

Spezifikation Umweltbasisdatensatz

**Datensatz-Identifizier** UBD0028@bundesamt-fur-umwelt-bafu

**Thema** Ressourcen

**Titel (DE)** **Pilot-study for the analysis of the environmental impacts of commodities traded in Switzerland**

**Beschreibung (DE)** Pilotstudie zur Analyse der Umweltauswirkungen von in der Schweiz gehandelten Rohstoffen  
Einleitung

Rohstoffe wie Metalle, Rohöl und Produkte wie Diesel oder Grundnahrungsmittel (z.B. Kaffee, Weizen, etc.) werden oft von Schweizer Unternehmen gehandelt, ohne physisch in die Schweiz transportiert zu werden. So werden sie von der Außenhandelsstatistik oder Input-Output-Analysen ausgeschlossen. Die damit verbundenen Umweltauswirkungen wurden in früheren Studien nicht bewertet. Eine Pilotstudie schließt diese Lücke (Jungbluth & Meili 2018). Sie beantwortet Schlüsselfragen für 15 ausgewählte Rohstoffe:

Welche Mengen werden von Schweizer Unternehmen gehandelt?

Welche Umweltauswirkungen hat die Gewinnung, Produktion und der Transport dieser Rohstoffe?

Welche Herkunftsländer sind für die globale Produktion dieser Rohstoffe relevant?

Methodik

Informationen über die gehandelten Mengen wurden aus Literatur, Statistiken, Online-Unternehmensberichten und Experteninterviews gewonnen und in der Studie dokumentiert. Die Umweltwirkungen werden anhand von sieben „Footprintindikatoren“ analysiert.

Ergebnisse

Je nach Rohstoff werden zwischen 20 und 65% des Welthandels von Schweizer Unternehmen gehandelt. Gewinnung, Produktion und Transport zum Markt verursachen pro Jahr mehr als 4 Billionen (4e15) ökologische Knappheitspunkte. Rohstoffe aus dem Energiesektor (z.B. Rohöl) haben die höchste Relevanz hinsichtlich Masse, Ökopunkte und kg CO<sub>2</sub>-Äquivalent. Am wichtigsten ist die Produktion in den USA, Russland, Australien, Saudi-Arabien, Brasilien, Indonesien und China.

Interpretation

Die Umweltauswirkungen der Produktion von Rohstoffen, die von Schweizer Unternehmen gehandelt werden, sind wesentlich höher als die direkten Umweltauswirkungen von Produktion und Konsum in der Schweiz. Bei jedem Handelsgeschäft geht neben der Ware auch die damit verbundene Umweltbelastung vom Verkäufer auf den Käufer über. Der Handelssektor hat daher einen direkten Bezug zur Überwachung und ggf. Beeinflussung grosser Umweltauswirkungen. Wenn es bessere Steuerungsmassnahmen für solche Gewerke gäbe, könnten die Umweltauswirkungen reduziert werden. Eine erste

**Status** Final version

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**Version** [https://esuserVICES-my.sharepoint.com/personal/mitarbeiter1\\_esuserVICES\\_onmicrosoft\\_com/Documents/582\\_BAFU\\_UmweltwirkungenBranchen/EcoSpold/EcoSpold-Database-commodities-trade-5.0.xlsx](https://esuserVICES-my.sharepoint.com/personal/mitarbeiter1_esuserVICES_onmicrosoft_com/Documents/582_BAFU_UmweltwirkungenBranchen/EcoSpold/EcoSpold-Database-commodities-trade-5.0.xlsx) | Metadaten

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**URL** [www.esu-services.ch](http://www.esu-services.ch)

**Tags** Trade, commodities

**Bemerkung**

	Unit	Commodities traded	Commodities traded, Min	Commodities traded, Max	Total production /consumption
		CH	CH	CH	GLO
Commodities, energy sources	kg	2.13E+12			
- crude oil	kg	7.44E+11	4.43E+11	7.44E+11	
- diesel (Middle distillates)	kg	1.83E+11	1.09E+11	1.83E+11	
- petrol (light distillates)	kg	1.67E+11	9.96E+10	1.67E+11	
- natural gas	Nm3	3.79E+11	1.88E+10	3.79E+11	
- coal	kg	4.67E+11	1.58E+11	4.67E+11	
Commodities, ores and metals	kg	9.98E+11			
- iron ore	kg	9.30E+11	4.71E+10	9.30E+11	
- copper	kg	8.58E+09	3.50E+09	8.58E+09	
- bauxite	kg	4.60E+10	2.74E+10	4.60E+10	
- aluminium	kg	1.39E+10	8.27E+09	1.39E+10	
- gold	kg	2.10E+06	5.95E+04	2.10E+06	
Commodities, agricultural goods	kg	1.37E+11			2.56E+11
- coffee	kg	2.88E+09	8.73E+08	3.24E+09	1.00E+10
- cocoa	kg	1.11E+09	6.61E+08	1.11E+09	4.14E+09
- cereals (wheat)	kg	7.82E+10	4.66E+10	1.10E+11	
- sugar	kg	2.63E+10	5.00E+08	2.96E+10	1.66E+11
- vegetable oils (palm oil)	kg	2.71E+10	1.61E+10	2.71E+10	5.21E+10
- cotton	kg	1.52E+09	4.00E+08	1.83E+09	2.34E+10
Total	kg	3.08E+12	9.79E+11	3.11E+12	
Total, turnover for trade	CHF	9.61E+11	4.26E+11	9.79E+11	
Carbon footprint, reported	kg CO2-eq				
Carbon footprint, calculated	kg CO2-ec	1.26E+12	5.73E+11	1.29E+12	
Environmental impacts, calculated	UBP	3.75E+15	1.71E+15	3.97E+15	
Ratio of impacts vs CH consumption					
year		2017			2014
Source		This study			Dubsach et al., 2015

