How to reduce individual environmental impacts of housing and mobility

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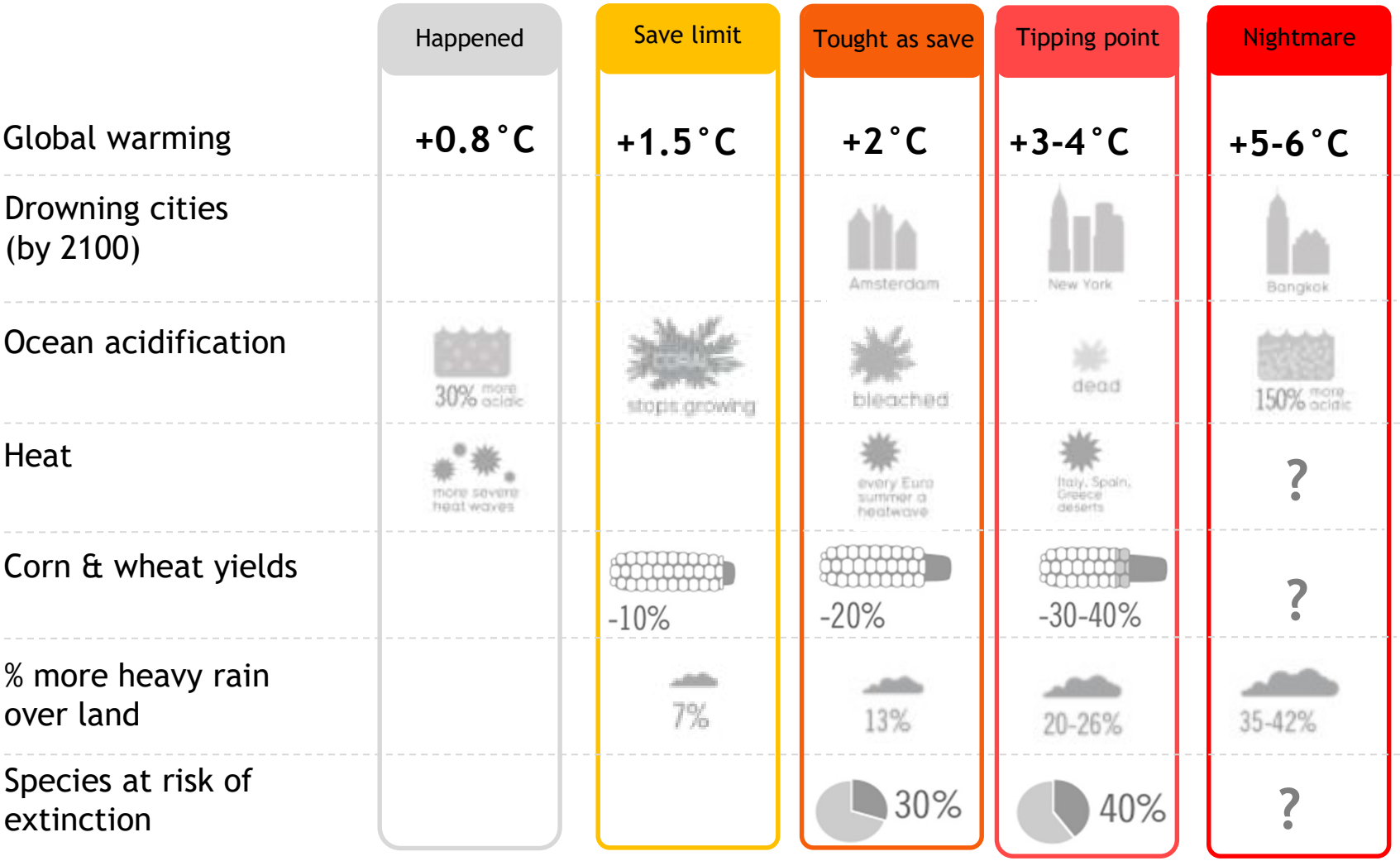
ESU-services Ltd., Schaffhausen, Switzerland

