

What's your carbon footprint?

Data set compiled by Elisabeth George
for the Transition Town Letchworth
meeting on 14 January 2020

Essex & Herts Air Ambulance Motorcycle Run

...3000
tonnes
CO₂ ?



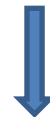
...1.5kg
CO₂ ?

...2 tonnes
CO₂ ?

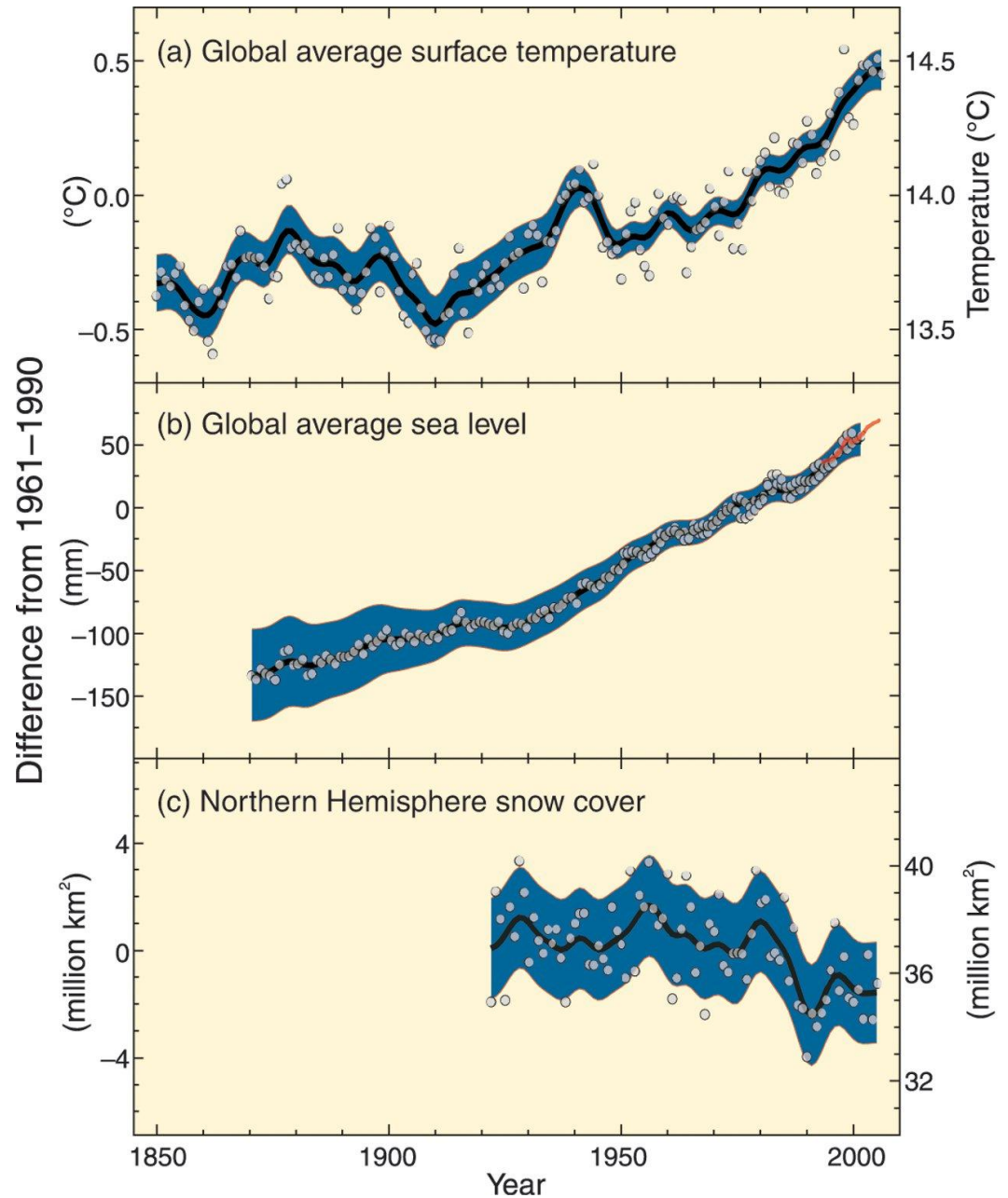
Plan for tonight

- What is a carbon footprint?
- Across the world
- In the UK
- Our own: What has the biggest impact?