Comments on reports

branch establishment

	Unit	Global production /consumption	Source
Global production			
Total production /consumption			
GLO			
Commodities, energy sources	kg	2.06E+13	
- crude oil	kg	4.40E+12	BP 2017
- diesel (Middle distillates)	kg	1.77E+12	BP 2017
- petrol (light distillates)	kg	1.62E+12	BP 2017
- natural gas	Nm3	3.55E+12	BP 2017
- coal	kg	7.46E+12	BP 2017
Commodities, ores and metals	kg	2.64E+12	
- iron ore	kg	2.28E+12	<a href="https://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/global_iron_ore_data.pdf">https://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/global_iron_ore_data.pdf</a>
- copper	kg	2.25E+10	<a href="https://www.statista.com/topics/1409/copper/">https://www.statista.com/topics/1409/copper/</a>
- bauxite	kg	2.74E+11	<a href="https://minerals.usgs.gov/minerals/pubs/commodity/bauxite/mcs-2016-bauxi.pdf">https://minerals.usgs.gov/minerals/pubs/commodity/bauxite/mcs-2016-bauxi.pdf</a>
- aluminium	kg	6.34E+10	<a href="http://www.world-aluminium.org/statistics/alumina-production/">http://www.world-aluminium.org/statistics/alumina-production/</a>
- gold	kg	3.15E+06	<a href="https://www.statista.com/statistics/238414/global-gold-production-since-2005/">https://www.statista.com/statistics/238414/global-gold-production-since-2005/</a>
Commodities, agricultural goods	kg	1.00E+12	
- coffee	kg	7.57E+09	<a href="https://apps.fas.usda.gov/psdonline/circulars/coffee.pdf">https://apps.fas.usda.gov/psdonline/circulars/coffee.pdf</a>
- cocoa	kg	3.97E+09	<a href="https://www.statista.com/statistics/262620/global-cocoa-production/">https://www.statista.com/statistics/262620/global-cocoa-production/</a>
- cereals (wheat)	kg	7.35E+11	<a href="https://www.statista.com/statistics/267268/production-of-wheat-worldwide-since-1990/">https://www.statista.com/statistics/267268/production-of-wheat-worldwide-since-1990/</a>
- sugar	kg	1.71E+11	<a href="https://www.statista.com/statistics/249679/total-production-of-sugar-worldwide/">https://www.statista.com/statistics/249679/total-production-of-sugar-worldwide/</a>
- vegetable oils (palm oil)	kg	6.26E+10	<a href="https://www.palmoilandfood.eu/en/palm-oil-production">https://www.palmoilandfood.eu/en/palm-oil-production</a>
- cotton	kg	2.32E+10	<a href="http://www.cottonfile.com/industry/production/production-of-cotton-worldwide-since-1990/">http://www.cottonfile.com/industry/production/production-of-cotton-worldwide-since-1990/</a>
Total	kg	2.24E+13	
Total, turnover for trade	CHF		
Carbon footprint, reported	kg CO2-eq		
Carbon footprint, calculated	kg CO2-eq	1.02E+13	
Environmental impacts, calculated	UBP	2.42E+16	
Ratio of impacts vs CH consumption			
year		2016-17	
Source		Different sources for each commodity	
Comments on reports			
branch establishment			

