

# How to reduce individual environmental impacts of housing and mobility

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Week for future @ PwC  
Online-workshop, 15.04.2021



Credit: © Nasa

# Effects of climate change

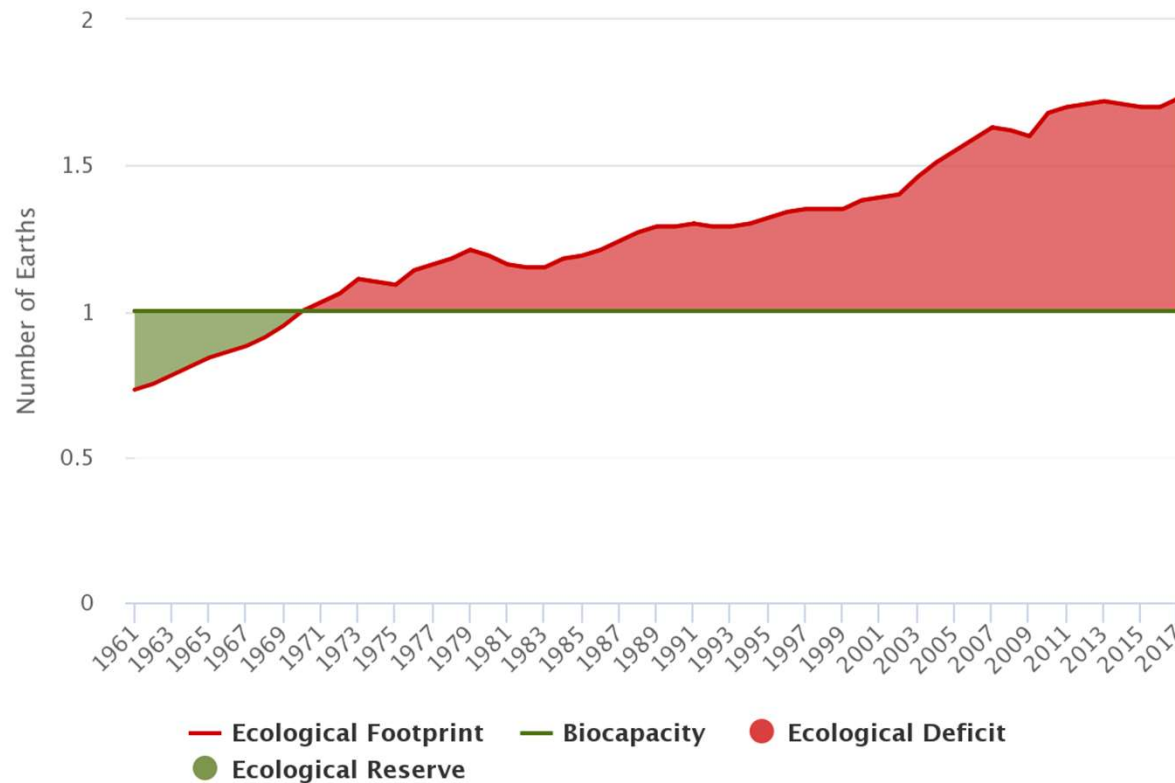
	Happened	Save limit	Tought as save	Tipping point	Nightmare
Global warming	+0.8 °C	+1.5 °C	+2 °C	+3-4 °C	+5-6 °C
Drowning cities (by 2100)			Amsterdam	New York	Bangkok
Ocean acidification	30% more acidic	stops growing	bleached	dead	150% more acidic
Heat	more severe heat waves		every Euro summer a heatwave	Italy, Spain, Greece deserts	?
Corn & wheat yields		-10%	-20%	-30-40%	?
% more heavy rain over land		7%	13%	20-26%	35-42%
Species at risk of extinction			30%	40%	?