~ please ask questions throughout ~



That's why
we are here

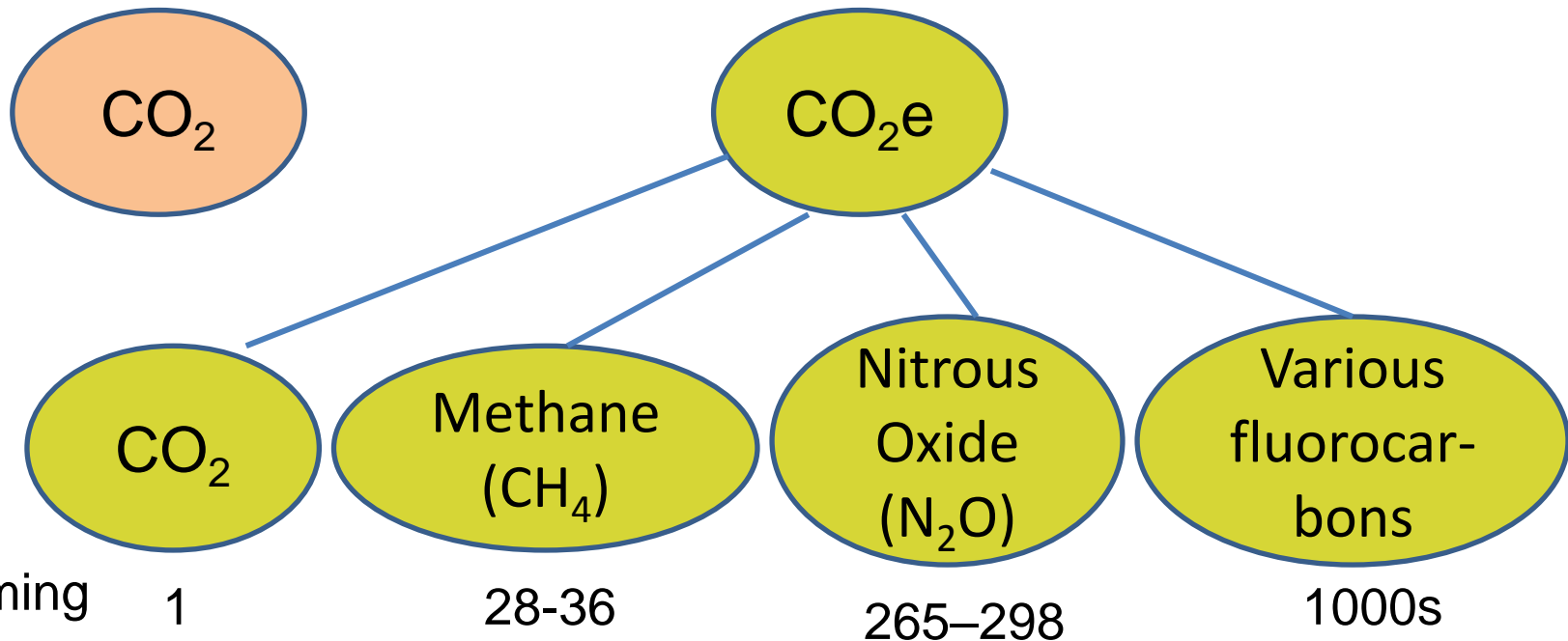


<https://www.ipcc.ch/report/ar4/syr/summary-for-policymakers/>

What is a carbon footprint?

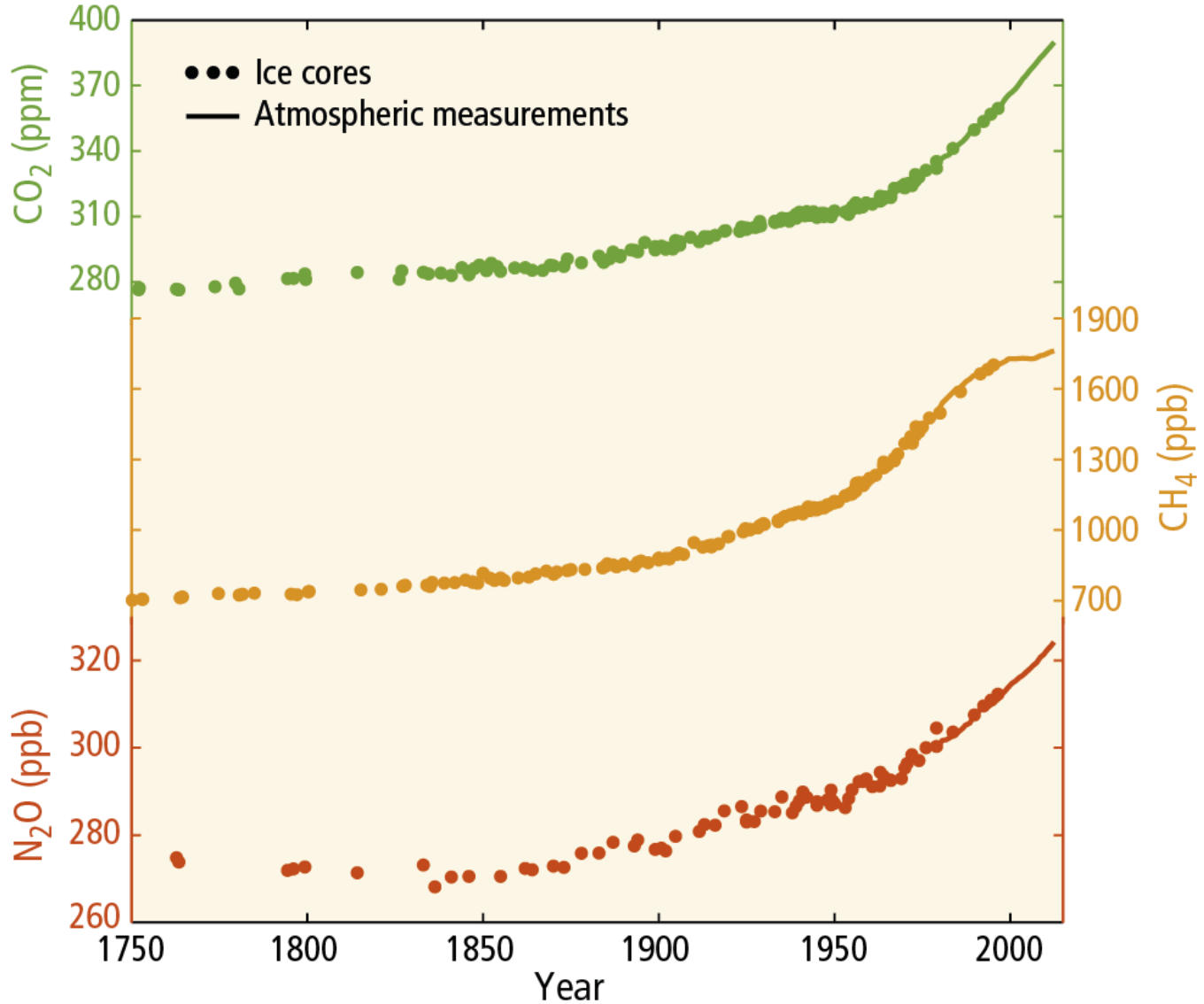
≈ All greenhouse gas emissions caused by an individual, organisation, event or product, resulting from every stage of a product or service's lifetime (material production, manufacturing, use, and disposal)

Beware – different ways of calculating it



Global warming
potential

Globally averaged greenhouse gas concentrations



Beware – different ways of calculating a country's carbon footprint (2)

Production only



Consumption and production

- For international comparisons one needs to use the production footprint otherwise double-counting

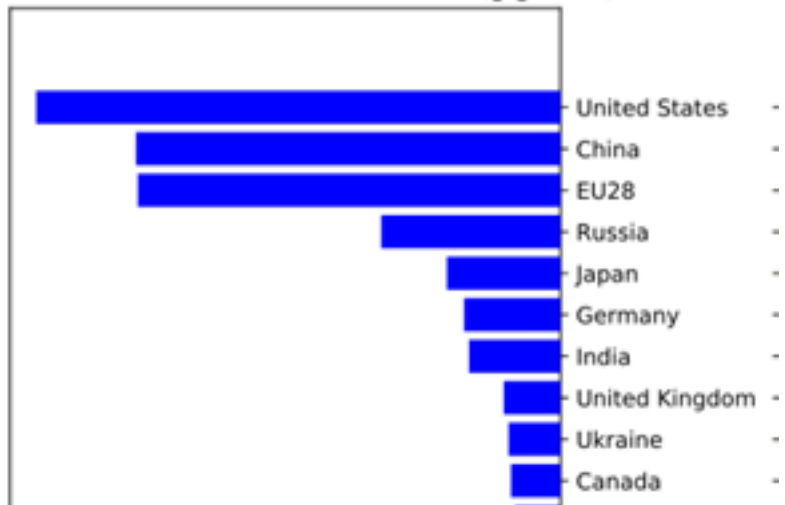
- includes also emissions from the consumption of imported goods
- this is the more honest approach