		Global trade		
	Unit	Share of production traded	Amount traded	Sources
		GLO	GLO	
Commodities, energy sources	kg	28%	5.86E+12	
· crude oil	kg	43%	1.90E+12	<a href="https://stsa.swiss/knowledge/main-players/companies">https://stsa.swiss/knowledge/main-players/companies</a>
· diesel (Middle distillates)	kg	30%	5.22E+11	<a href="https://stsa.swiss/knowledge/main-players/companies_quantity_transported_by_sea">https://stsa.swiss/knowledge/main-players/companies_quantity_transported_by_sea</a>
· petrol (light distillates)	kg	30%	4.78E+11	<a href="https://stsa.swiss/knowledge/main-players/companies_quantity_transported_by_sea">https://stsa.swiss/knowledge/main-players/companies_quantity_transported_by_sea</a>
· natural gas	Nm3	31%	1.08E+12	BP 2017
· coal	kg	18%	1.33E+12	<a href="https://www.worldcoal.org/coal/coal-market-pricing">https://www.worldcoal.org/coal/coal-market-pricing</a>
Commodities, ores and metals	kg	63%	1.66E+12	
· iron ore	kg	68%	1.55E+12	<a href="https://www.statista.com/statistics/590231/exports-of-iron-ore-worldwide-by-region/">https://www.statista.com/statistics/590231/exports-of-iron-ore-worldwide-by-region/</a>
· copper	kg	64%	1.43E+10	<a href="http://icsq.org">http://icsq.org</a>
· bauxite	kg	28%	7.67E+10	<a href="https://www.bureau-federatif-vaudais-chaux.com/Seit%20le%201%20septembre%202015.aspx?no_cache=1&amp;no_cache2=1">https://www.bureau-federatif-vaudais-chaux.com/Seit%20le%201%20septembre%202015.aspx?no_cache=1&amp;no_cache2=1</a>
· aluminium	kg	37%	2.32E+10	<a href="https://www.bureau-federatif-vaudais-chaux.com/Seit%20le%201%20septembre%202015.aspx?no_cache=1&amp;no_cache2=1">https://www.bureau-federatif-vaudais-chaux.com/Seit%20le%201%20septembre%202015.aspx?no_cache=1&amp;no_cache2=1</a>
· gold	kg	100%	3.15E+06	
Commodities, agricultural goods	kg	30%	3.04E+11	
· coffee	kg	71%	5.40E+09	<a href="https://stsa.swiss/knowledge/main-players/companies">https://stsa.swiss/knowledge/main-players/companies</a>
· cocoa	kg	80%	3.18E+09	No data found, estimation
· cereals (wheat)	kg	25%	1.83E+11	<a href="https://apps.fas.usda.gov/psdonline/circulars/grain-wheat.pdf">https://apps.fas.usda.gov/psdonline/circulars/grain-wheat.pdf</a>
· sugar	kg	35%	5.92E+10	<a href="https://apps.fas.usda.gov/psdonline/circulars/Sugar.pdf">https://apps.fas.usda.gov/psdonline/circulars/Sugar.pdf</a>
· vegetable oils (palm oil)	kg	77%	4.82E+10	<a href="https://www.iisd.org/pdf/2014/ssi_2014_chapter_11.pdf">https://www.iisd.org/pdf/2014/ssi_2014_chapter_11.pdf</a> for 2012
· cotton	kg	24%	5.50E+09	<a href="https://stsa.swiss/knowledge/main-players/companies">https://stsa.swiss/knowledge/main-players/companies</a>
Total	kg	32%	7.29E+12	
Total, turnover for trade	CHF			
Carbon footprint, reported	kg CO2-ec			
Carbon footprint, calculated	kg CO2-ec		3.23E+12	
Environmental impacts, calculated	UBP		8.84E+15	
Ratio of impacts vs CH consumption				
year			2016-17	
Source		Calculation	Different sources for each commodity	
Comments on reports				
branch establishment				

	Unit	Data for Swiss trade								Sources and infos
		Best guess share	Share of trading hub	Share of trading hub	Share of trading hub	Share of global trade handled	Amount traded	Amount traded	Amount traded	
		CH	CH	CH	Geneva	Geneva	Geneva	Geneva	CH	
Commodities, energy sources	kg									
- crude oil	kg	39%	35%			35%	37%	7.00E+11	7.44E+11	
- diesel (Middle distillates)	kg	35%								
- petrol (light distillates)	kg	35%								
- natural gas	Nm3	35%								
- coal	kg	35%								
Commodities, ores and metals	kg		60%	66%		60%				
- iron ore	kg	60%								
- copper	kg	60%								
- bauxite	kg	60%								
- aluminium	kg	60%								
- gold	kg	67%							67%	
Commodities, agricultural goods	kg									
- coffee	kg	53%	60%		50%	50%	50%	2.70E+09		
- cocoa	kg	35%				35%				
- cereals (wheat)	kg	43%	35%		33%	60%	41%	7.50E+10		
- sugar	kg	44%	50%		33%	50%	25%	1.50E+10		
- vegetable oils (palm oil)	kg	56%			33%					
- cotton	kg	28%			33%	22%	22%	1.20E+09		
Total	kg	42%								
Total turnover for trade	CHF									
Carbon footprint, reported	kg CO2-eq									
Carbon footprint, calculated	kg CO2-eq									
Environmental impacts, calculated	UBP									
Ratio of impacts vs CH consumption										
year			2013							2010
Source		Estimation for this study	<a href="http://www.news.admin.ch/NSD/Sabc/objet/message/attachments/30136.pdf">http://www.news.admin.ch/NSD/Sabc/objet/message/attachments/30136.pdf</a>	Bürgi Bonanomi et al. 2015	<a href="https://www.myswitzerland.com/en-us/meetings/commoditytrading.html">https://www.myswitzerland.com/en-us/meetings/commoditytrading.html</a>	<a href="https://ista.swiss/zuquiffam/24.8.2017">https://ista.swiss/zuquiffam/24.8.2017</a>	<a href="https://ista.swiss/knowledge/main-players/companies">https://ista.swiss/knowledge/main-players/companies</a>	<a href="https://ista.swiss/knowledge/main-players/companies">https://ista.swiss/knowledge/main-players/companies</a>		EVB 2011
Comments on reports										
branch establishment										

