

ライフサイクルアセスメント  
生命週期評估  
전 과정 평가  
வாழ்க்கை வட்டப் பகுப்பாய்வு

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Evaluarea Ciclului de Viață

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Pilot-study for the analysis of the  
environmental impacts of commodities  
traded in Switzerland

Niels Jungbluth, Christoph Meili  
ESU-services Ltd., Schaffhausen, Switzerland



SETAC Europe 24th LCA Symposium

24-26.9.2018

# Pilot-study for the analysis of the environmental impacts of commodities traded in Switzerland

Niels Jungbluth, Christoph Meili  
ESU-services Ltd., Schaffhausen, Switzerland



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[www.lca2018.setac.org](http://www.lca2018.setac.org)

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## Our motivation

- Sustainability is a major challenge for humanity
- Environmental impacts must be reduced over the full life cycle of products and services
- We apply transparent life cycle thinking to help our customers for reducing their environmental footprint

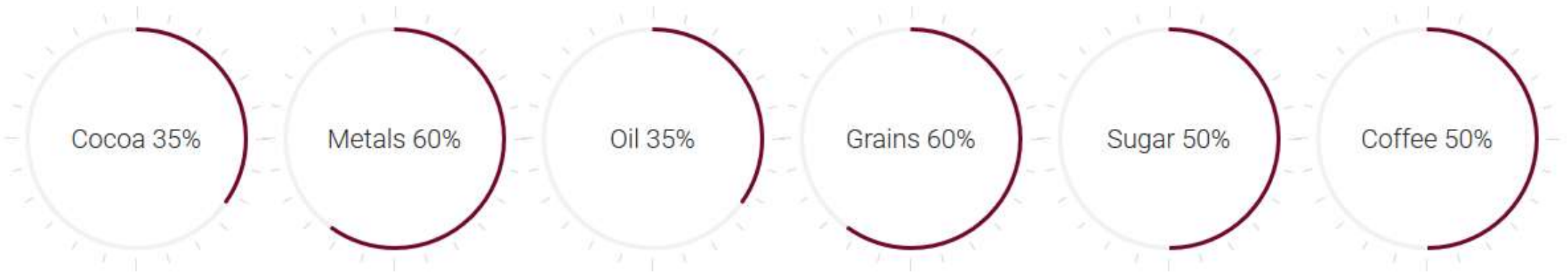
## Our services

- Full-scale Life Cycle Assessments (LCA)
- Key parameter and simplified LCAs
- LCI data acquisition and management (data-on-demand)
- LCA project management
- Ecolabelling and environmental product declaration (EPD)
- Literature surveys
- Critical peer reviews
- LCA training & coaching
- Regional esu-services Centre (LCA software)

# Starting point

Switzerland, the global commodity trading hub

Share of global trade handled by Swiss-based commodity trading companies



[www.stsa.swiss](http://www.stsa.swiss)

- There is a public debate about the social and environmental responsibility of the financial sector in Switzerland
- The Federal Office for the Environment (FOEN) wishes to get better knowledge on the environmental impacts associated with this sector

# Key questions for 16 selected commodities

- What quantities are traded by Swiss companies?
- Which countries of origin are relevant for the global production of these commodities?
- What are the environmental impacts caused by the extraction, production and transport of these commodities?