Week for future @ PwC

Online-workshop, 15.04.2021

Credit: © Nasa

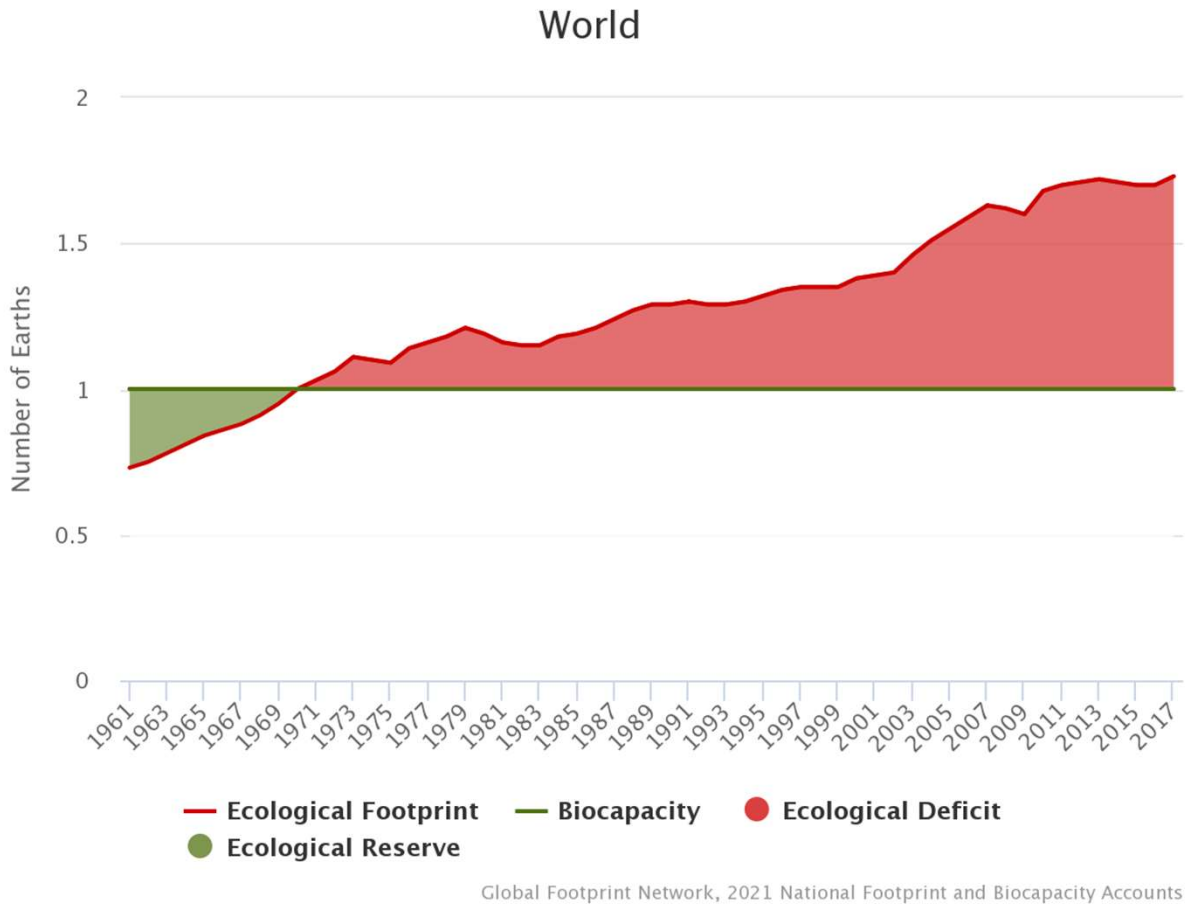
Effects of climate change



Source: http://www.informationisbeautiful.net/visualizations/how-many-gigatons-of-co2/, Feb 2017

➢ Fast and effective action necessary to prevent a nightmare

Ecological Footprint



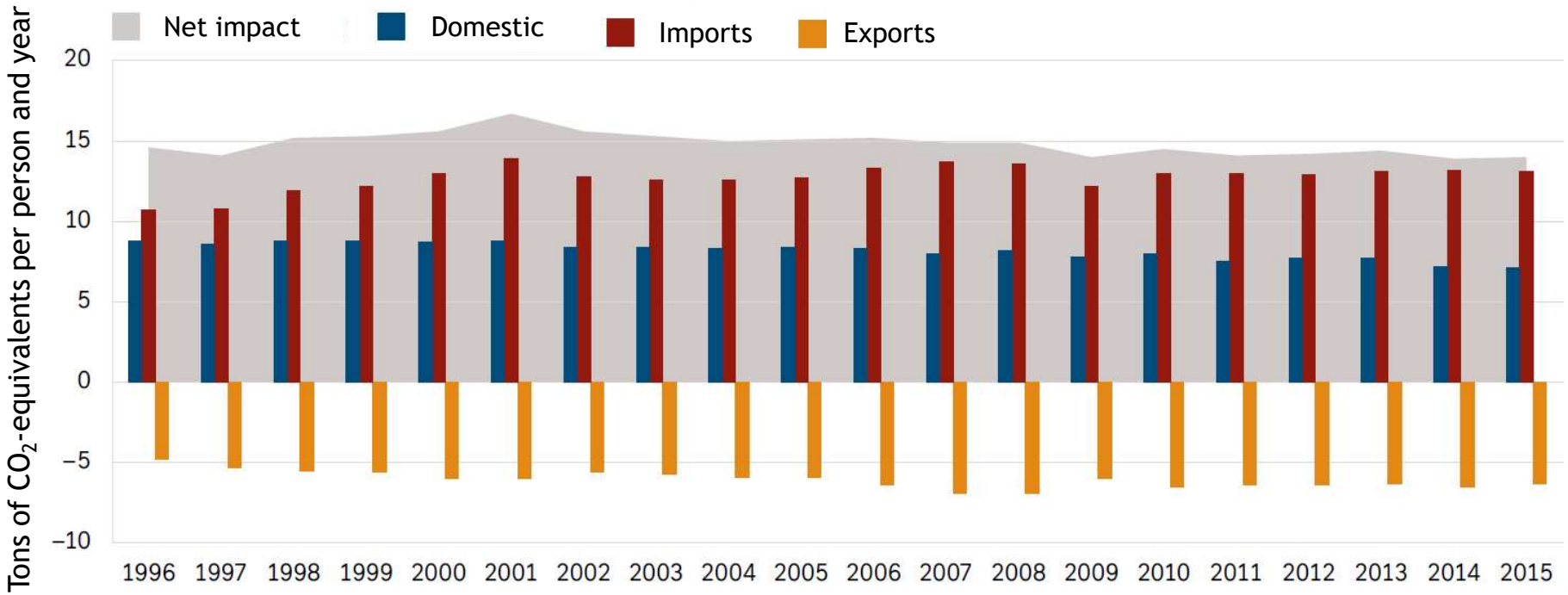
Switzerland: 3 planets

Global: 1.7 planets

Target: less than 1 planet

- The global ecological footprint has increased continously over the last decades.

