

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  
ارزیابی چرخه عمر  
Evaluarea Ciclului de Viață  
Posuzování Životního Cyklu  
Bizi zikloaren analisi  
Olelusingi hindamine  
Lífsferilsgreining  
Levenscyclusanalyse  
Livscyklusvurdering  
Livscykelanalys  
Elinkaariarviointi

The concept of functional unit does not fully  
utilise the power of LCA

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78th and jubilee Swiss Discussion Forum LCA  
Zürich, Switzerland  
13.9.2021

# The concept of functional unit does not fully utilise the power of LCA

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## Problem and Aim

- **ISO 14040/44 standard:** “Comparisons between systems shall be made based on the same function(s), quantified by the same functional unit(s) in the form of their reference flows“

## Consumers have questions like ...

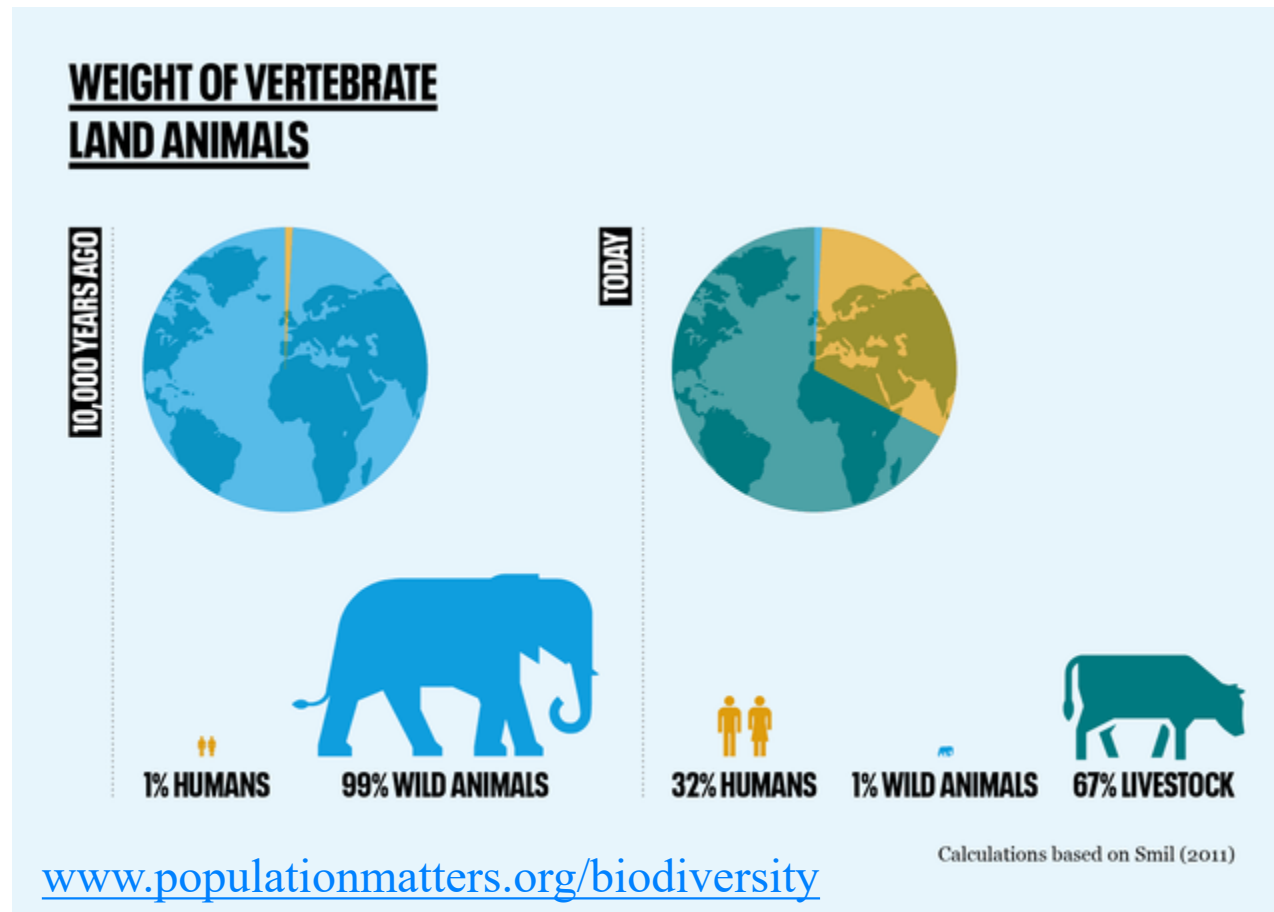
- How will we spend our next family holidays?
- What will we do next weekend?
- What do we want to drink in the restaurant today?
- What will we eat for lunch?
- Which pet should we keep in our family?
- Do you prefer coffee or tea?
- Which filling should I chose for my sandwich?