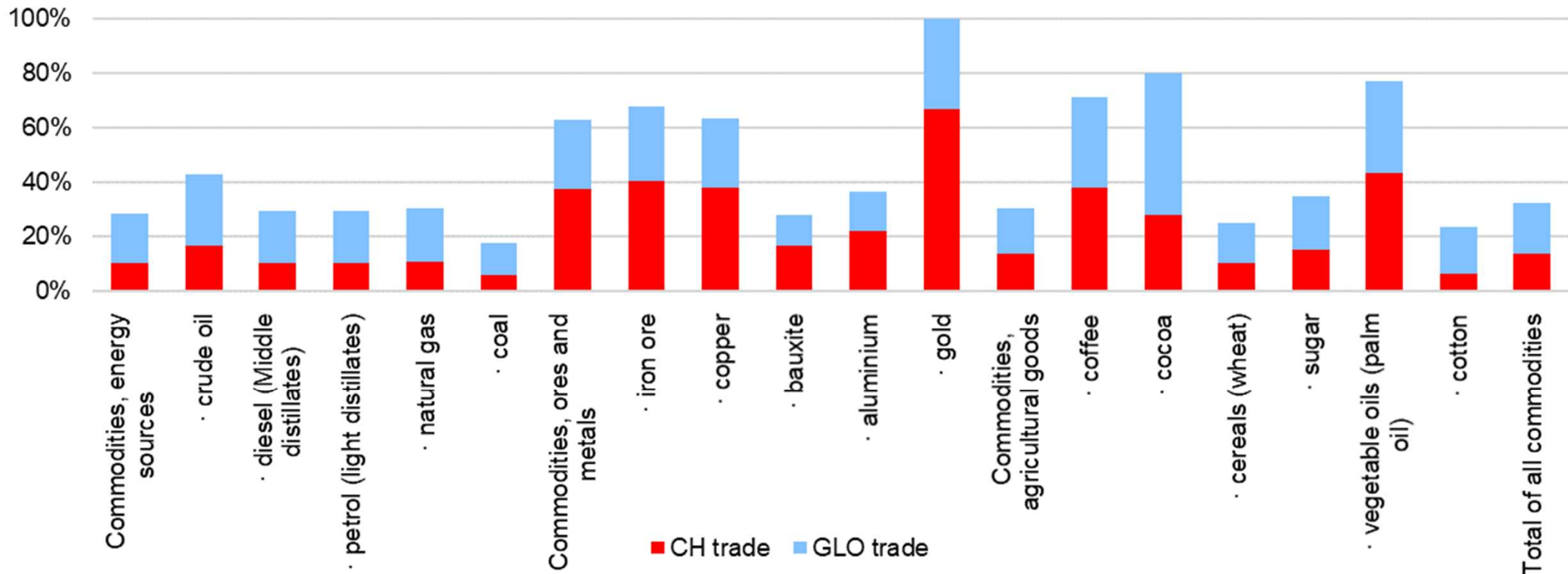
# Data sources for estimation of trades

- Global trading statistics
- Associations
- Single companies (bottom-up estimation)
- Literature
- Direct contacts
- Financial information by Swiss National Bank

- Different system boundaries to monitor the activities of a Swiss company
- Here we look at all trades taking started from an office in Switzerland