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

➤ Fast and effective action necessary to prevent a nightmare

# Ecological Footprint

World



Switzerland: 3 planets



Global: 1.7 planets



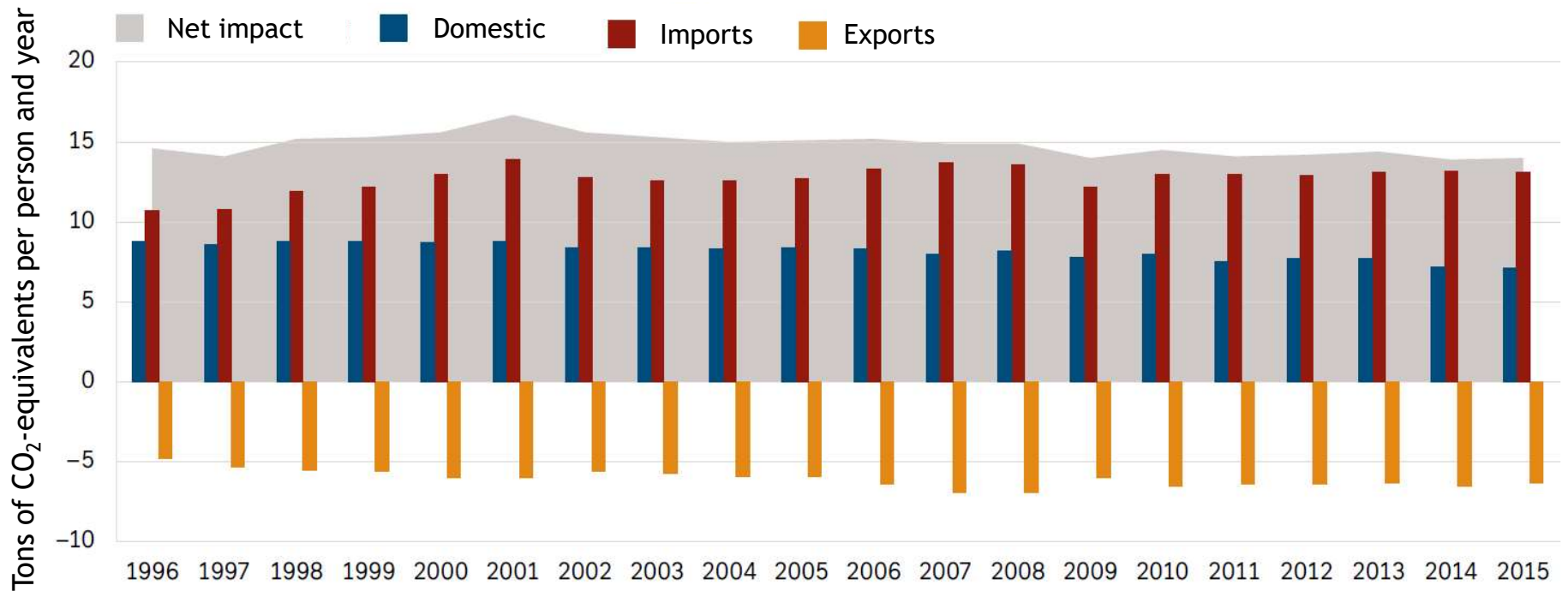
Target: less than 1 planet



Global Footprint Network, 2021 National Footprint and Biocapacity Accounts

➤ The global ecological footprint has increased continuously 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!

# Which step protects our livelihoods the most?

Average consumption in Switzerland: 14t CO<sub>2</sub>-eq per person and year

To stay below +1.5° C of global warming: Get to 0 t CO<sub>2</sub>-eq quickly and remove greenhouse gases from the atmosphere

**-1.5t**

Do 20km  
commuting  
by train  
instead by  
car

**-0.5t**

Eat plant-  
based with less  
than 300g  
instead of 1kg  
meat per week

**-1.0t**

Consume less  
stuff for hobbies  
and furniture,  
(CHF 330 instead  
of 1000 per  
month)

**-2.1t**

Enjoy  
holidays  
nearby  
without flying  
11 hours per  
year.