	Unit	production / trade /								
		Amount traded, big player	Glencore	Kolmar Group	Vitol	Mercuria	Gunvor	Litasco	Alvean	Sucafina
		CH	Zug	Zug	Geneva	Geneva	Geneva	Geneva	Geneva	Geneva
Commodities, energy sources	kg	1.07E+12	3.66E+11	1.00E+10	2.86E+11	1.08E+11	1.28E+11	1.65E+11	0.00E+00	0.00E+00
· crude oil	kg	6.13E+11	1.27E+11	1.00E+10	1.69E+11	1.08E+11	1.28E+11	7.10E+10		
· diesel (Middle distillates)	kg	1.31E+11	1.18E+11		1.33E+10					
· petrol (light distillates)	kg	1.40E+11			4.56E+10			9.40E+10		
· natural gas	Nm3	1.88E+10			1.88E+10					
· coal	kg	1.58E+11	1.21E+11		3.00E+10					
Commodities, ores and metals	kg	9.50E+10	6.20E+10	0.00E+00	1.00E+09	3.20E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
· iron ore	kg	4.71E+10	4.71E+10							
· copper	kg	3.50E+09	3.50E+09							
· bauxite	kg									
· aluminium	kg	1.24E+10	1.14E+10		1.00E+09					
· gold	kg	5.95E+04	5.95E+04							
Commodities, agricultural goods	kg	8.97E+10	7.14E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
· coffee	kg	8.73E+08								
· cocoa	kg	8.53E+08								
· cereals (wheat)	kg	5.99E+10	4.38E+10							
· sugar	kg	5.00E+08	5.00E+08							
· vegetable oils (palm oil)	kg	2.71E+10	2.67E+10							
· cotton	kg	4.00E+08	4.00E+08							
Total	kg	1.42E+12	5.00E+11	1.00E+10	2.71E+11	3.22E+11	1.28E+11	1.65E+11	0.00E+00	0.00E+00
Total, turnover for trade	CHF	3.92E+11		7.00E+09	1.55E+11	9.27E+10	4.79E+10			
Carbon footprint, reported	kg CO2-ec	3.56E+10	3.56E+10							
Carbon footprint, calculated	kg CO2-ec	7.60E+11	3.34E+11	4.98E+09	1.54E+11	5.38E+10	6.36E+10	1.12E+11	0.00E+00	0.00E+00
Environmental impacts, calculated	UBP	2.20E+15	1.01E+15	1.23E+13	3.25E+14	1.33E+14	1.57E+14	2.31E+14	0.00E+00	0.00E+00
Ratio of impacts vs CH consumption										
year			2015?		2016	2016		2015		
Source		Calculation with data for Swiss companies	<a href="http://www.glencore.com/who-we-are/about-us/our-business-at-a-glance/">http://www.glencore.com/who-we-are/about-us/our-business-at-a-glance/</a>	<a href="http://www.kolmargroup.com/annual-reports">http://www.kolmargroup.com/annual-reports</a>	<a href="http://www.vitol.com/what-we-do/trading/">http://www.vitol.com/what-we-do/trading/</a>	<a href="http://www.mercuria.com/about-us/performance-and-risk-management">http://www.mercuria.com/about-us/performance-and-risk-management</a>	<a href="https://gunvorgroup.com/wp-content/uploads/2014/04/Group-Summary-2016-web.pdf">https://gunvorgroup.com/wp-content/uploads/2014/04/Group-Summary-2016-web.pdf</a>	<a href="http://litasco.com/en/About/General-Information">http://litasco.com/en/About/General-Information</a>	<a href="http://www.alvean.com/product-services/">http://www.alvean.com/product-services/</a>	<a href="http://www.sucafina.ch/sustainability/">http://www.sucafina.ch/sustainability/</a>
Comments on reports							Only 1 page of summary (from 2016, about business in 2015), no report available, data	no annual report available	No annual report or absolute numbers available	No annual report or absolute numbers available
branch establishment										