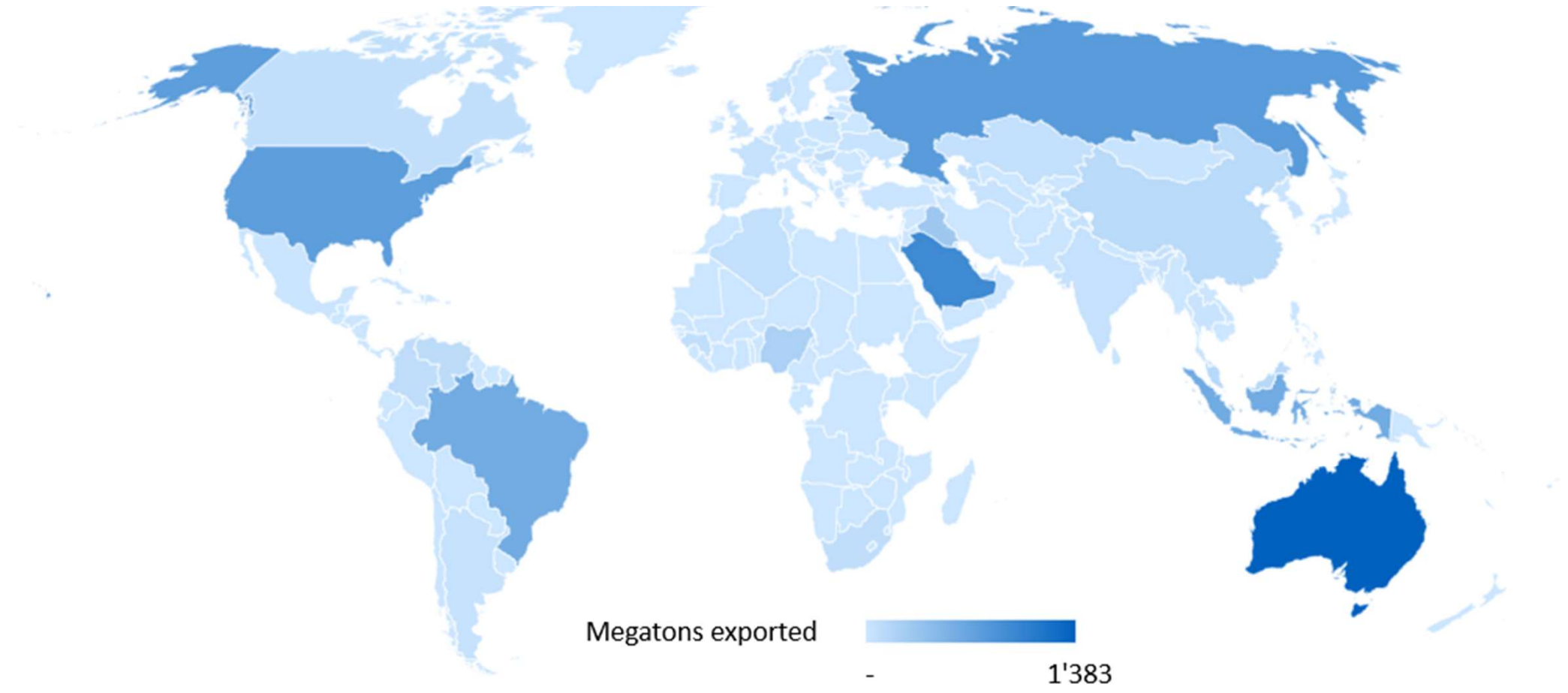


# Swiss and global trade as share of global production (=100%)



➤ A huge share of total global trade is traded by a Swiss company

# Main producing countries for the commodities traded by Swiss companies (by mass)



➤ Commodities traded by Swiss companies are produced globally