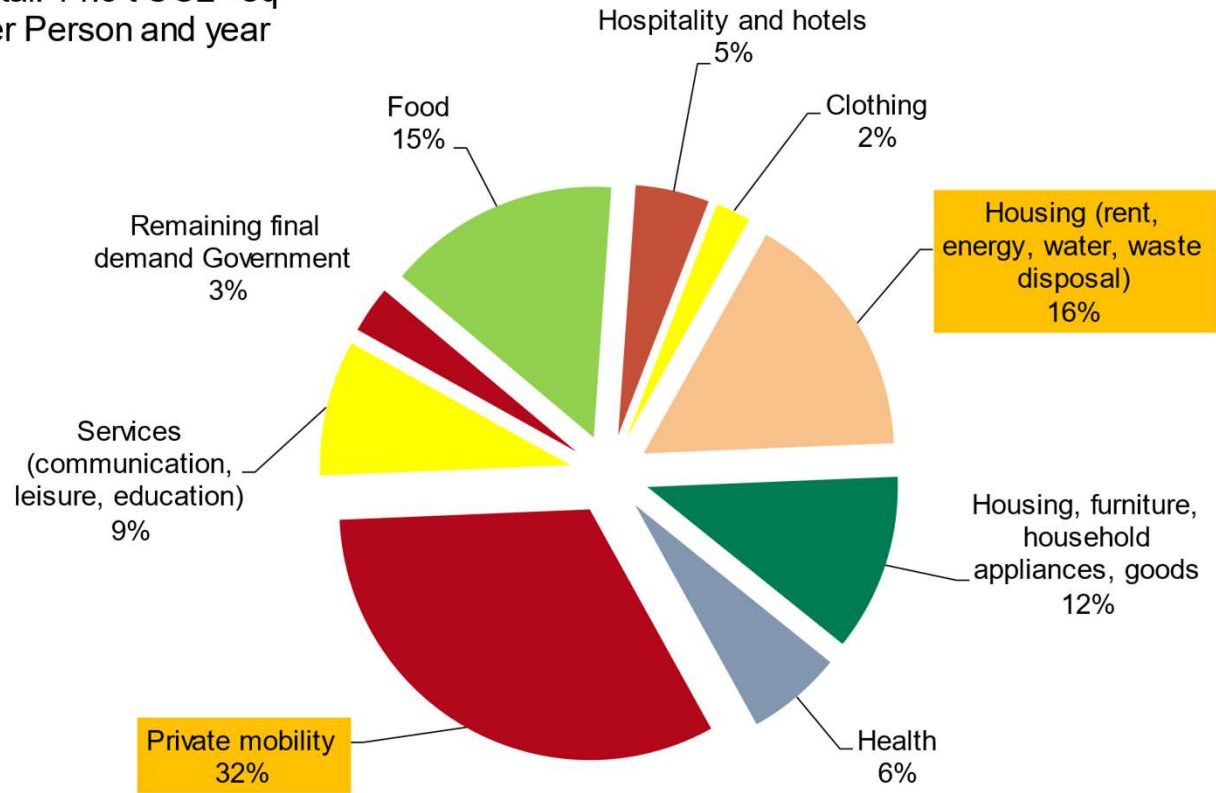
**-1.0t**

Replace the oil  
heating with a  
heatpump  
(effect per year  
and person in a  
2-person  
household)

➤ These consumption choices protect nature the most!