	Unit	production / trade /							source
		Ameropa	Baytur trade SA	M.I.S. Commodities AG	Trammo AG	Barry Callebaut	ECOM Agroindustrial Corporation Ltd.	Nestlé	
		Chamberlain	Commodity	Bäch SZ	Freienbach SZ	Zürich ZH	Pully	Vevey	
Commodities, energy sources	kg	0.00E+00	0.00E+00	0.00E+00	7.00E+09	0.00E+00	0.00E+00	0.00E+00	
- crude oil	kg								
- diesel (Middle distillates)	kg								
- petrol (light distillates)	kg								
- natural gas	Nm3								
- coal	kg				7.00E+09				
Commodities, ores and metals	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
- iron ore	kg								
- copper	kg								
- bauxite	kg								
- aluminium	kg								
- gold	kg								
Commodities, agricultural goods	kg	1.25E+10	0.00E+00	0.00E+00	0.00E+00	4.38E+08	0.00E+00	5.33E+09	
- coffee	kg							8.73E+08	<a href="http://storage.nestle.com/nestle-society-full-2016/index.html#85/z">http://storage.nestle.com/nestle-society-full-2016/index.html#85/z</a>
- cocoa	kg					4.38E+08		4.15E+08	<a href="https://www.nestle.com/csv/communities/nestle-cocoa-plan">https://www.nestle.com/csv/communities/nestle-cocoa-plan</a>
- cereals (wheat)	kg	1.25E+10						3.63E+09	<a href="https://www.nestle.com/csv/communities/responsible-sourcing/cereals">https://www.nestle.com/csv/communities/responsible-sourcing/cereals</a>
- sugar	kg							?	<a href="https://www.nestle.com/csv/communities/responsible-sourcing/sugar">https://www.nestle.com/csv/communities/responsible-sourcing/sugar</a>
- vegetable oils (palm oil)	kg							4.20E+08	<a href="https://www.nestle.com/csv/communities/responsible-sourcing/palm-oil">https://www.nestle.com/csv/communities/responsible-sourcing/palm-oil</a>
- cotton	kg								
Total	kg	1.25E+10	0.00E+00	0.00E+00	7.00E+09	4.38E+08	0.00E+00	5.33E+09	
Total, turnover for trade	CHF		2.40E+06					8.95E+10	<a href="https://www.nestle.com/investors/annual-report">https://www.nestle.com/investors/annual-report</a>
Carbon footprint, reported	kg CO2-ec								
Carbon footprint, calculated	kg CO2-ec	8.15E+09	0.00E+00	0.00E+00	2.11E+09	8.83E+09	0.00E+00	1.85E+10	0.00E+00
Environmental impacts, calculated	UBP	7.80E+13	0.00E+00	0.00E+00	2.54E+12	1.00E+14	0.00E+00	1.55E+14	0.00E+00
Ratio of impacts vs CH consumption									
year					2015	2017			
Source		<a href="http://www.ameropa.com/media/B4257M64/B4257M64_Annual_Progress_Report_2016.pdf">http://www.ameropa.com/media/B4257M64/B4257M64_Annual_Progress_Report_2016.pdf</a>	<a href="http://www.business-informations.ch/BAYTUR-TRADING-SA.html">http://www.business-informations.ch/BAYTUR-TRADING-SA.html</a>	<a href="http://www.miscommodities.com/index.php">http://www.miscommodities.com/index.php</a>	<a href="http://www.trammo.com/">http://www.trammo.com/</a>	<a href="http://annual-report-2016-17.barry-callebaut.com/">http://annual-report-2016-17.barry-callebaut.com/</a>	<a href="https://www.escomtrading.com/">https://www.escomtrading.com/</a>	<a href="https://www.nestle.com/investors/annual-report">https://www.nestle.com/investors/annual-report</a>	
Comments on reports			No trading information available	Only type of products traded but no numbers available	Partial data on amounts of commodities traded in one year, no annual report	Comprehensive report available	Report has to be ordered (not publicly available), was not submitted so far	Numbers found on different subpages, annual report contains financial figures only	
branch establishment									