Consumer perspective: green house gas emissions per year



Source: BAFU 2018 - Umwelt-Fussabdrücke der Schweiz

- The Swiss footprint of consumption is higher than its domestic footprint!

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Which step protects our livelihoods the most?

Average consumption in Switzerland: 14t CO_2-eq per person and year

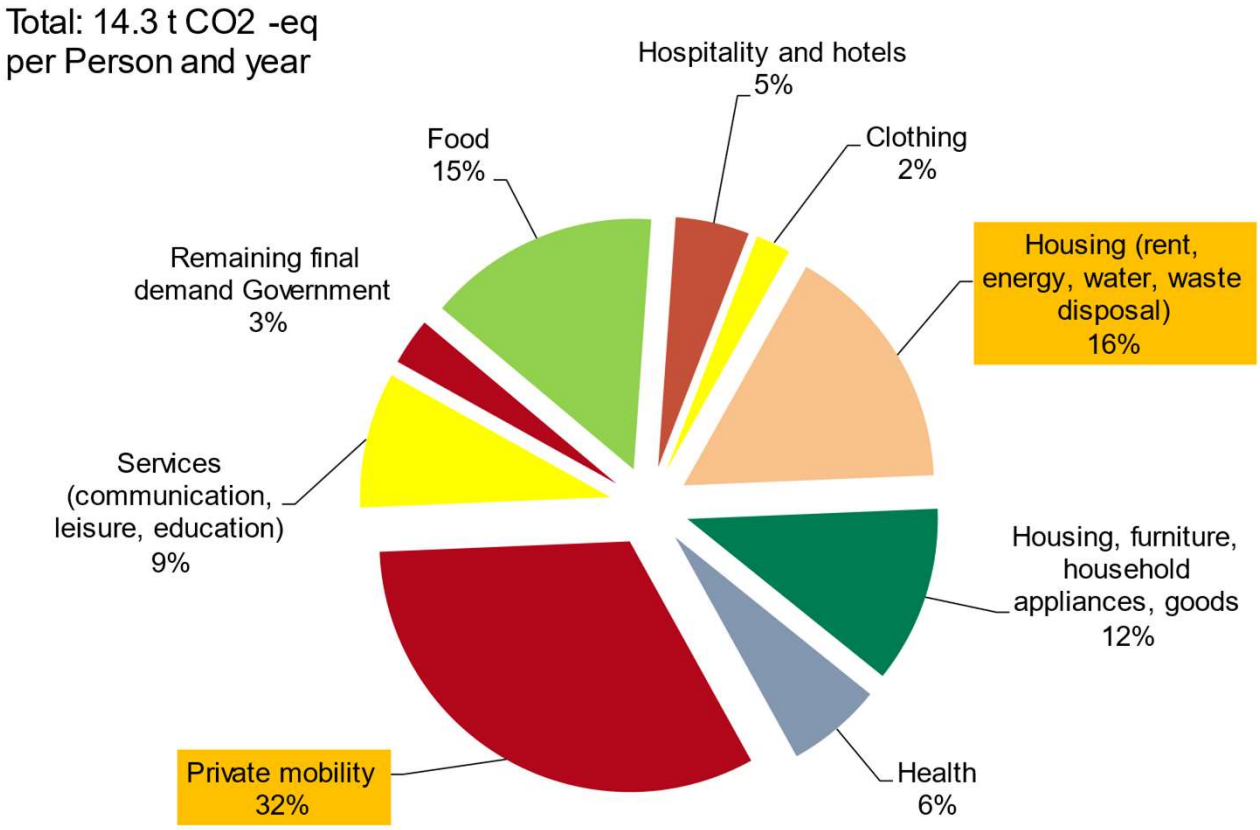
To stay below +1.5°C of global warming: Get to 0 t CO_2-eq quickly and remove greenhouse gases from the atmosphere

-1.5t	-0.5t	-1.0t	-2.1t	-1.0t
Do 20km commuting by train instead by car	Eat plant-based with less than 300g instead of 1kg meat per week	Consume less stuff for hobbies and furniture, (CHF 330 instead of 1000 per month)	Enjoy holidays nearby without flying 11 hours per year.	Replace the oil heating with a heatpump (effect per year and person in a 2-person household)

Reduction CO_2-eq per year, according to the footprint calculator of WWF Switzerland, Background data: ESU-services 2017

➢ These consumption choices protect nature the most!