➤ ... for which they also expect answers from an environmental point of view

# Research Questions LCA of pet animals

- How do the environmental impacts of **distinct types of pets** differ?
- How large is the potential contribution of a pet to a person's **personal environmental balance** over one year?
- Which **influencing factors** are relevant and how?
- How large is the contribution of pets to the **overall burden of Swiss consumption**?
- What possibilities are there for **reducing the environmental impacts**?

# Why study pets?



➤ Humans and domesticated animals have replaced wildlife

# Methodology and Data

- **Species** studied: Horse, dog, cat, rabbit, ornamental fish and ornamental bird
- **LCI** includes: breeding, feeding, housing, energy consumption, transport, disposal of urine, faeces, dung, and purchases of other necessary equipment
- **LCIA** method: Ecological Scarcity 2013 and Global Warming Potential
- **Background data**: ESU service's internal company database

## Possible functions of a pet

- Leisure activities and hobbies (breeding, competitions)
- Sport (walking dogs, horse riding)
- Education (responsibility of children for a pet, appreciation of living beings)
- Social contacts (pet as life companion, contact with other pet owners)
- Health (positive influence e.g. on depression or other mental illnesses)

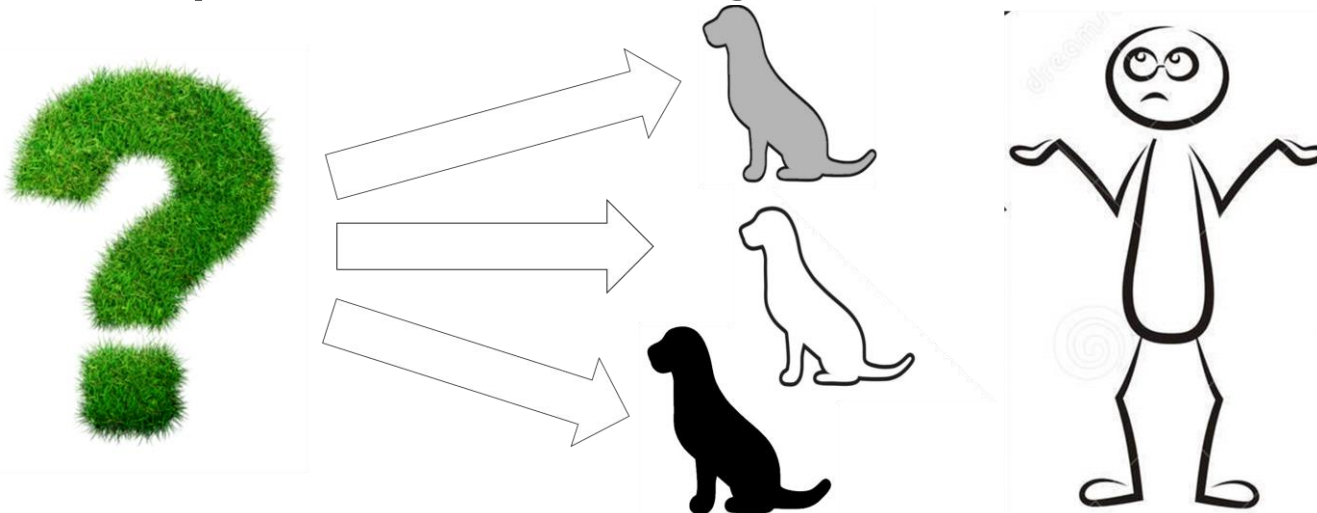


# Functional Unit

Various aspects are discussed in a family before a decision is made for a certain pet. Environmental aspects may be one of the criteria used to make such a decision.

→ “One terrier in different colours”

→ A functional unit in the strict sense of ISO standards will not help in decision making!