	Unit	production / trade other						
		Louis Dreyfus	Trafigura	Trafigura	ADM	Bunge	Cargill	Unilever
Commodities, energy sources	kg	0.00E+00	2.19E+11	2.81E+11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
· crude oil	kg		8.59E+10	1.04E+11				
· diesel (Middle distillates)	kg		3.64E+10	4.04E+10				
· petrol (light distillates)	kg		5.91E+10	7.62E+10				
· natural gas	Nm3			9.40E+09				
· coal	kg		3.77E+10	4.64E+10				
Commodities, ores and metals	kg	0.00E+00	1.48E+10	1.53E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
· iron ore	kg		6.40E+09	8.10E+09				
· copper	kg							
· bauxite	kg							
· aluminium	kg							
· gold	kg							
Commodities, agricultural goods	kg	3.75E+08	0.00E+00	0.00E+00	1.98E+08	0.00E+00	0.00E+00	0.00E+00
· coffee	kg							
· cocoa	kg							
· cereals (wheat)	kg							
· sugar	kg				1.98E+08			
· vegetable oils (palm oil)	kg	3.75E+08						
· cotton	kg							
Total	kg	8.10E+10	2.26E+11	2.81E+11	1.98E+08	0.00E+00	0.00E+00	0.00E+00
Total, turnover for trade	CHF	5.07E+10	3.83E+08	3.97E+08				
Carbon footprint, reported	kg CO2-ec	1.67E+09						
Carbon footprint, calculated	kg CO2-ec	6.07E+08	1.30E+11	1.63E+11	3.20E+08	0.00E+00	0.00E+00	0.00E+00
Environmental impacts, calculated	UBP	1.22E+12	2.64E+14	3.26E+14	6.45E+11	0.00E+00	0.00E+00	0.00E+00
Ratio of impacts vs CH consumption								
year		2016	2016	2017				
Source		<a href="http://www.lbc.com/global/investor-sustainability-and-reports-and-publications/annual-report-2016-interactive-pdf">http://www.lbc.com/global/investor-sustainability-and-reports-and-publications/annual-report-2016-interactive-pdf</a> <a href="http://www.lbc.com/files/2715/0038/0">http://www.lbc.com/files/2715/0038/0</a>	<a href="https://www.trafigura.com/media/364892/trafigura-2017-annual-report.pdf">https://www.trafigura.com/media/364892/trafigura-2017-annual-report.pdf</a>	<a href="https://www.trafigura.com/media/364892/trafigura-2017-annual-report.pdf">https://www.trafigura.com/media/364892/trafigura-2017-annual-report.pdf</a>	<a href="https://www.adm.com/sustainability">https://www.adm.com/sustainability</a>	<a href="https://www.bunge.com/sustainability/2016/index.html">https://www.bunge.com/sustainability/2016/index.html</a>	<a href="https://www.cargill.com/doc/14320948_02973-2017-annual-report.pdf">https://www.cargill.com/doc/14320948_02973-2017-annual-report.pdf</a>	
Comments on reports		sustainability and annual report available, but no effective numbers for total trade. Only relative changes stated, commodities in yellow are traded.	No numbers for CH trade	No numbers for CH trade	No numbers for CH trade	No numbers for CH trade	No numbers for CH trade	No numbers for CH trade
branch establishment		Geneva	Luzern, Geneva	Luzern, Geneva			Geneva	



	Economic information						
	Unit	Price	Price	conversion	Value, trade, CH	Value, trade, CH	Transit trade statistics
		CHF/kg	US\$/unit	unit	kg/unit	CHF	CHF
Commodities, energy sources	kg				6.18E+11		3.90E+11
- crude oil	kg	0.474	62	bbl	139.91	3.53E+11	2.10E+11
- diesel (Middle distillates)	kg	0.523	1.85	gallon	3.79	9.55E+10	6.68E+10
- petrol (light distillates)	kg	0.489	1.73	gallon	3.79	9.18E+10	4.87E+10
- natural gas	Nm3	0.10	2.60	10,000 mmBTU	2.80E+01	6.77E+10	2.24E+10
- coal	kg	0.11	100.00	t	1'000.00	4.99E+10	2.97E+10
Commodities, ores and metals	kg				2.65E+11		1.17E+11
- iron ore	kg	0.07	70.00	t	1'000.00	6.96E+10	4.14E+10
- copper	kg	7.52	7'026.00	t	1'000.00	6.45E+10	8.84E+10
- bauxite	kg	0.03	28	t	1'000.00	+1.38E+09	8.20E+08
- aluminium	kg	2.40	2'240.00	t	1'000.00	6.33E+10	1.98E+10
- gold	kg	45708.53	1'329.00	fine troy ounce	0.03	9.60E+10	6.71E+10
Commodities, agricultural goods	kg				7.89E+10		6.50E+10
- coffee	kg	2.83	1.20	pound	0.45	+8.15E+09	+4.85E+09
- cocoa	kg	2.30	2'148.00	t	1'000.00	+2.55E+09	+1.52E+09
- cereals (wheat)	kg	0.49	460.00	t	1'000.00	6.85E+10	2.29E+10
- sugar	kg	0.31	0.13	pound	0.45	+8.25E+09	+4.91E+09
- vegetable oils (palm oil)	kg	0.68	640.00	t	1'000.00	+1.86E+10	+1.10E+10
- cotton	kg	1.89	0.80	pound	0.45	+2.86E+09	+1.70E+09
Total	kg						5.72E+11
Total, turnover for trade	CHF		0.93480			9.61E+11	5.72E+11
Carbon footprint, reported	kg CO2-ec					168%	
Carbon footprint, calculated	kg CO2-ec						
Environmental impacts, calculated	UBP						
Ratio of impacts vs CH consumption							