Consumption issues



ESU-services 2019 - update input output tables for Switzerland

- There are technical solutions for many issues
- Change in consumption habits are necessary as well

Life cycle assessment = from cradle to grave

Impact of driving 1km

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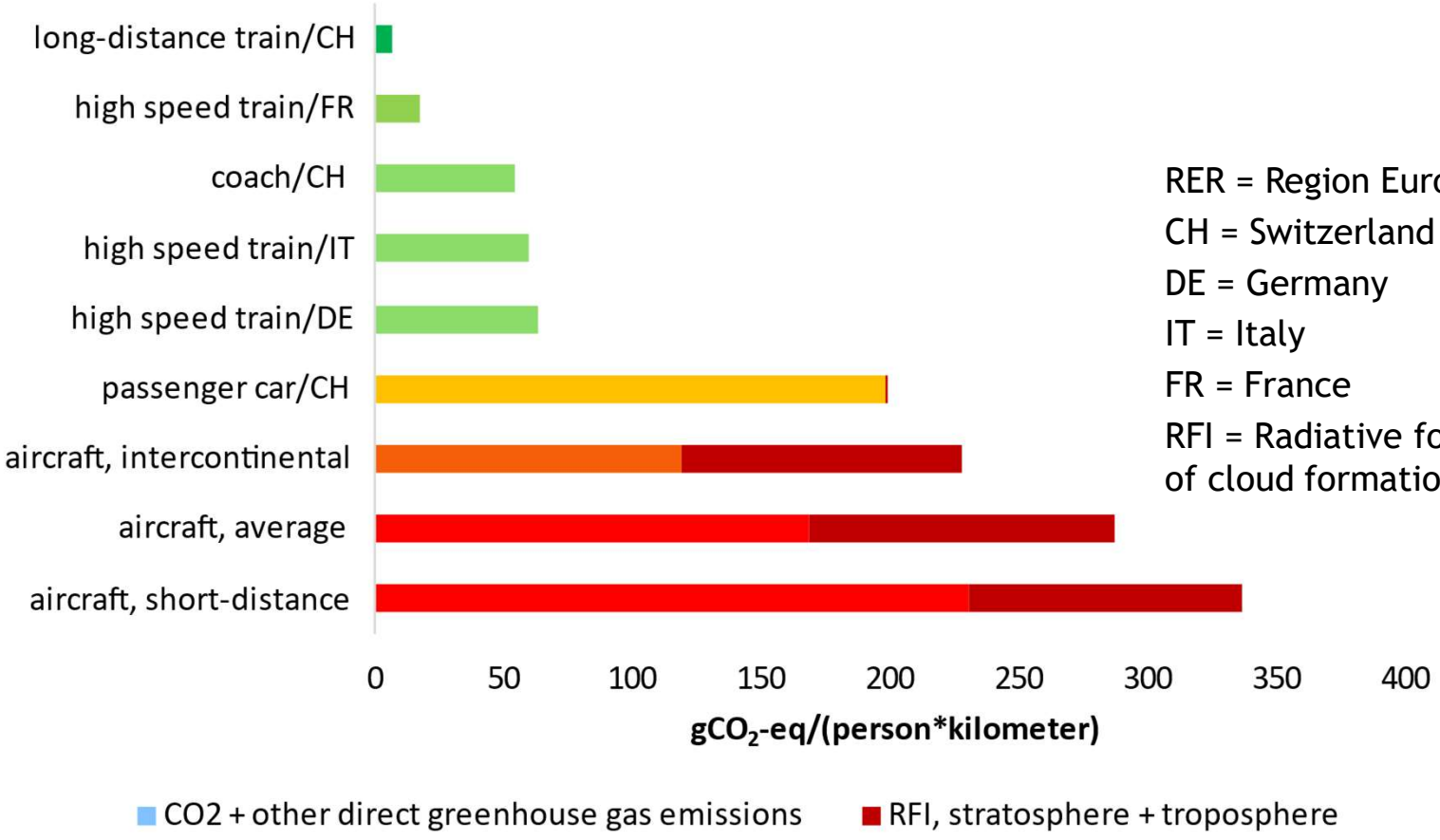
Global warming potential per kilometre travelled by one person



Jungbluth N. and Meili C. (2018) Recommendations for calculation of the global warming potential of aviation including the radiative forcing index, with LCI-Data from ESU-database 2021 http://esu-services.ch/data/database

- Total annual consumption of a Swiss resident corresponds to a flight of ~60'000km in economy class or 20'000km in first class.