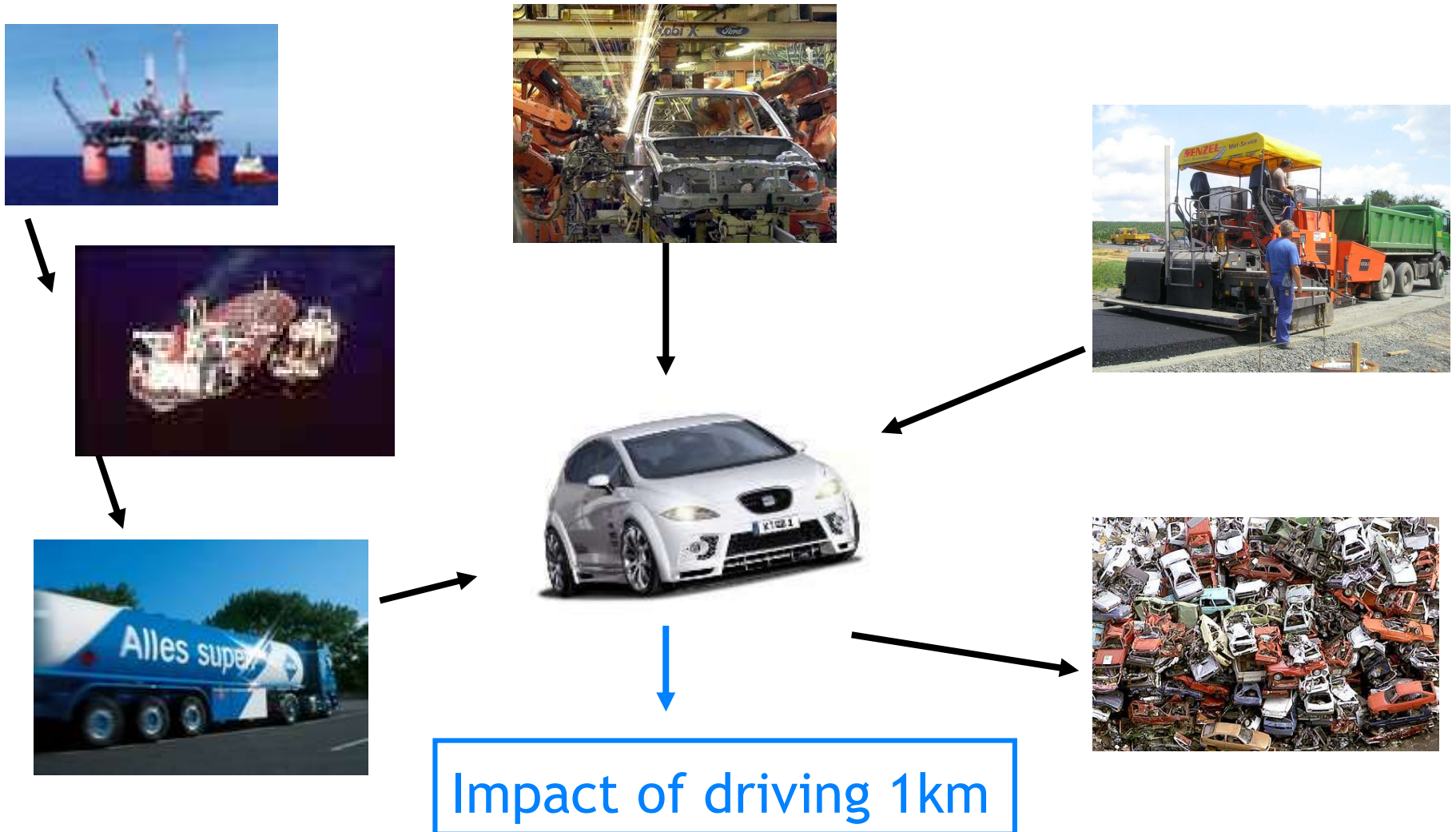
# Consumption issues

Total: 14.3 t CO<sub>2</sub> -eq  
per Person and year



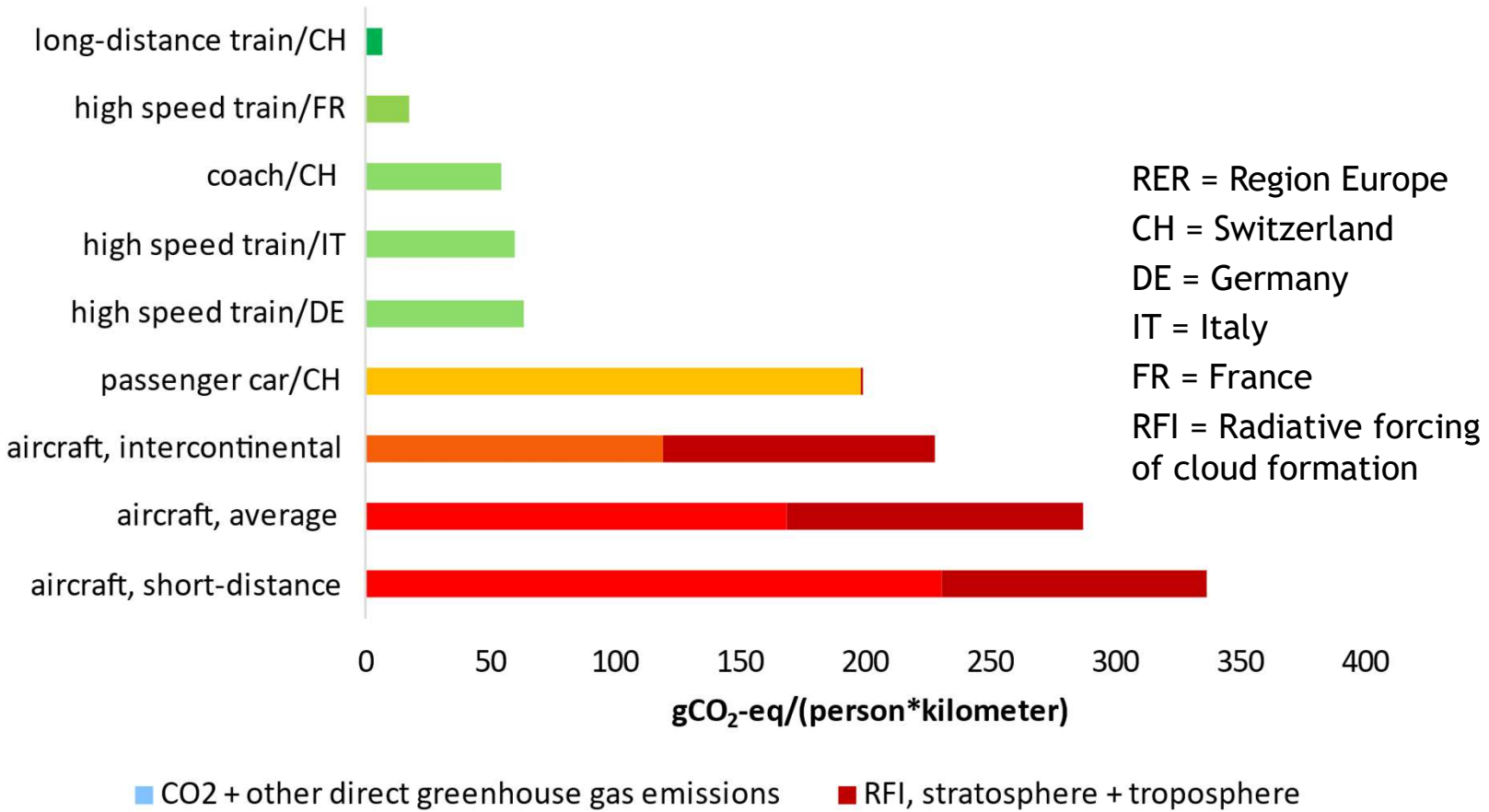
- There are technical solutions for many issues
- Change in consumption habits are necessary as well