2 elements: operational + embodied = total

Beware (3)

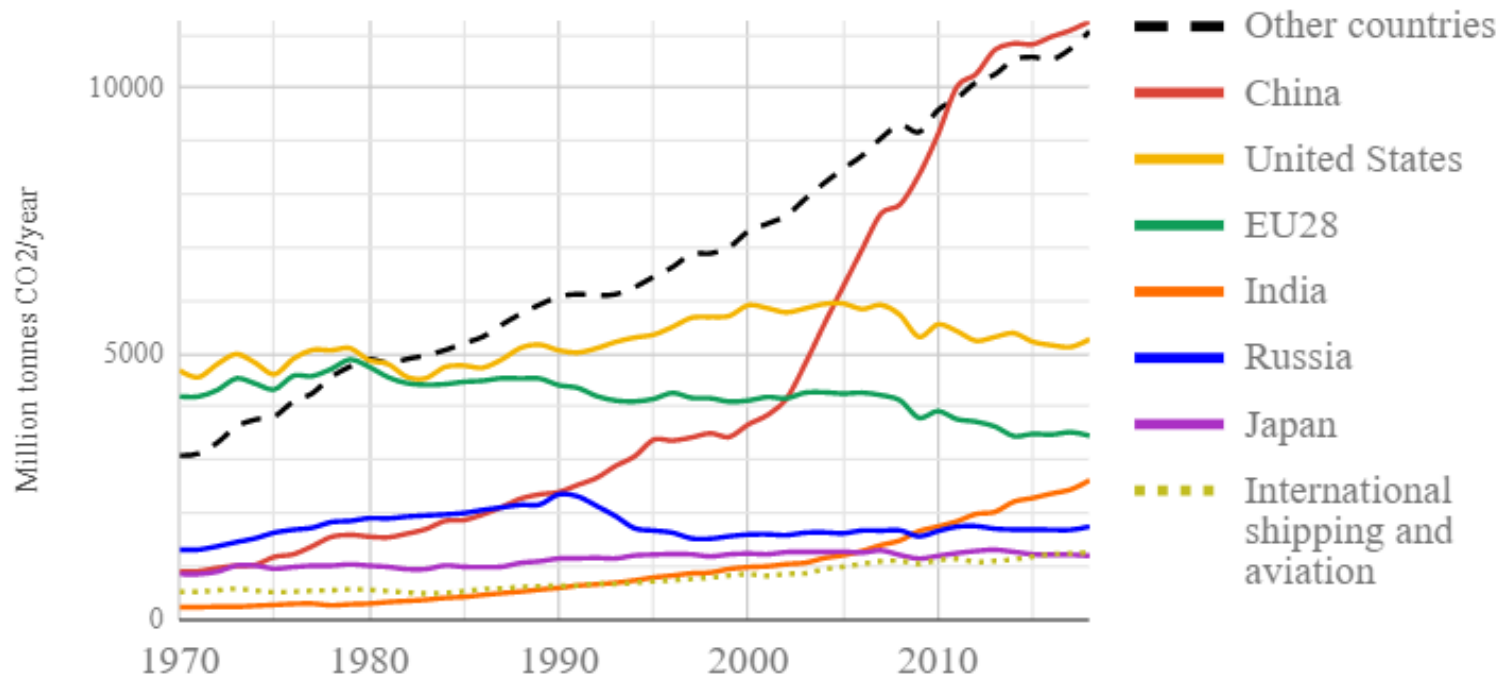
- This is not an exact science: the data varies a lot
- One can still make justified and reasonable decisions - being thorough and careful which information to use
- My sources: Official government reporting, ONS, IPCC, EU reporting, published books, Wikipedia
- Lots of numbers - mostly in pictures

Cumulative CO2 emissions 1970-2017 (gigatons)



(CO2 production only)

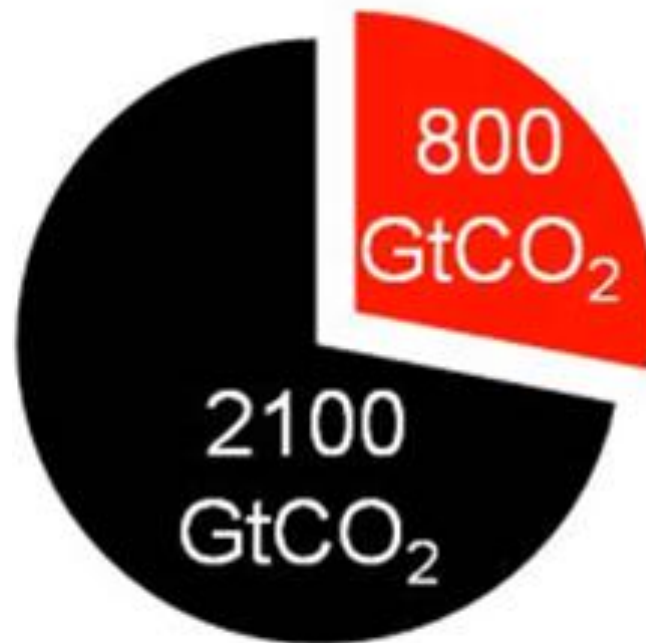
World fossil carbon dioxide emission 1970-2018



https://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions

...to limit the temperature increase to 1.5°C a small carbon budget is left:

Already emitted
(up to 2016)