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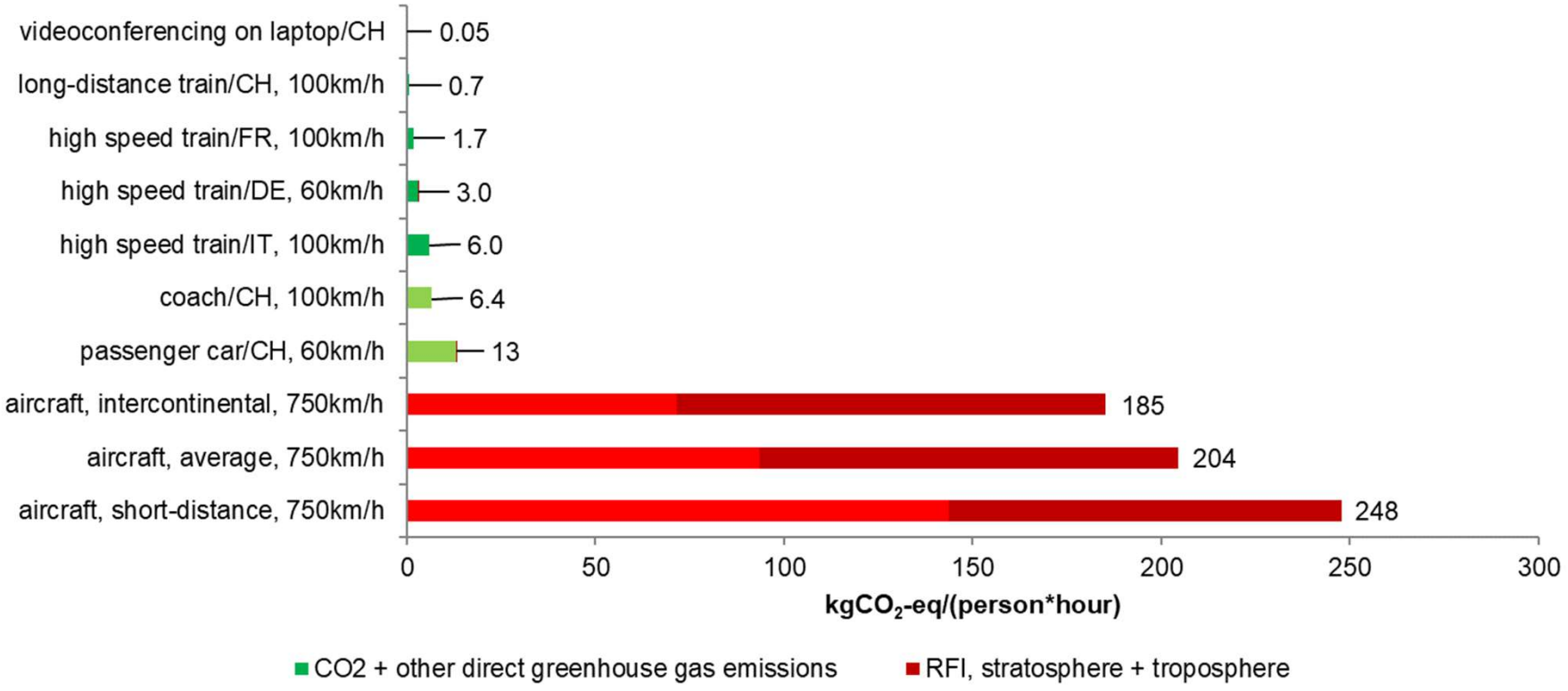
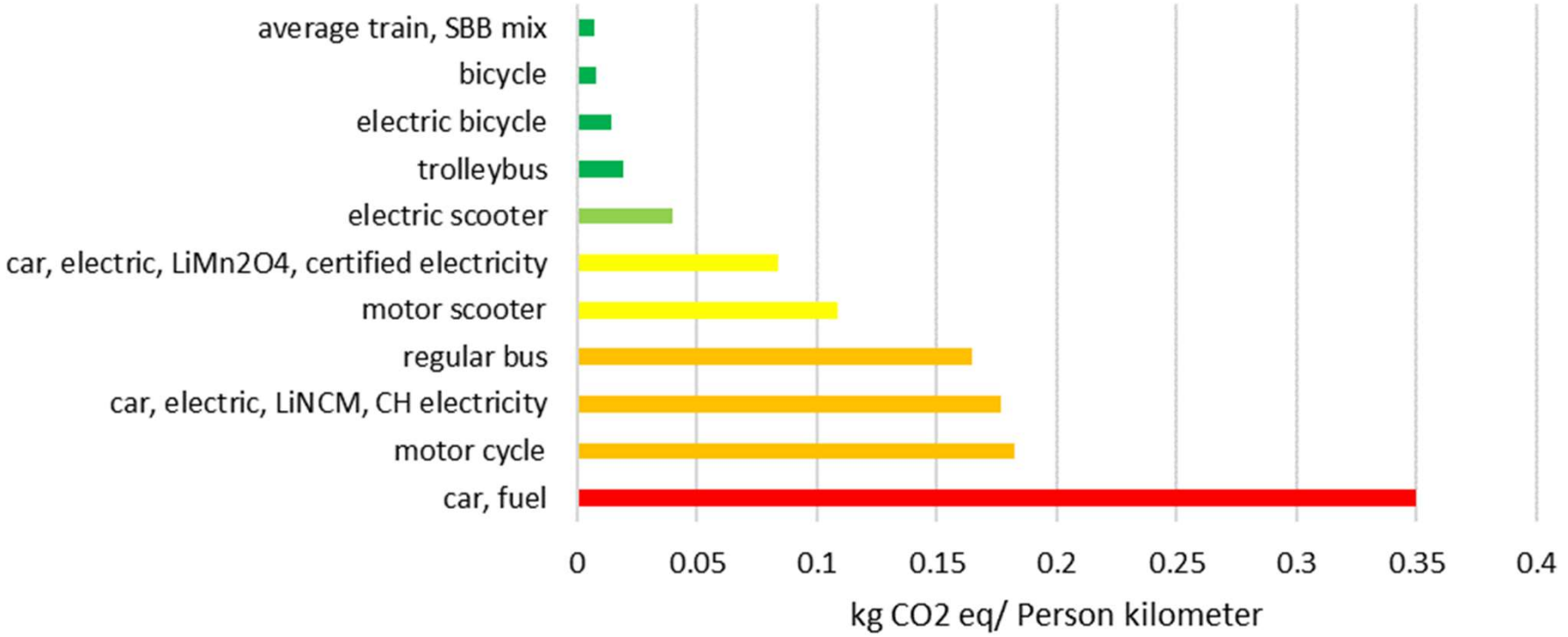
Global warming potential per hour travelled by one person



Jungbluth N. and Meili C. (2018) **Recommendations for calculation of the global warming potential of aviation including the radiative forcing index**, with LCI-Data from ESU-database 2021 http://esu-services.ch/data/database

- Assumption: Taking an airplane is the most climate damaging action a single person might take regularly, under normal circumstances.