## Life cycle assessment = from cradle to grave





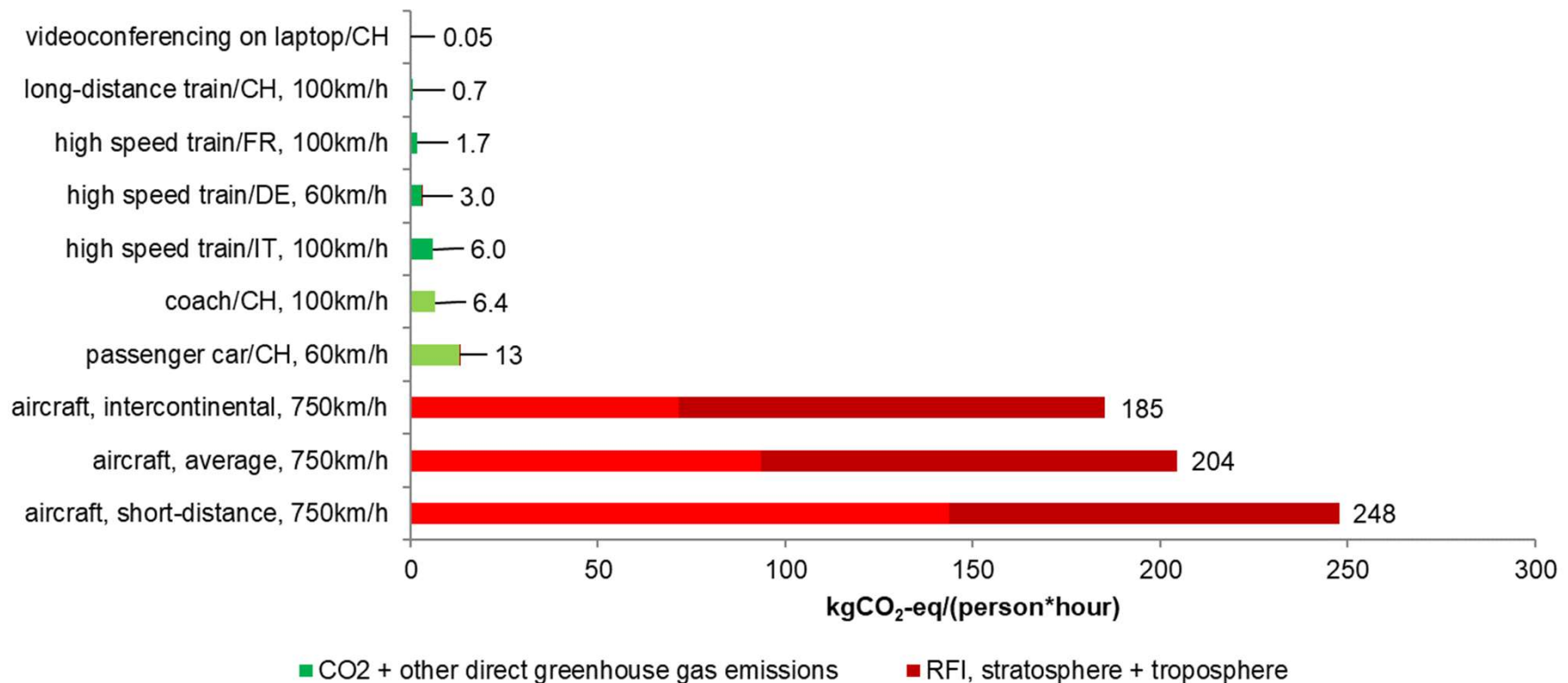
# Global warming potential per kilometre travelled by one person



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

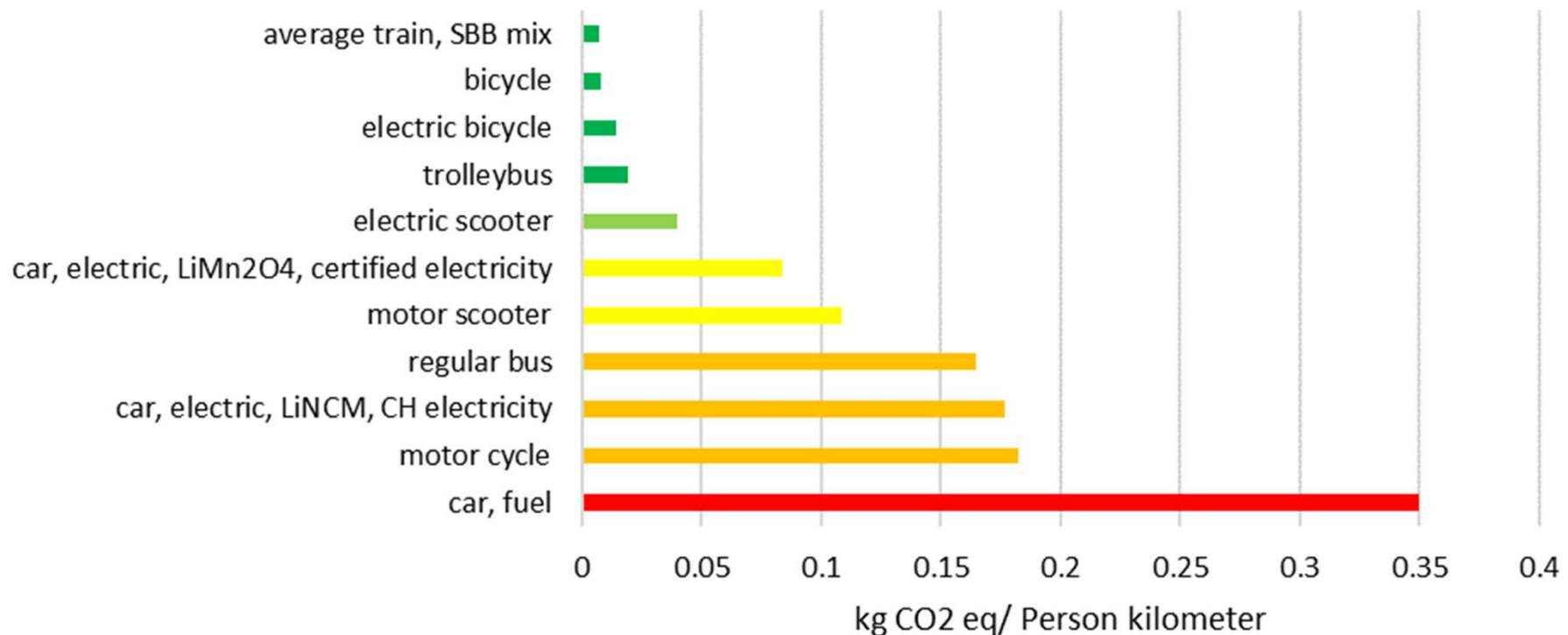
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- Assumption: Taking an airplane is the most climate damaging action a single person might take regularly, under normal circumstances.