## System boundaries LCA

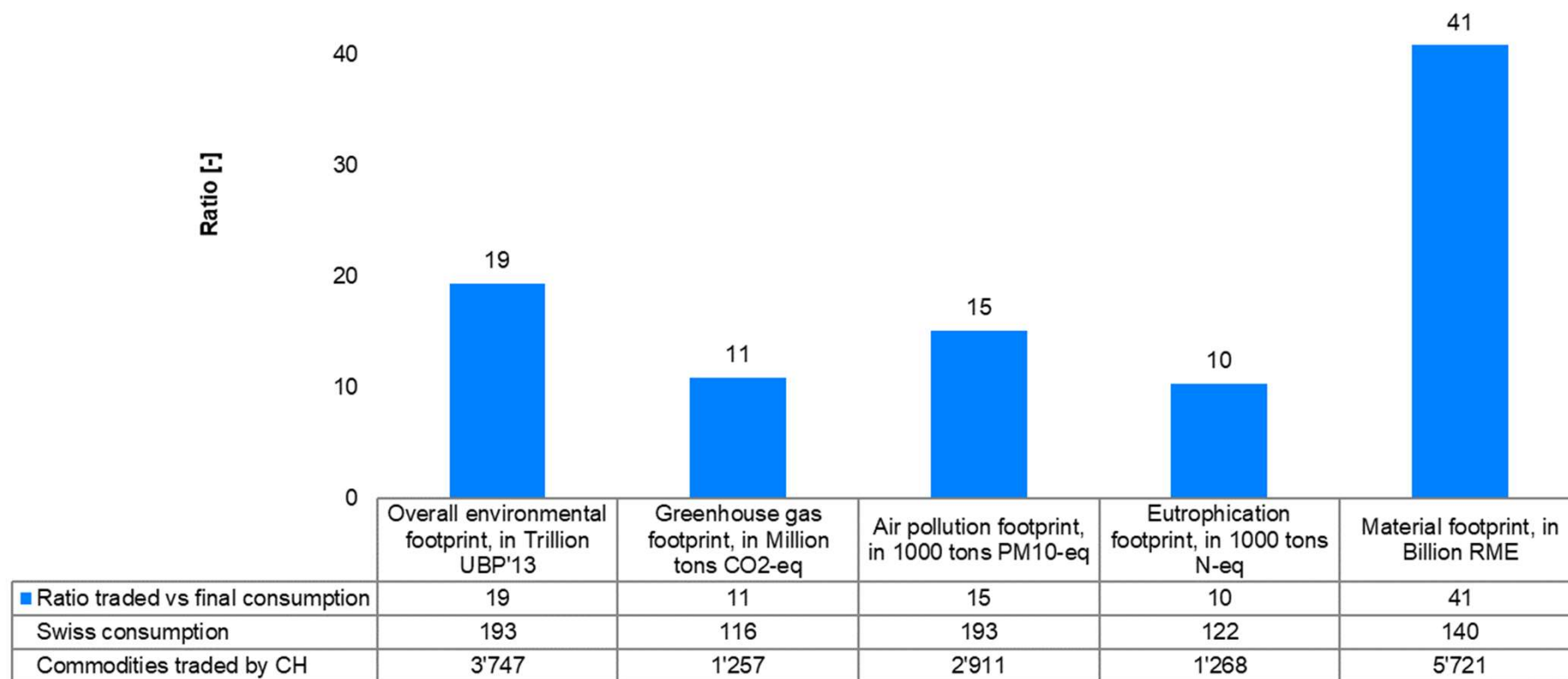
- Cradle-to-gate (product - as traded - at a central storage), incl. agriculture/extraction, processing and transports
- Not including downstream processing, use phase and disposal
- ESU database 2018 (based on ecoinvent v2.2) used as background data
- 5 so called footprint indicators