Global warming potential for commuting



ESU-database 2021: http://esu-services.ch/data/database

- Impact related to usage rate, energy intake and material transported
- Choose work and home close to each other
- Switch to electrified transport if possible and support green electricity

Construction and housing type

Example: Series-prefabricated, completely finished room modules made of solid wood are combined into multifunctional living units according to the "plug & play" principle

https://allgemeinebauzeitung.de/abz/purelivin-holzmassivbau-konzept-ist-modular-37206.html, online 10.03.2021

- Condensed construction and shared walls might save resources and energy
- Building materials from renewable sources might be preferred

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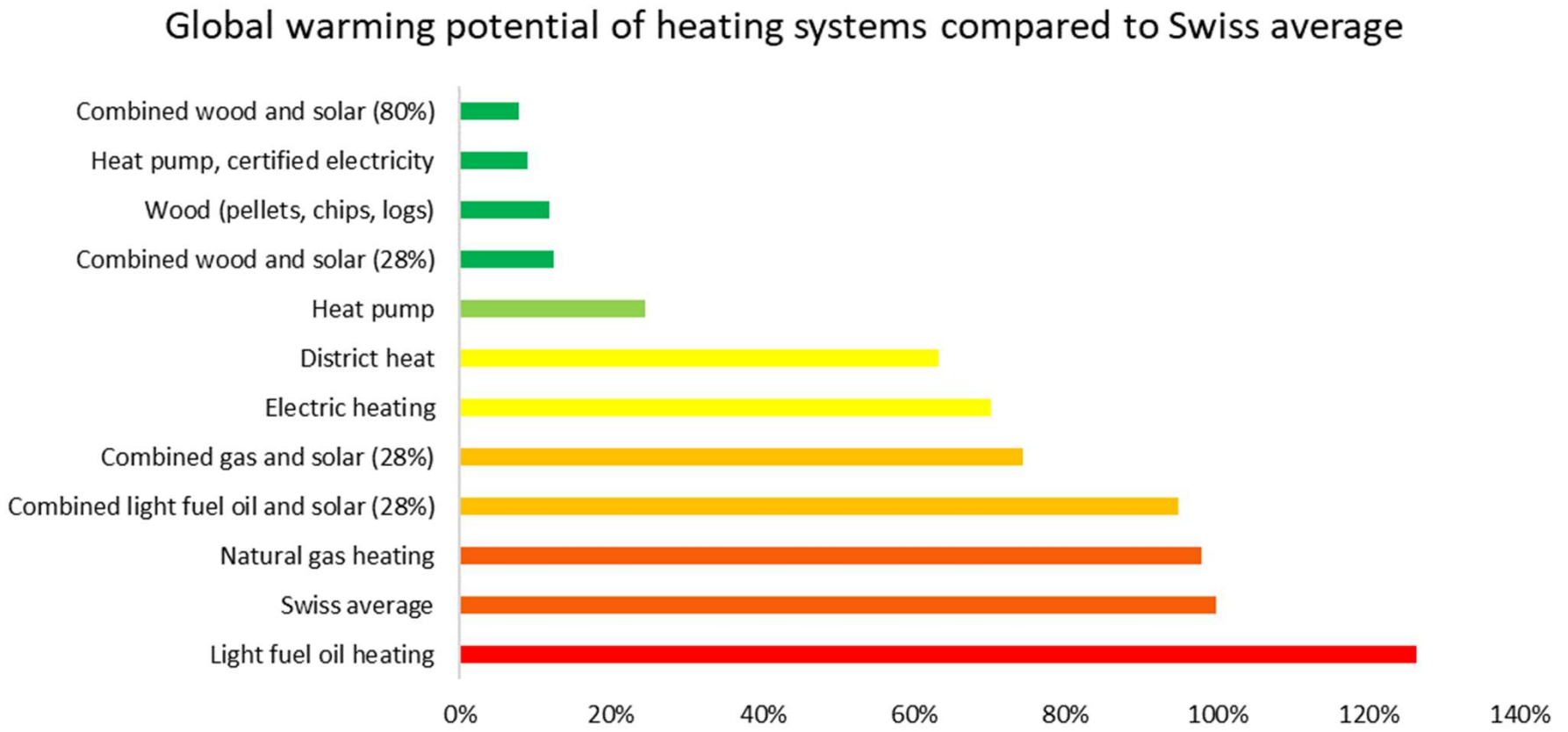
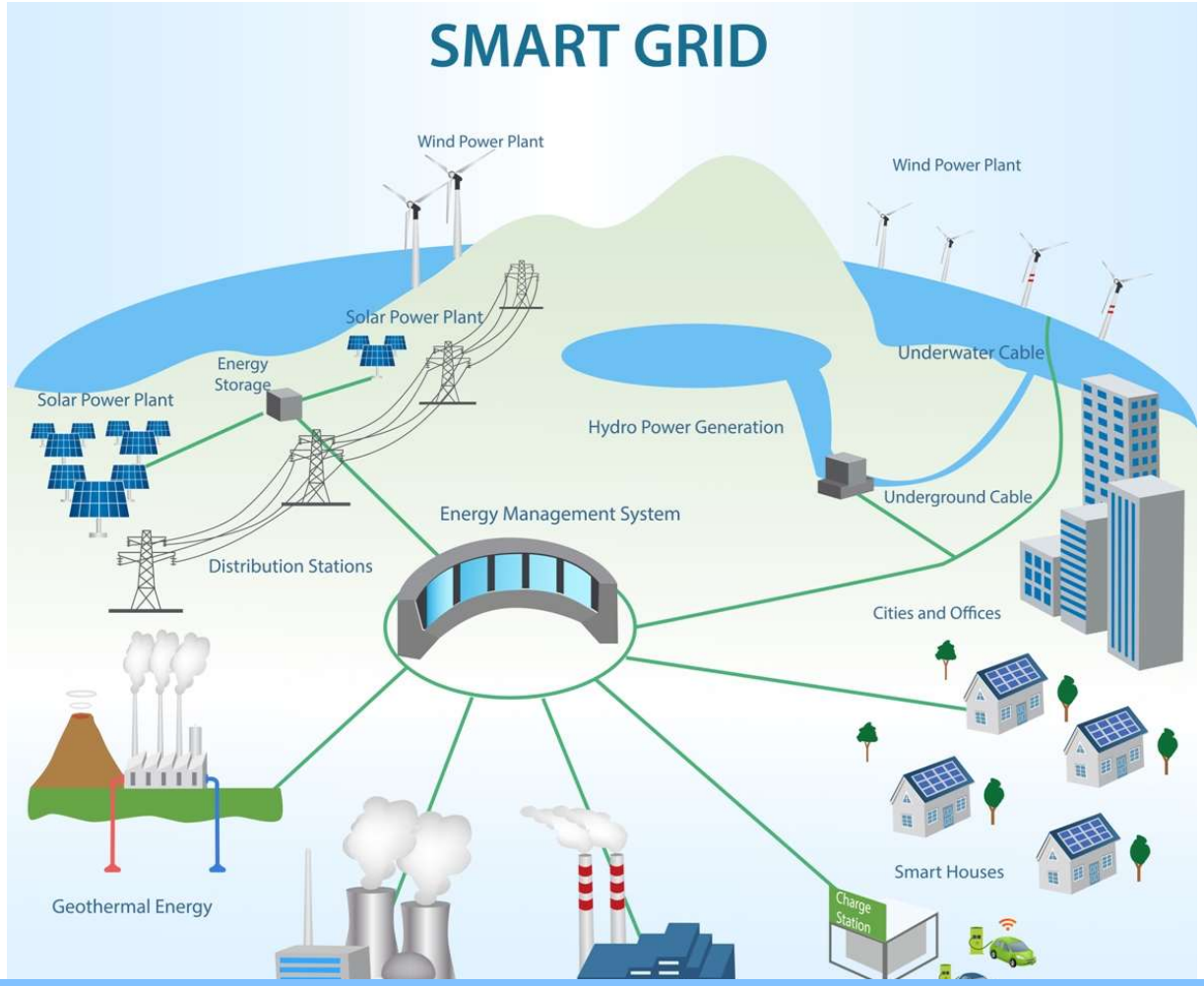
Heating system