# Global warming potential for commuting



- 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



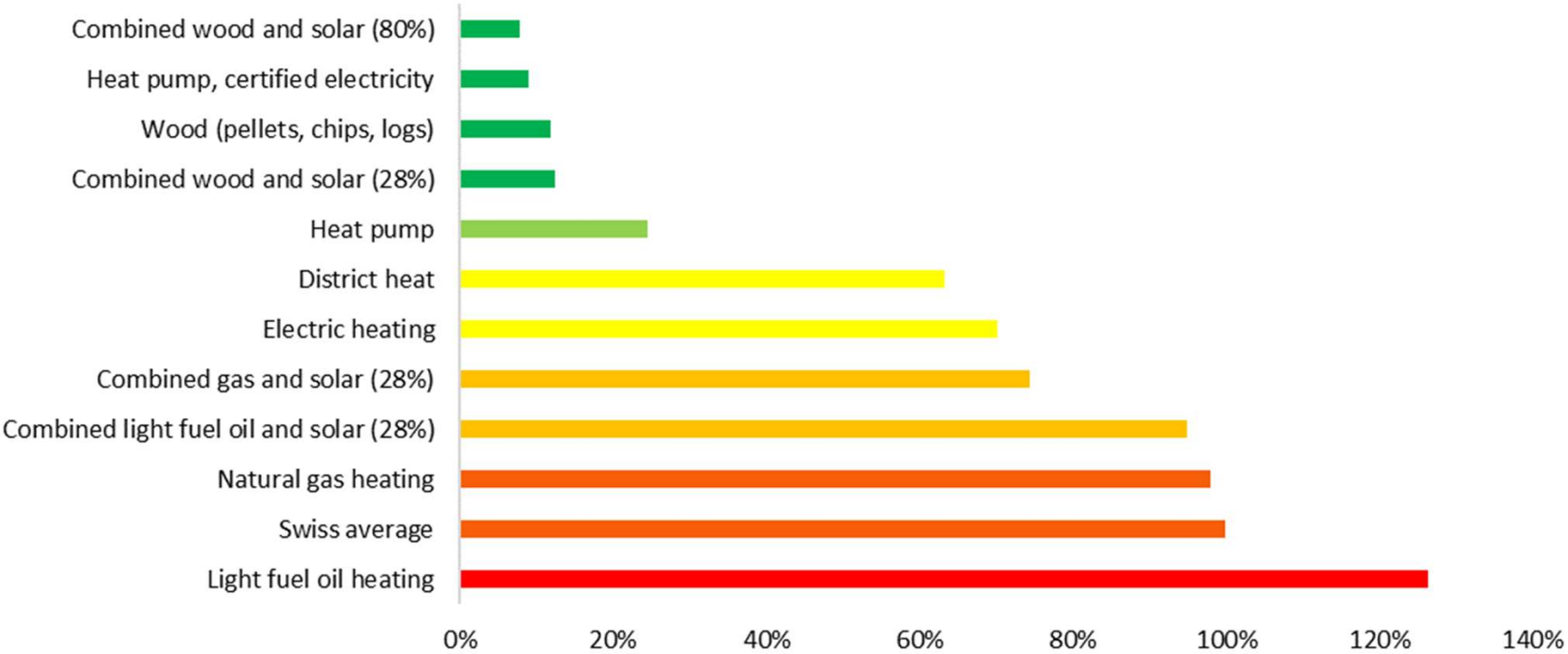
Example: Series-prefabricated, completely finished room modules made of solid wood are combined into multifunctional living units according to the "plug & play" principle

<https://allgemeinebauzeitung.de/abz/purelavin-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