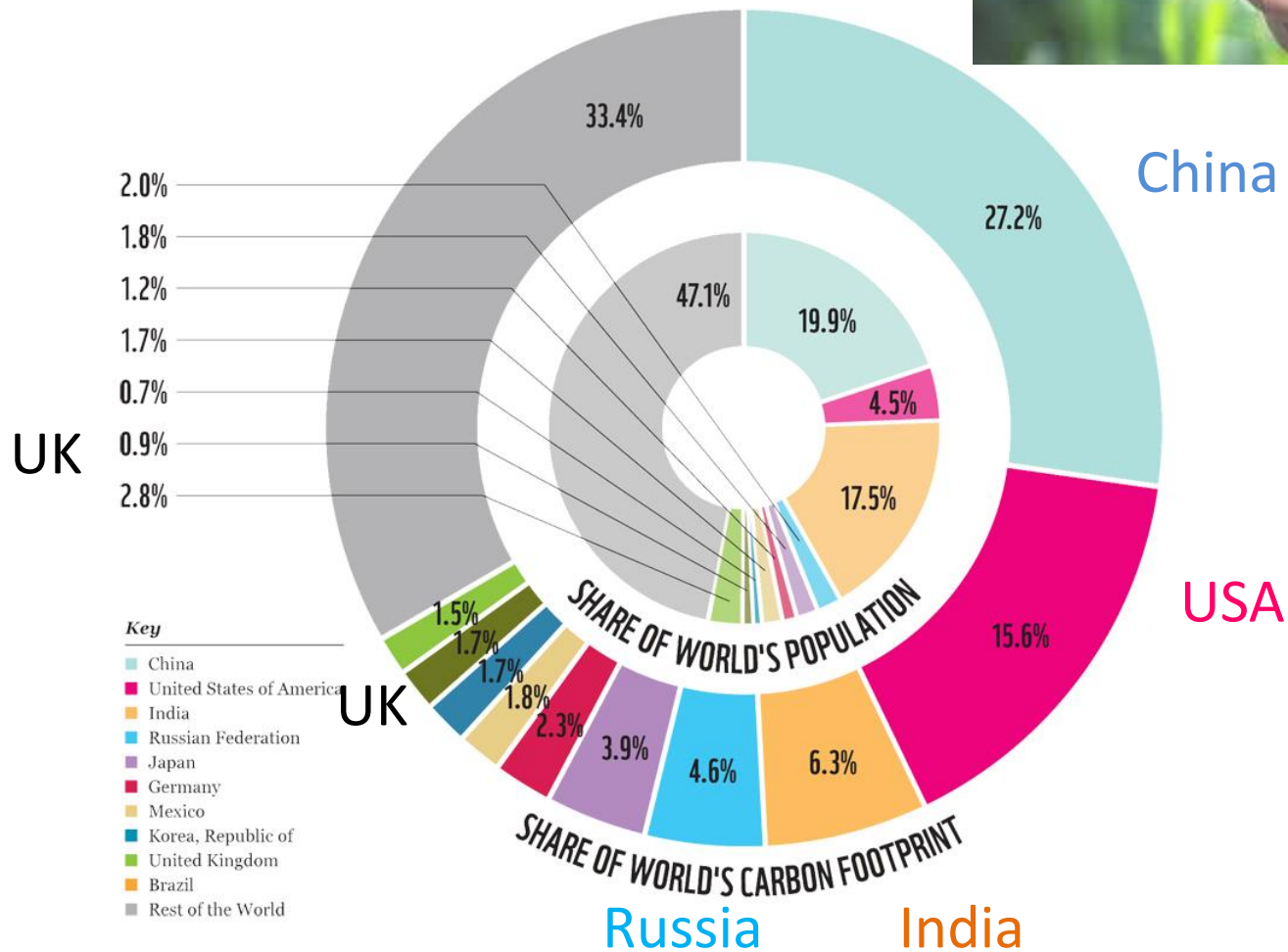
Still 'available'

Source: IPCC Rogelj 2016

See also:

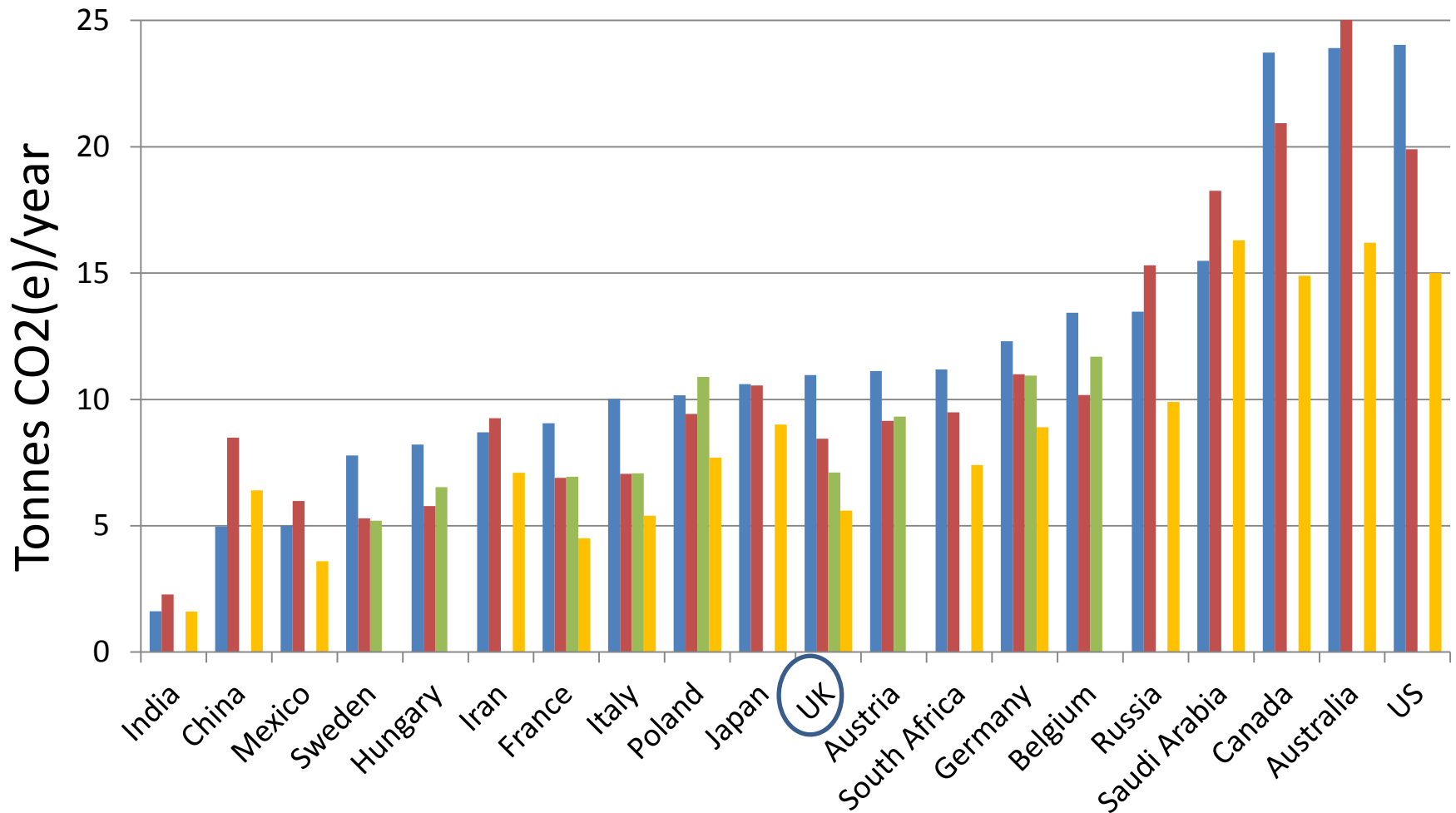
<https://www.mcc-berlin.net/en/research/co2-budget.html>