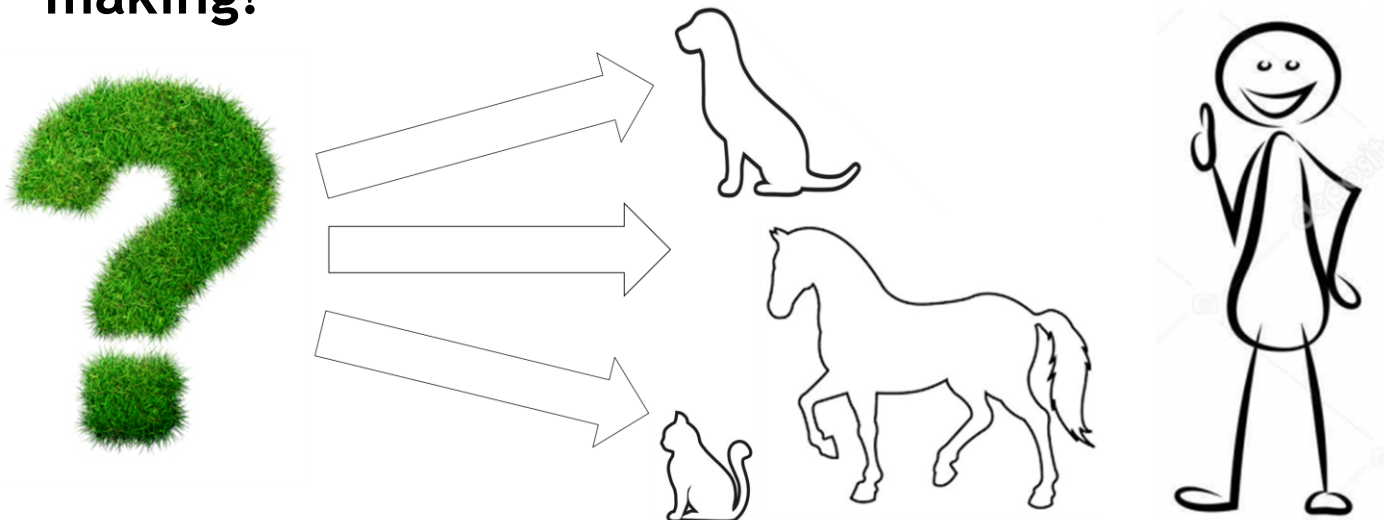


## Decisional Unit

Various aspects are discussed in a family before a decision is made for a certain pet. Environmental aspects may be one of the criteria to make such a decision.

→ “A pet kept for one year in a farm or household”

→ A “decisional unit” can support the consumer in decision making!