# Heating system

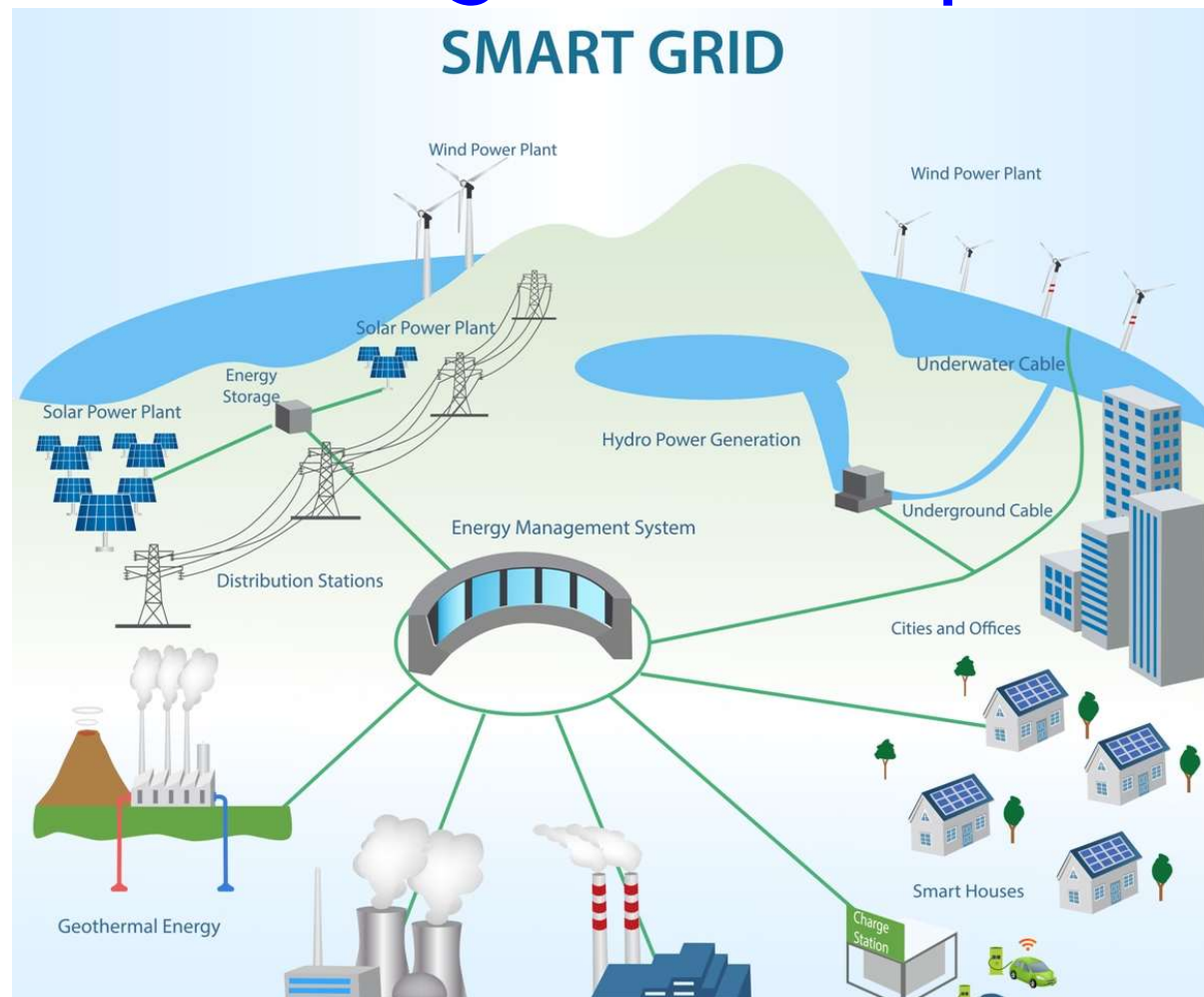
Global warming potential of heating systems compared to Swiss average