45,261 million tonnes CO2e (2017)



<https://www.footprintnetwork.org/our-work/climate-change/>
(possibly 2016 figures)

Carbon footprint per person (production only)



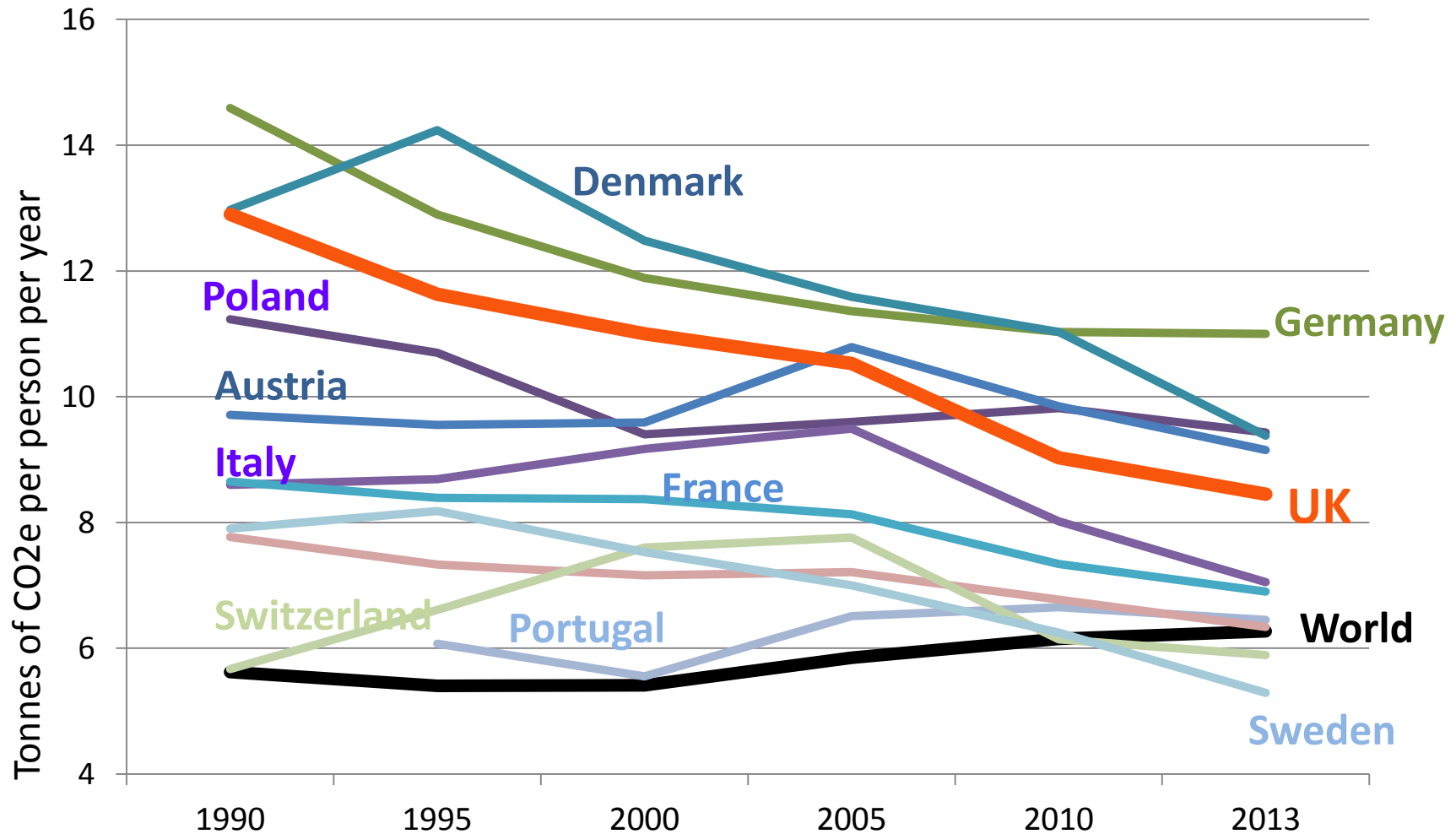
[2010 – 2016 data; sources on next slide]

Sources for international carbon footprint comparison (slide 12)

- **Blue 2010** M Berners-Lee (2010) How Bad Are Bananas?
Profile Books ISBN 1846688914
- **Red 2013**
https://en.wikipedia.org/wiki/List_of_countries_by_greenhouse_gas_emissions_per_capita
- **Green 2015**
<http://www.europarl.europa.eu/news/en/headlines/society/20180301STO98928/greenhouse-gas-emissions-by-country-and-sector-infographic>
- Yellow: 2016 (CO2 only)
<https://www.ucsusa.org/resources/each-countrys-share-co2-emissions>