Calculations: ESU-services 2021

- Better thermal insulation improves efficiency of any heating system
- Reducing room temperature by 1 °C reduces energy use by ~6%

Smart grid - example

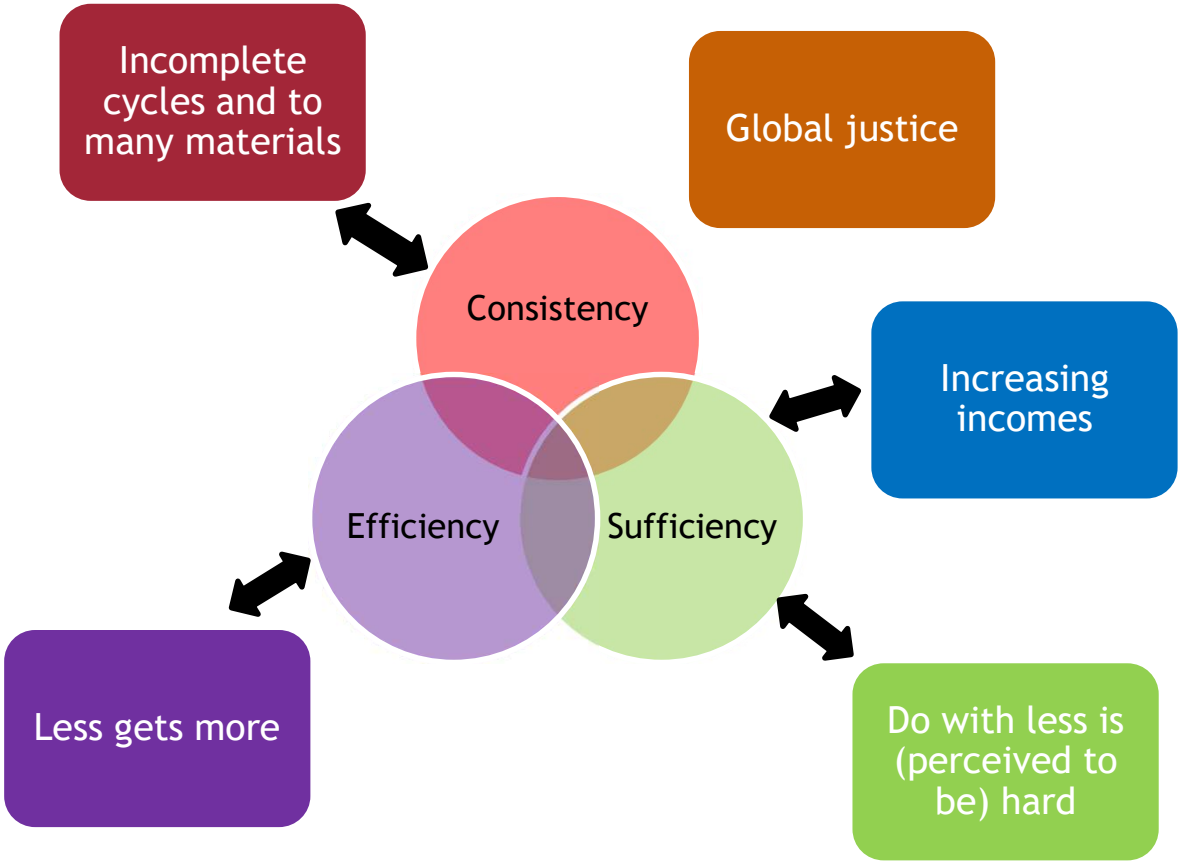


- Seasonal and short-term energy storage needed to use the full potential of renewable energy sources

Interim summary

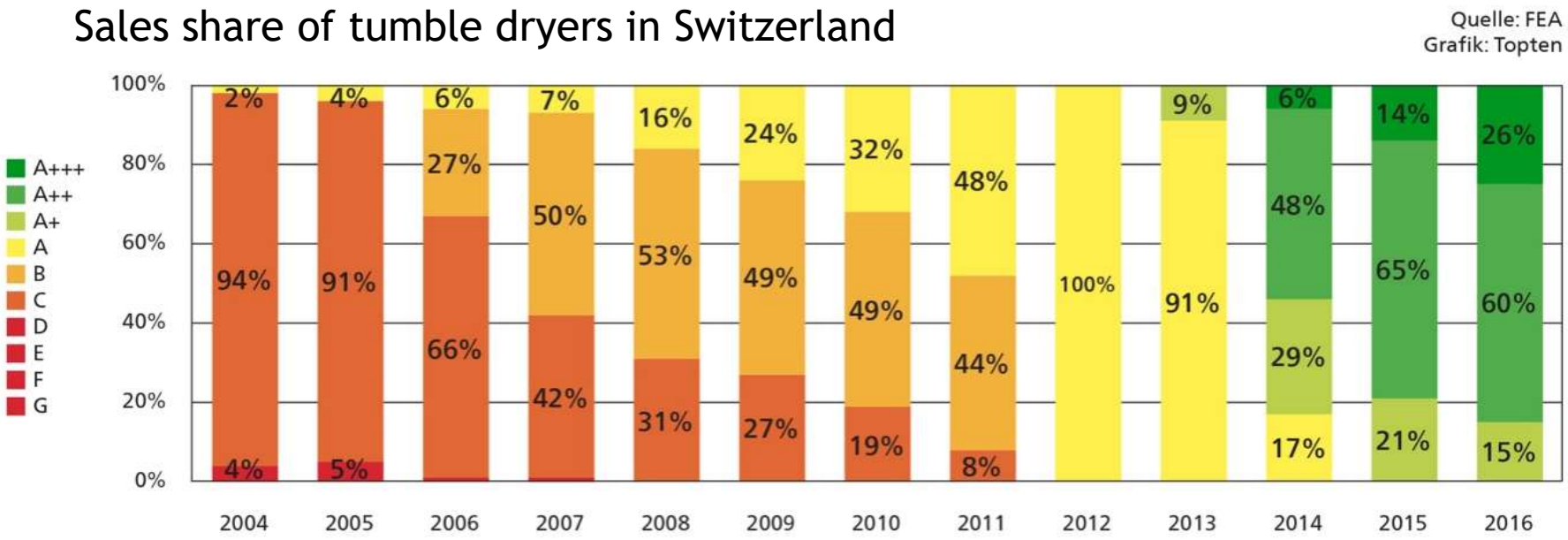
- Technology relying on fossil fuels (coal, oil and gas) needs to be banned
- Infrastructure, vehicles and consumables need to be shared and maintained better (cradle to cradle)

Sustainable living: 3 strategies and related dilemmata



➢ We need improvement with all strategies

Sustainable actions change structures – example



- Efficient appliances are bought more often (Market advantage)
- Producer build efficient appliances more often
- Ineffizient appliances may get forbidden

What can I do?

I can…

- Acknowledge the challenge and tackle it together
- Use my own strengths where they bring the highest benefit
- Demand privately, at work and politically that legal and economic framework conditions enable environmentally friendly and sustainable coexistence.

➢ Goal: Contribute to making it attractive and easy for all of us to live in an environmentally friendly way.

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In case of any questions, please contact:

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