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

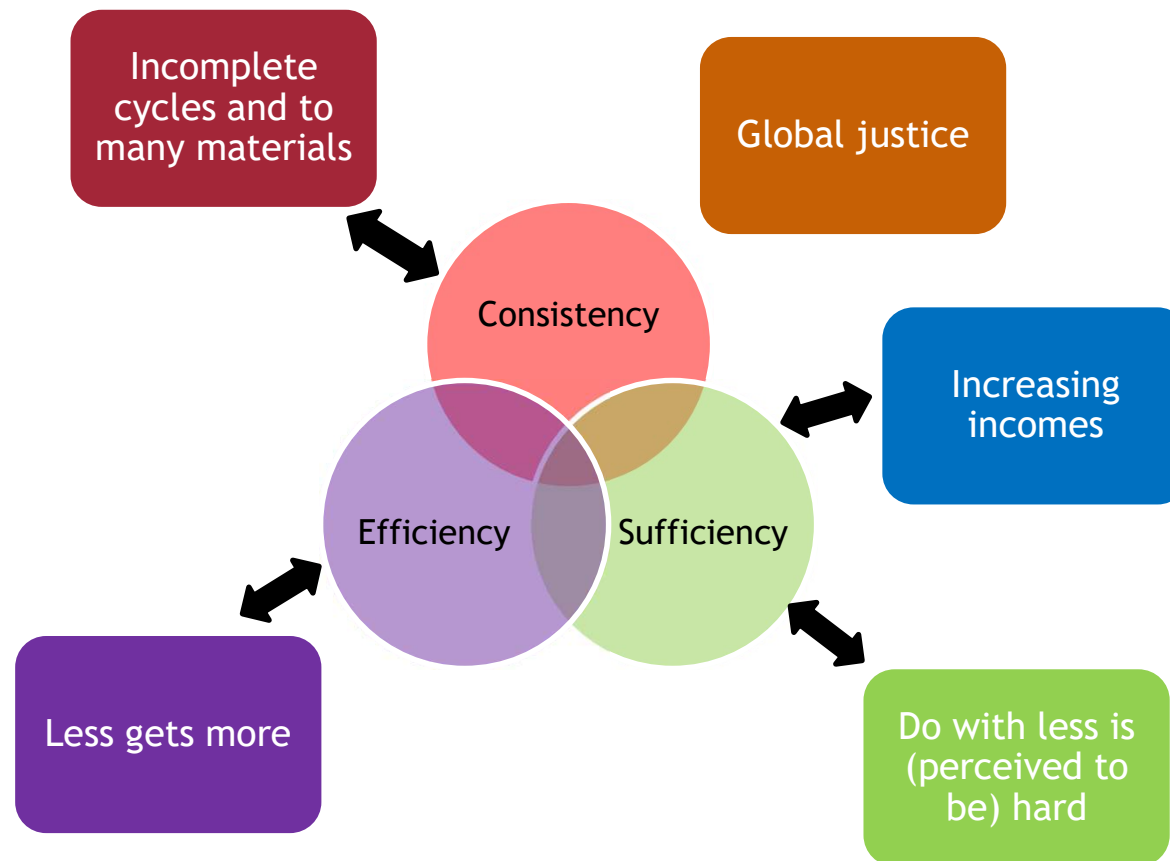


- Seasonal and short-term energy storage needed to use the full potential of renewable energy sources

## 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



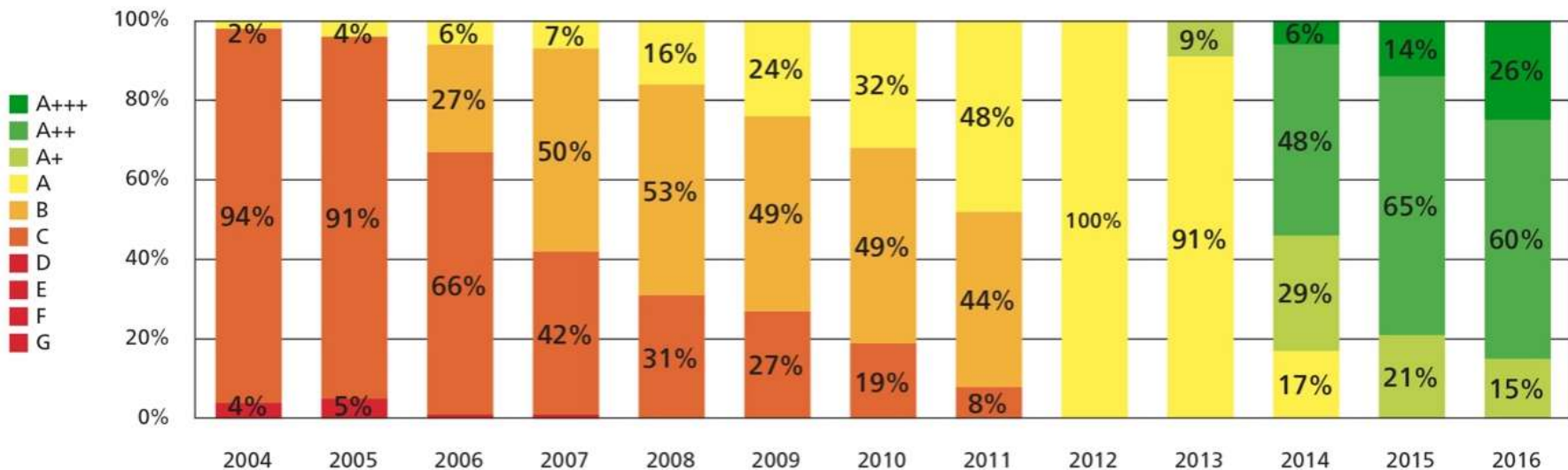
➤ We need improvement with all strategies



## Sustainable actions change structures - example

Sales share of tumble dryers in Switzerland

Quelle: FEA  
Grafik: Topten



- 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.



Credit: © Nasa

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