CO₂e per person in Europe

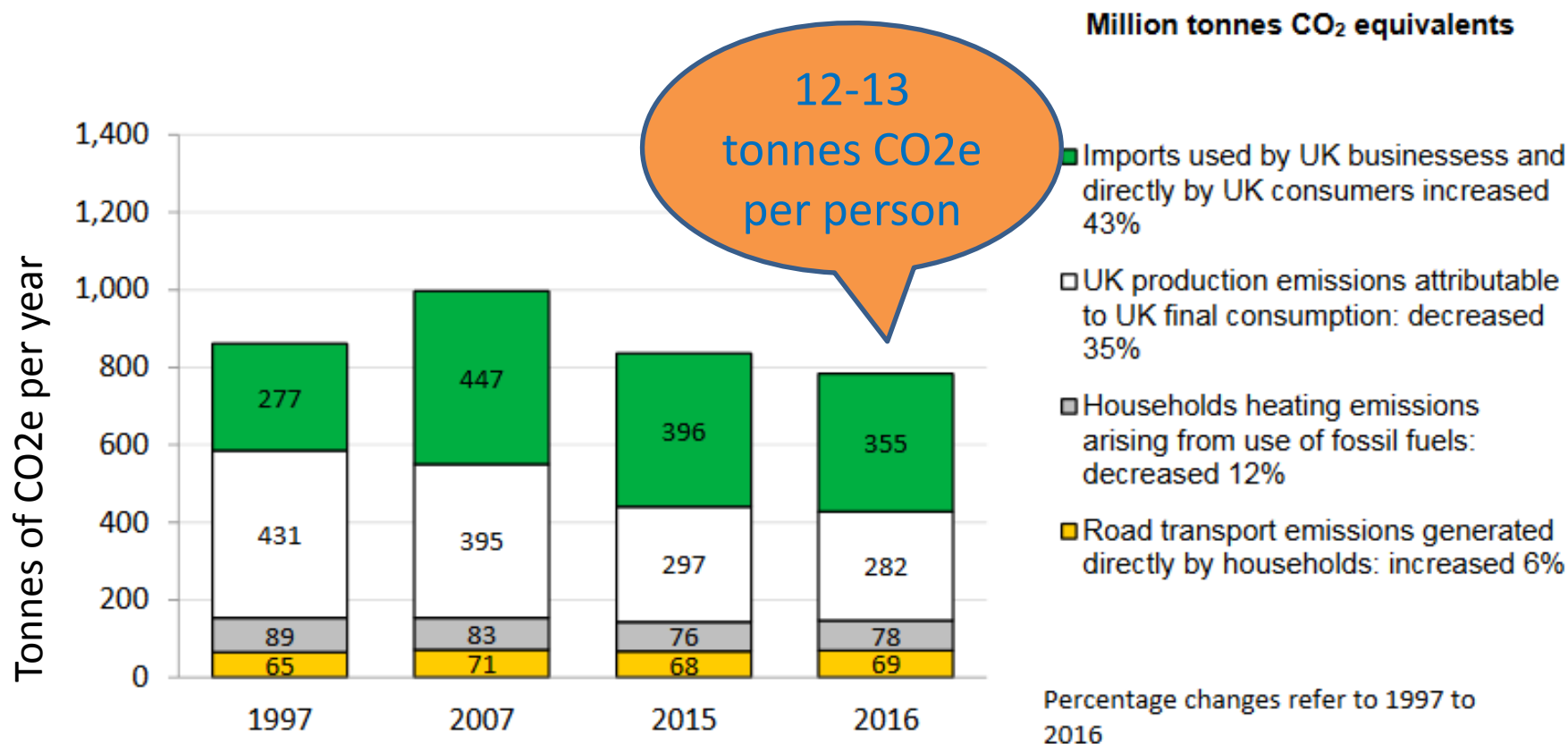
(production footprint)



https://en.wikipedia.org/wiki/List_of_countries_by_greenhouse_gas_emissions

The UKs carbon footprint

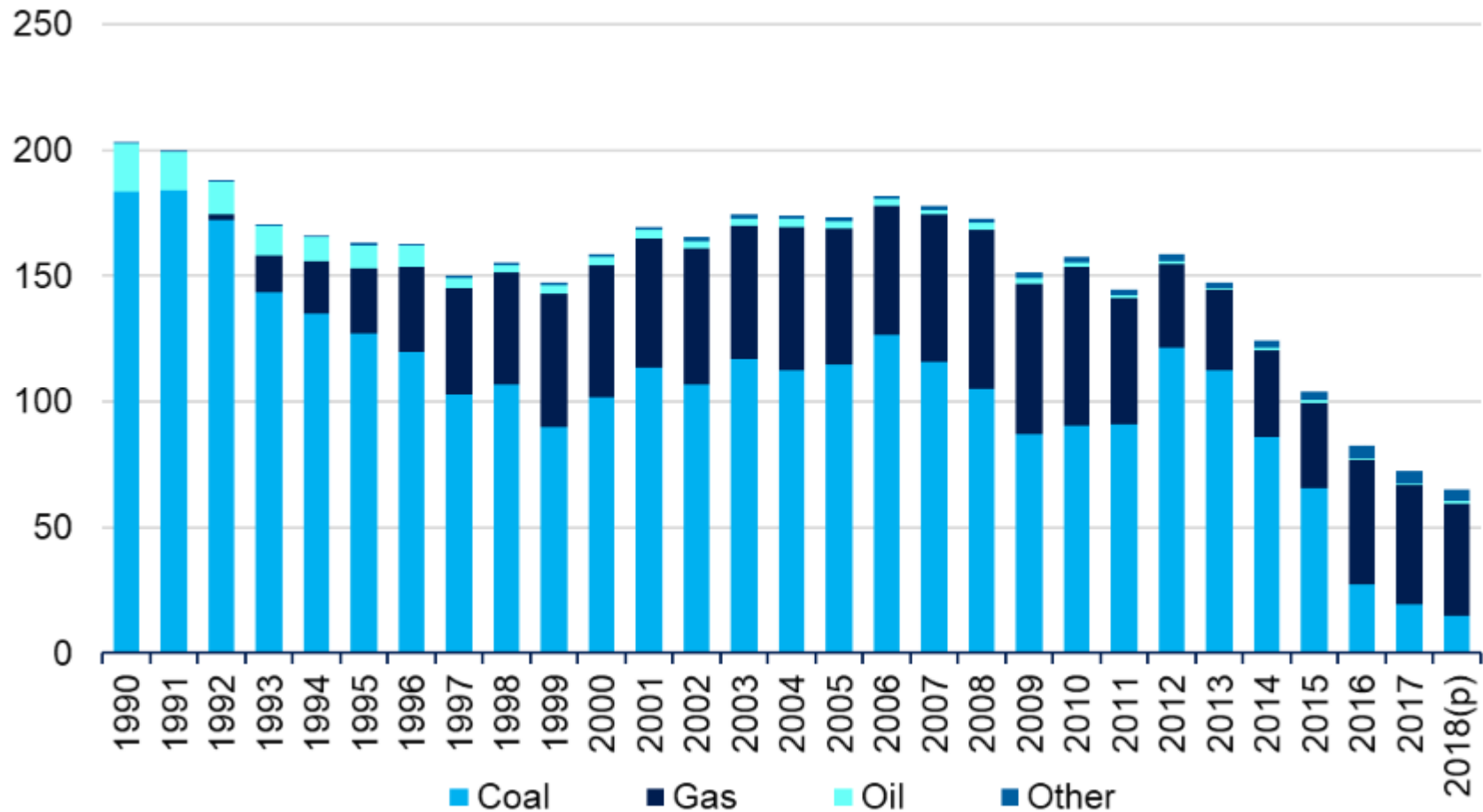
Figure 2 Greenhouse gas emissions associated with UK consumption 1997, 2007, 2015 and 2016



https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794557/Consumption_emissions_April19.pdf

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/790626/2018-provisional-emissions-statistics-report.pdf

Figure 4: Carbon dioxide emissions from electricity generation, UK, 1990-2018 (MtCO₂)



Why find out about carbon footprints?