<https://www.lme.com>  
<https://www.indexmundi.com/commodities/>

Swiss National Bank

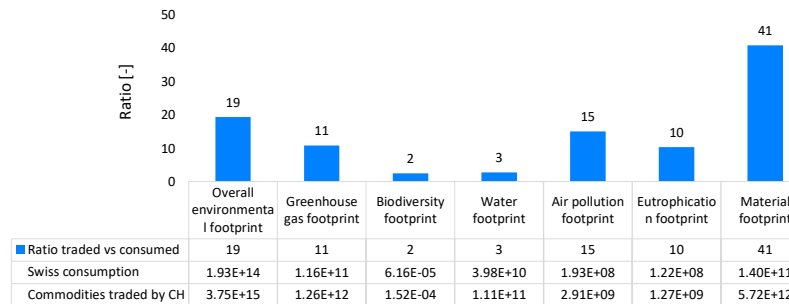
Comments on reports

branch establishment

Environmental impacts of Swiss trade									
Unit	Overall environmental footprint	Greenhouse gas footprint	Biodiversity footprint	Water footprint	Air pollution footprint	Eutrophication footprint	Material footprint		
	UBP*13	kg CO2-eq	PDF*1a	m3-eq	kg PM10-eq	kg N-eq	RME		
Commodities, energy sources	1.82E+15	9.59E+11	7.57E-05	3.60E+10	1.57E+09	3.90E+08	2.70E+12		
- crude oil	9.18E+14	3.70E+11	1.67E-05	1.23E+10	7.43E+08	1.66E+08	3.07E+11		
- diesel (Middle distillates)	2.69E+14	1.41E+11	4.55E-06	3.99E+09	2.32E+08	4.70E+07	2.56E+11		
- petrol (light distillates)	2.56E+14	1.36E+11	4.26E-06	4.29E+09	2.40E+08	4.52E+07	2.39E+11		
- natural gas	2.07E+14	1.72E+11	1.48E-06	2.21E+09	1.25E+08	1.59E+07	5.53E+11		
- coal	1.69E+14	1.41E+11	4.87E-06	1.32E+10	2.28E+08	1.18E+08	6.98E+11		
Commodities, ores and metals	9.05E+14	1.30E+11	1.61E-05	3.21E+10	8.41E+08	1.21E+08	2.90E+12		
- iron ore	9.08E+13	1.60E+10	8.34E-07	7.54E+09	2.51E+08	1.42E+07	1.29E+12		
- copper	4.24E+14	1.59E+10	4.24E-06	2.83E+09	3.88E+08	3.98E+07	6.64E+11		
- bauxite	1.50E+12	2.42E+08	4.32E-08	8.18E+08	5.33E+06	9.56E+05	6.83E+10		
- aluminium	9.04E+13	7.07E+10	2.02E-06	1.67E+10	1.09E+08	2.40E+07	9.91E+10		
- gold	2.99E+14	2.75E+10	9.01E-06	4.22E+09	8.76E+07	4.19E+07	7.02E+11		
Commodities, agricultural goods	1.02E+15	1.67E+11	5.99E-05	4.24E+10	5.00E+08	7.57E+08	1.26E+11		
- coffee	1.18E+14	2.33E+10	4.71E-06	0.00E+00	8.63E+07	2.01E+08	2.06E+10		
- cocoa	2.55E+14	2.24E+10	3.41E-07	0.00E+00	4.30E+07	1.02E+08	4.46E+09		
- cereals (wheat)	4.88E+14	5.10E+10	2.49E-06	1.92E+09	1.25E+08	2.42E+08	5.17E+10		
- sugar	3.36E+13	6.90E+09	3.66E-07	5.62E+09	3.13E+07	3.68E+07	1.29E+10		
- vegetable oils (palm oil)	8.83E+13	4.39E+10	5.08E-06	3.00E+09	1.68E+08	1.44E+08	2.25E+10		
- cotton	3.98E+13	1.95E+10	1.14E-06	3.16E+10	4.65E+07	3.14E+07	1.36E+10		
<b>Total</b>	<b>3.75E+15</b>	<b>1.26E+12</b>	<b>1.52E-04</b>	<b>1.11E+11</b>	<b>2.91E+09</b>	<b>1.27E+09</b>	<b>5.72E+12</b>		
Total, turnover for trade	CHF	Greenhouse gas	Biodiversity	Water	Air pollution	Eutrophication	Material		
Carbon footprint, reported	kg CO2-eq	Swiss consumption	1.93E+14	1.16E+11	6.16E-05	3.98E+10	1.93E+08	1.22E+08	1.40E+11
Carbon footprint, calculated	kg CO2-eq	Commodities traded by CH	3.75E+15	1.26E+12	1.52E-04	1.11E+11	2.91E+09	1.27E+09	5.72E+12
Environmental impacts, calculated	UBP	Ratio traded vs consumed	19	11	2	3	15	10	41