# Key results

	Overall environmental footprint	Greenhouse gas footprint	Air pollution footprint	Eutrophication footprint	Material footprint
	Trillion UBP'13	Million tons CO2-eq	1000 tons PM10-eq	1000 tons N-eq	Billion RME
Commodities, energy sources	1'819	959	1'569	390	2'696
· crude oil	918	370	743	165	951
· diesel (Middle distillates)	269	141	232	47	256
· petrol (light distillates)	256	136	240	45	239
· natural gas	207	172	125	16	553
· coal	169	141	228	118	698
Commodities, ores and metals	905	130	841	121	2'899
· iron ore	91	16	251	14	1'285
· copper	424	16	388	40	664
· bauxite	2	0	5	1	68
· aluminium	90	71	109	24	99
· gold	299	28	88	42	782
Commodities, agricultural goods	1'023	167	500	757	126
· coffee	118	23	86	201	21
· cocoa	255	22	43	102	4
· cereals (wheat)	488	51	125	242	52
· sugar	34	7	31	37	13
· vegetable oils (palm oil)	88	44	168	144	23
· cotton	40	20	46	31	14
<b>Total</b>	<b>3'747</b>	<b>1'257</b>	<b>2'911</b>	<b>1'268</b>	<b>5'721</b>

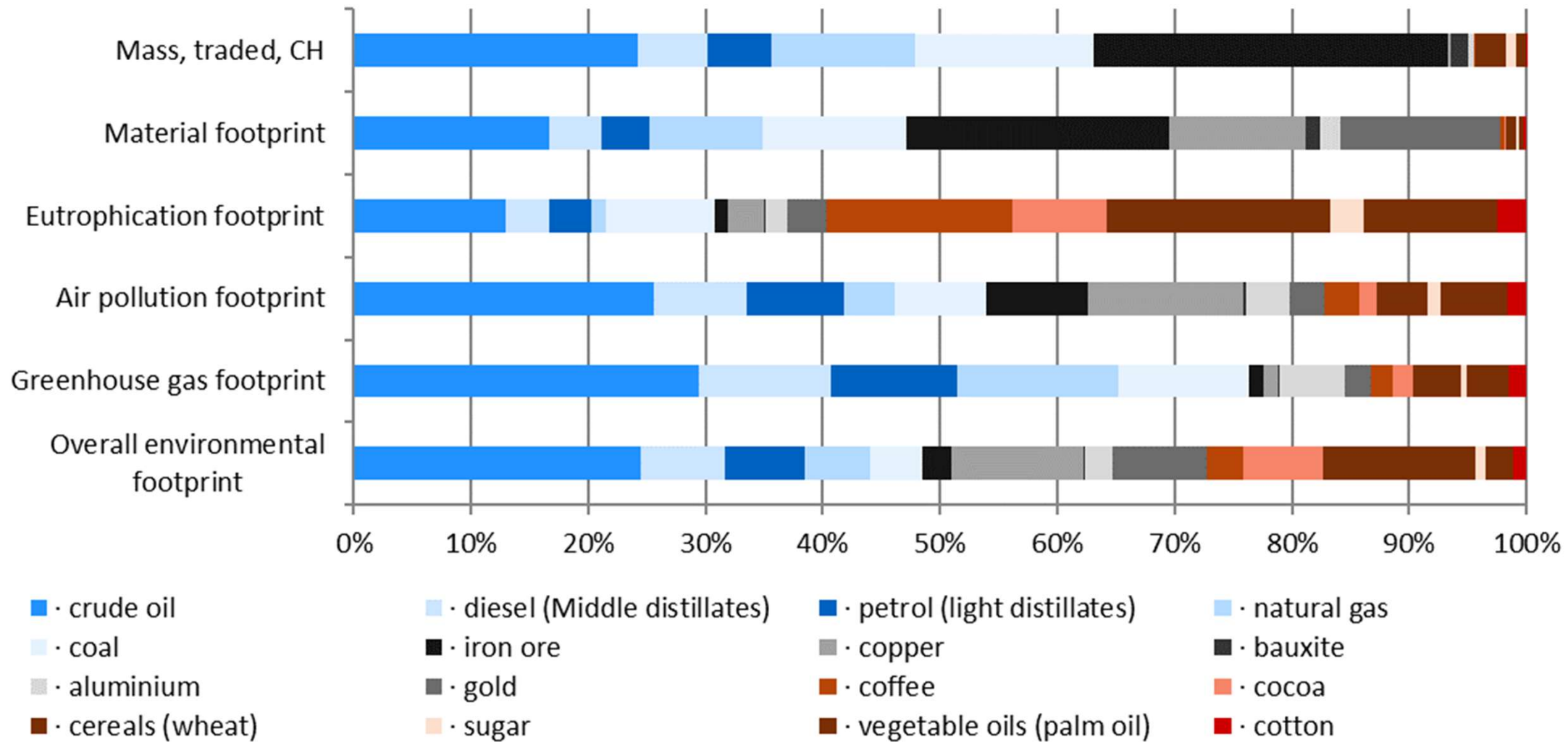
➤ For 3 out of 5 footprint indicators, impacts of crude oil production is most relevant for trading in Switzerland.

# Comparison of environmental impacts from production of traded commodities and total consumption in Switzerland



➤ Environmental impacts of the production of traded commodities are 19 times higher than the impacts of Swiss final consumption

# Share of different commodities for the total environmental impacts of traded commodities



➤ Share of commodities in total impacts depends on the indicator used

## Summary

- A huge share of commodities traded globally goes through the “hands” of companies located in Switzerland without these goods physically entering the Swiss territory
- Environmental impacts of the production of this share are 19 times higher than the impacts caused by Swiss final consumption

➤ How can politics and traders deal with this responsibility?

## Taking the challenge

- More transparency on the environmental impacts associated with the traded goods is necessary in international trade
- Information about primary production conditions needs to be passed along to new owners of goods
- Barriers for traders to pass this information along should be tackled
- The presently discussed Swiss “Konzernverantwortungsinitiative” tackles the political responsibility



Thank you very much for your attention!

Data and reports available on

<https://www.esu-services.ch/projects/trade/>

Contact:

[jungbluth@esu-services.ch](mailto:jungbluth@esu-services.ch)

[meili@esu-services.ch](mailto:meili@esu-services.ch)

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**Note:** The views expressed in this presentation are those of the authors and do not necessarily represent those of the FOEN

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In case of any questions, please contact:

Dr. Niels Jungbluth, CEO - Chief Executive Officer  
ESU-services Ltd. - fair consulting in sustainability  
Vorstadt 10  
CH-8200 Schaffhausen  
<https://www.esu-services.ch>  
tel +41 44 940 61 32  
[jungbluth@esu-services.ch](mailto:jungbluth@esu-services.ch)



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