Until we know the carbon footprint of a product/ service or our own life choices

- we don't know out where the biggest impact is
- we cannot demand 'low carbon' products/services

Once we know, we can make informed choices to

- set our own personal carbon budget
- change our behaviour

How do online footprint calculators work?

- Questions about
 - Food (meat - vegan), food waste, how much locally produced or processed food
 - Type of house, number of bedrooms, how many people, fuel type and cost, energy efficiency improvements
 - Travel: vehicle type, time spend in, or miles travelled in car, train, bus, how many flights and where to
 - Behaviour (turning off your lights and appliances, temperature in your home, recycling)
 - Consumption (new household items; clothes and footwear, pets, health and beauty products, phone, internet and TV contracts)

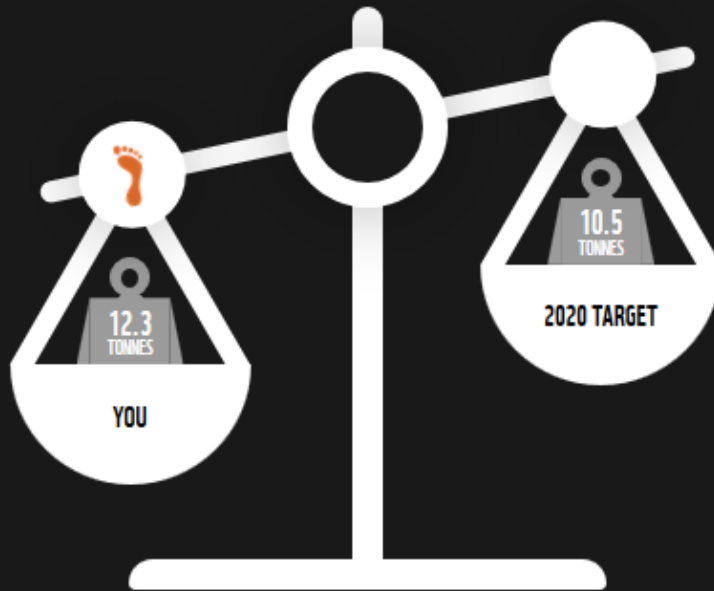
Online carbon footprint calculators explored

- There are many! ...and show different results
- WWF footprint calculator
<https://footprint.wwf.org.uk/#/>
 - Does not provide a lot of granular information
- Carbon footprint TM
<https://www.carbonfootprint.com/calculator.aspx>
 - Very detailed, works via expenditure, but some implausible results
- Carbonindependent
<https://www.carbonindependent.org/>
 - Detailed (apart from consumption), plausible results

Basic profile

- Based on 2 people sharing a 2 bedroom semi detached house
- Trying to do their best: low energy light bulbs, cavity insulation, recycle everything, switch appliances off, average electricity and gas use
- Food: meat only in some meals, very little food waste
- Moderate/ average spending on clothes, and other stuff, no pets, phone internet contract
- 1 small car, average mileage =7600 miles (office for national statistics)
- Both do 2 return flights to Europe (1.5h each)

WWF footprint calculator <https://footprint.wwf.org.uk/#/>
Basic profile



YOUR CARBON FOOTPRINT IS

124%

of your target impact on the world, when measured against the 2020 target as set by the UK government

20 • TONNES

10

0



WORLD AVERAGE

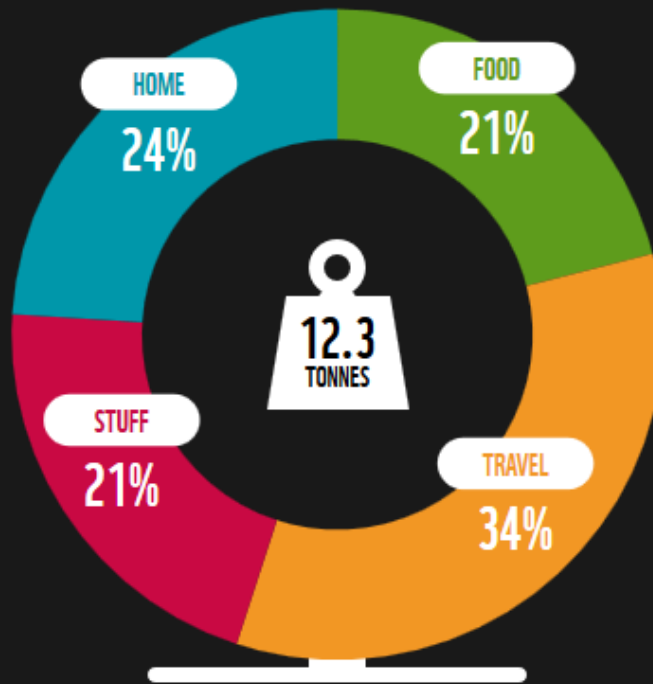
UK AVERAGE

YOU

VIEW FULL RESULTS



WWF footprint calculator <https://footprint.wwf.org.uk/#/> Basic profile



TIME FOR [BACK TO FOOTPRINT](#)

Stay informed through WWF's carbon progress updates.

[STAY INFORMED](#)