Ratio of impacts vs CH consumption  
year  
Source

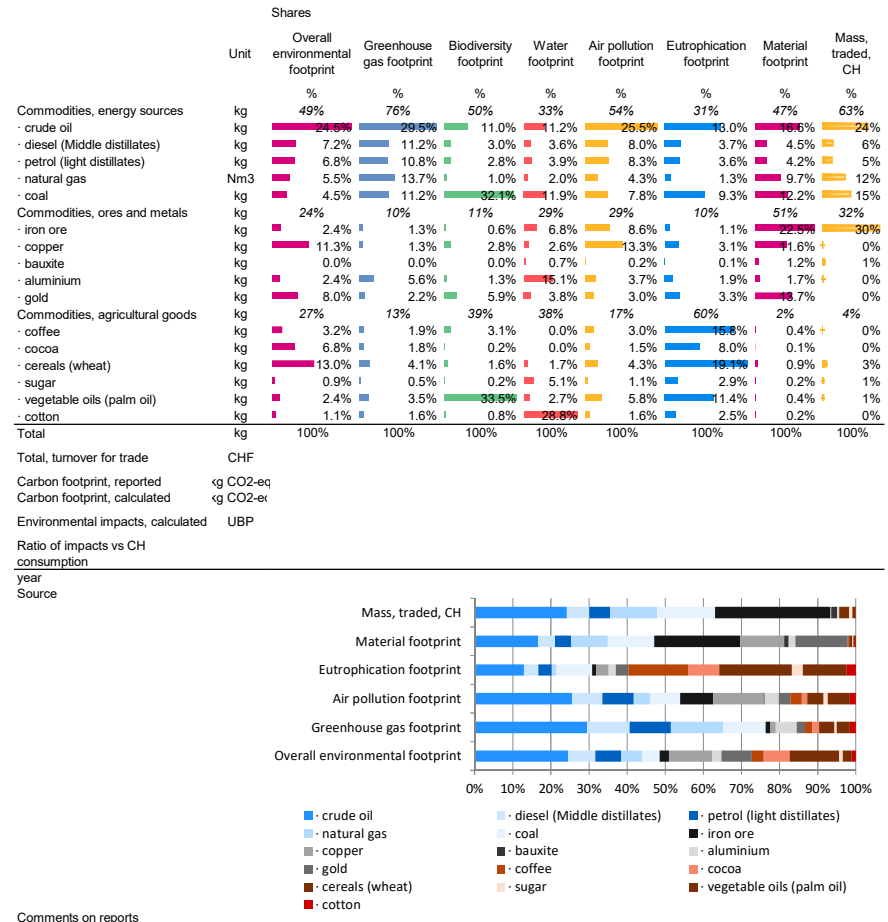
Ratio between the impact of traded commodities and Swiss consumption



Comments on reports

Swiss consumption	1.93E+14	1.16E+11	6.16E-05	3.98E+10	1.93E+08	1.22E+08	1.40E+11
Commodities traded by CH	3.75E+15	1.26E+12	1.52E-04	1.11E+11	2.91E+09	1.27E+09	5.72E+12

branch establishment



		intensities per kg/Nm3							
Unit	Overall environmental footprint	Overall environmental footprint	Greenhouse gas footprint	Biodiversity footprint	Water footprint	Air pollution footprint	Eutrophication footprint	Material footprint	
	GLO production	UBP*13	kg CO2-eq	PDF*a	m3-eq	kg PM10-eq	kg N-eq	RME	
<b>Commodities, energy sources</b>									
- crude oil	kg	5.43E+15	1233	0.50	2.24E-17	0.017	9.99E-04	2.21E-04	1.28
- diesel (Middle distillates)	kg	2.61E+15	1474	0.77	2.49E-17	0.022	1.27E-03	2.57E-04	1.40
- petrol (light distillates)	kg	2.47E+15	1527	0.81	2.55E-17	0.026	1.44E-03	2.70E-04	1.43
- natural gas	Nm3	1.94E+15	546	0.45	3.90E-18	0.006	3.30E-04	4.18E-05	1.46
- coal	kg	2.71E+15	363	0.30	1.04E-16	0.028	4.89E-04	2.52E-04	1.50
<b>Commodities, ores and metals</b>									
- iron ore	kg	2.23E+14	98	0.02	8.97E-19	0.008	2.70E-04	1.52E-05	1.38
- copper	kg	1.11E+15	49408	1.85	4.94E-16	0.329	4.52E-02	4.63E-03	77.39
- bauxite	kg	8.96E+12	33	0.01	9.40E-19	0.018	1.16E-04	2.08E-05	1.48
- aluminium	kg	4.12E+14	6502	5.09	1.45E-16	1.202	7.84E-03	1.73E-03	7.13
- gold	kg	4.48E+14	142192810	13115.26	4.29E-12	2009.590	4.17E+01	2.00E+01	372521.90
<b>Commodities, agricultural goods</b>									
- coffee	kg	3.10E+14	41007	8.09	1.64E-15	0.000	3.00E-02	6.98E-02	7.17
- cocoa	kg	9.09E+14	229005	20.15	3.07E-16	0.000	3.87E-02	9.14E-02	4.02
- cereals (wheat)	kg	4.56E+15	6239	0.65	3.18E-17	0.025	1.60E-03	3.09E-03	0.66
- sugar	kg	2.18E+14	1277	0.26	1.39E-17	0.214	1.19E-03	1.40E-03	0.49
- vegetable oils (palm oil)	kg	2.04E+14	3255	1.62	1.87E-15	0.111	6.19E-03	5.33E-03	0.83
- cotton	kg	6.10E+14	26263	12.86	7.54E-16	20.990	3.06E-02	2.07E-02	8.98
Total	kg								
Total, turnover for trade	CHF								
Carbon footprint, reported	kg CO2-eq								
Carbon footprint, calculated	kg CO2-eq								
Environmental impacts, calculated	UBP	2.42E+16							
Ratio of impacts vs CH consumption									
year									
Source									

Comments on reports

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