# Example: Horse keeping per year



transport in  
car: 2,400 km

Horse: 550 kg



straw and hay:  
6,300 kg  
Fodder: 750 kg

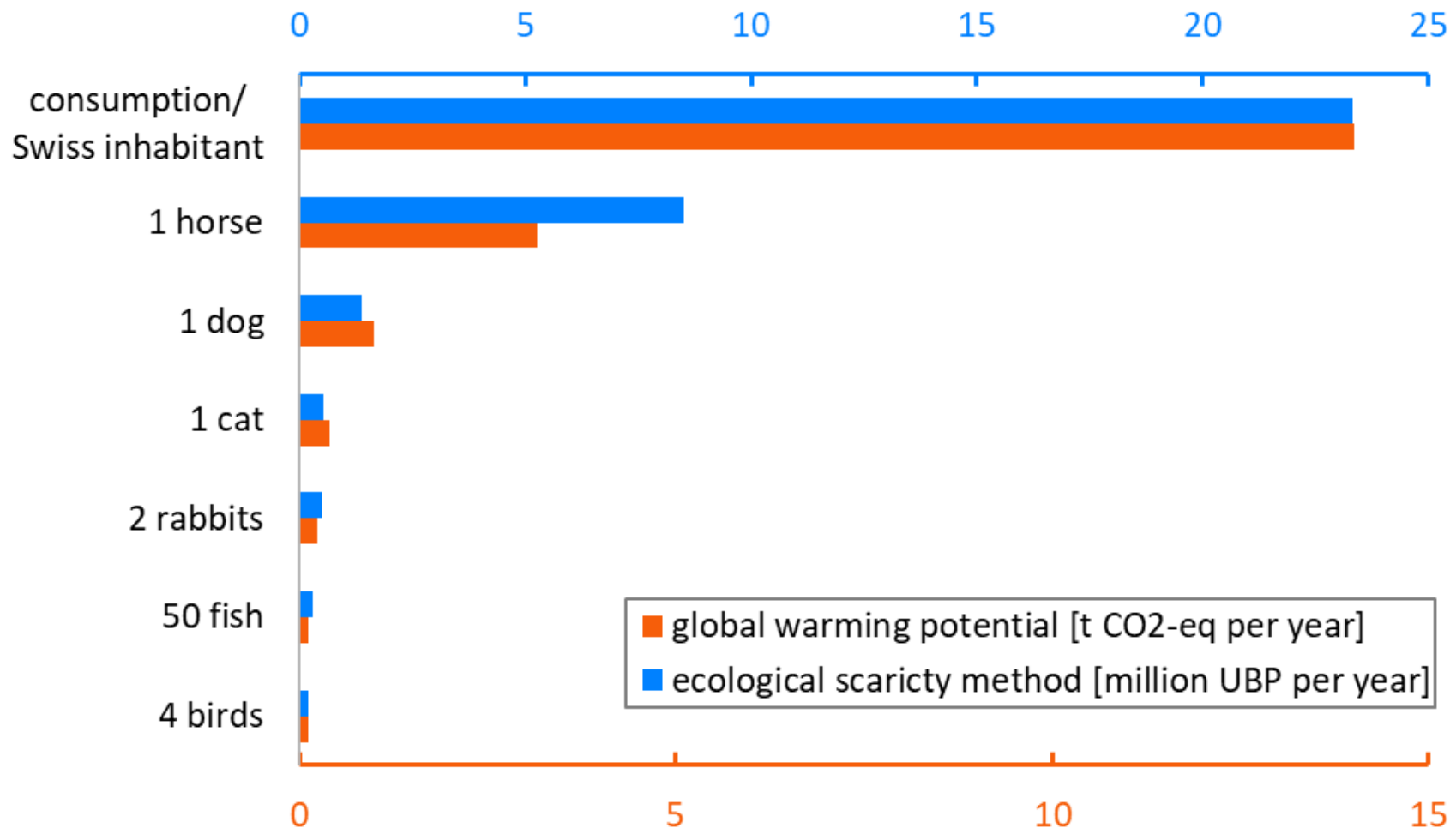


shelter incl.  
electricity, water  
and litter



direct emissions  
methane: 18 kg

# Pets per year compared to human consumption



➤ The horse has the highest impact compared to the consumption of one person

# Interpretation

- The impact increases with increasing size of the pet
- Keeping a large pet may impact a single person's environmental burden considerably
- Decisions about pet care influence the impact and show reduction potential
- Positive aspects of pets can not be measured
- Compared to the average impact of Swiss consumption, average keeping of pets plays a secondary role

# Pets - an emotional topic

Betreff **Ein Hund ist so umweltschädlich wie ein Europaflug**

An Niels Jungbluth ★

What an idiot you are! You're a real fundamentalist and you are far more dangerous to the world than ANY animal! Stupid man!

With contempt,  
Koen Vermeiren  
Doctor in Literature and Philosophy  
Belgium

Beantworte

An Niels Jungbluth ★

Geachte

Weer iemand die komt zeggen wat wij moeten doen.  
Huisdieren opruimen? Het wordt tijd dat wij in opstand komen. Ga zelf maar restvlees eten.  
Idioten zijn jullie allemaal

Jan



**Lagonda Blogger** ★★ ★ @Lagonda\_Blogger · 2 Std.

1) Kijk, nou hebben ze een reden bedacht om huisdieren in de ban te doen. Waarom kan ik me maar niet aan de indruk onttrekken dat dit \*weer\* een poging is om onze samenleving meer congruent te maken met de voorkeuren van Allah?

Übersetzt aus Niederländisch von Microsoft

1) Schau, nun, sie haben einen Grund gefunden, Haustiere zu verbieten. Warum kann ich nicht dem Eindruck entgehen, dass dieses \*wieder\* ein Versuch ist, unsere Gesellschaft mit den Vorlieben Allahs besser zu verbinden?



h/news/schweiz/schlechte-oekobilanz-ein-hund-ist-so-umweltschaedlich-wie-ein-europaflug

na SP

Zustimmen (5) | Ablehnen (2)

**Marco Ehmke (MarcoEh)**

Freitag, 4. Januar 2019, 07:18 Uhr

Jetzt wird es ganz lächerlich! „Sarkasmus-ein“: Dann ist es gut haben wir Menschen mittlerweile die Tiere verdrängt und die Artenvielfalt schrumpft.

hat ja eine Ökobilanz. Früher gab es Wildpferde in freier Natur, es gibt immer noch mehr Wildbestand, Grossteil der Natur war ja unbesiedelt. Das ist eher das Problem sein, dass der Mensch zuviel Raum einnimmt und eine nachhaltige Haltung möglich ist, sei es Hund, Katze, Pferd, Schwein etc

111 | Ablehnen (14)

**beat Reuteler (br)**

Samstag, 5. Januar 2019, 14:44 Uhr

Ihre Gedanken sind gut nachvollziehbar. Die Ökobilanz von wildlebenden Tieren ist hervorragend. Die Ökobilanz von durchschnittlichen Haustieren ist deshalb viel schlechter, weil der Mensch zu deren Haltung grosse Mengen an Futter und anderen lebensnotwendigen Dingen heranschleppen muss.

Zustimmen (6) | Ablehnen (4)

**Achim Frill (Afri)**

Freitag, 4. Januar 2019, 06:38 Uhr

# What would you like to drink today?

## Functions of beverages:

- Provision of fluids to quench thirst
- Provision of nutrients (vitamins, calcium, protein)
- Warm up or cool down
- Sociability, reducing inhibitions (alcohol)
- Pleasure and taste

➤ Each person might weight these aspects in given situations differently

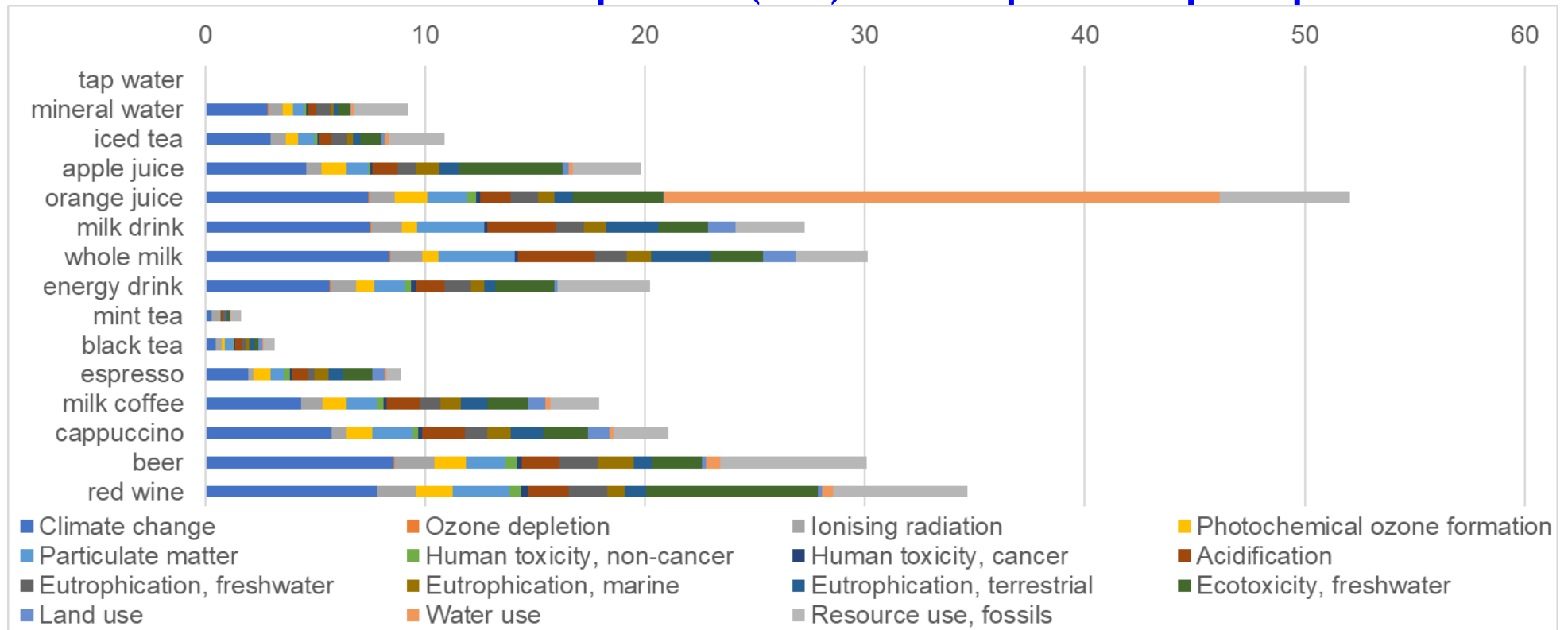
## Decisional unit

One portion as typically found on the drinks menu in Switzerland (might differ in other cultures)

- 100 ml wine
- 300 ml beer
- 200 ml of water
- 200 ml of soft drinks, juices
- Cup of hot chocolate, coffee or tea



## Results for beverage examples environmental footprint (EF) milli-points per portion



- Portion size is one factor
- More functions lead to higher impacts?

# Key differences

## Functional unit

- Narrow scope
- Comparative assertions
- Support for decisions in industry

## Decisional unit

- Broad scope
- Real life questions
- Multi-functionality
- Decision making by consumers

## Conclusions

- The concept of a functional unit is not sufficient to answer consumers' everyday questions
- A more open concept going beyond full equivalence of functions addresses the questions consumers typically have
- We recommend to speak about a *decisional unit* in order to avoid conflicts with ISO 14040

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