JOIN WWF TODAY

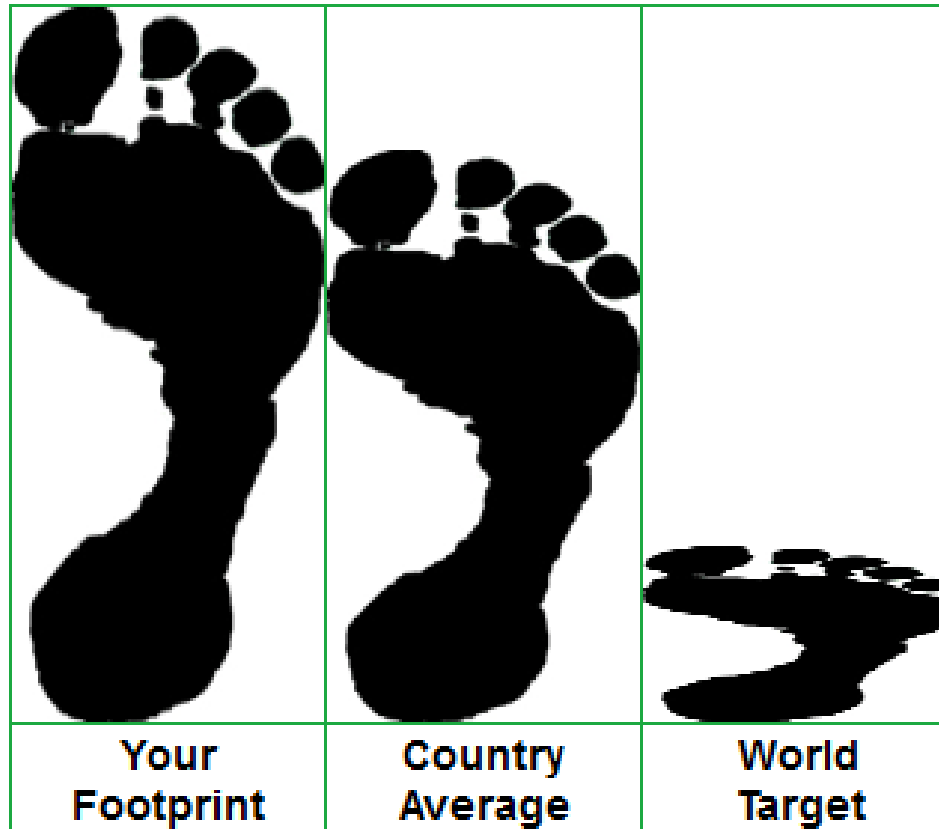
Become part of a growing movement and help us combat climate change and call on world leaders to act to protect nature.

[JOIN](#)

'Carbonfootprint™ 'calculator

<https://www.carbonfootprint.com/calculator.aspx>








Basic profile



- Your footprint is 8.12 tonnes per year
- The average footprint for people in United Kingdom is 6.50 tonnes
- The average for the European Union is about 6.4 tonnes
- The average worldwide carbon footprint is about 5 tonnes
- The worldwide target to combat climate change is 2 tonnes

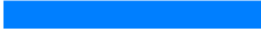








Carbonindependent <https://www.carbonindependent.org/>

Basic profile

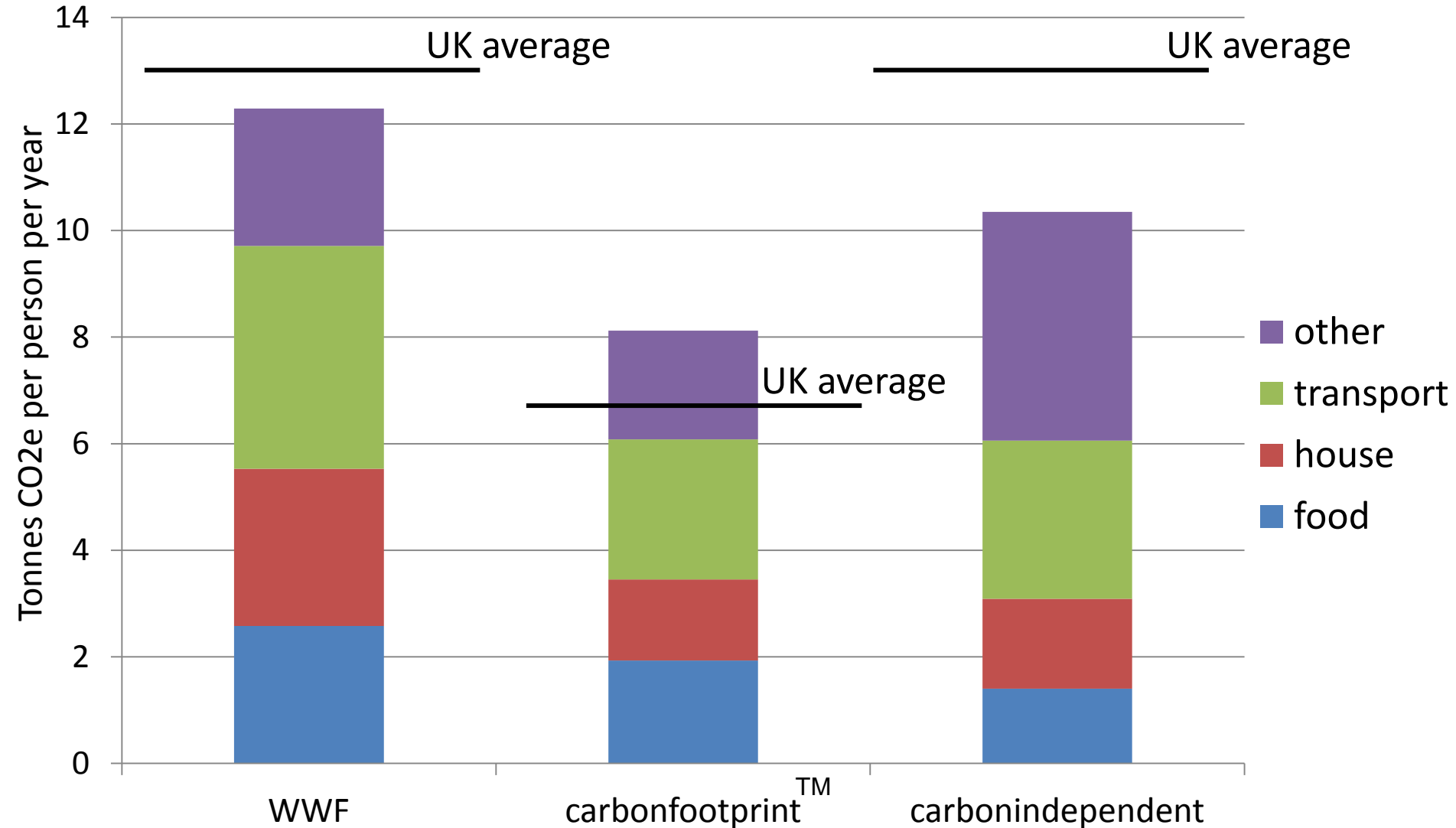
	<i>household</i>	<i>person</i>	
Electricity (3000 kWh)	0.93	0.47	
Gas (12000 kWh)	2.44	1.22	
Car 1 (7600 miles)	2.94	1.47	
Food		1.4	
Health, education, etc		1.1	
Flights (6 hours)		1.5	
Miscellaneous		3.19	
Your total		10.35	tonnes

No or minimal recorded emissions from the following categories: **oil, coal, wood, bottled gas, car 2, car 3, car 4, bus, train**

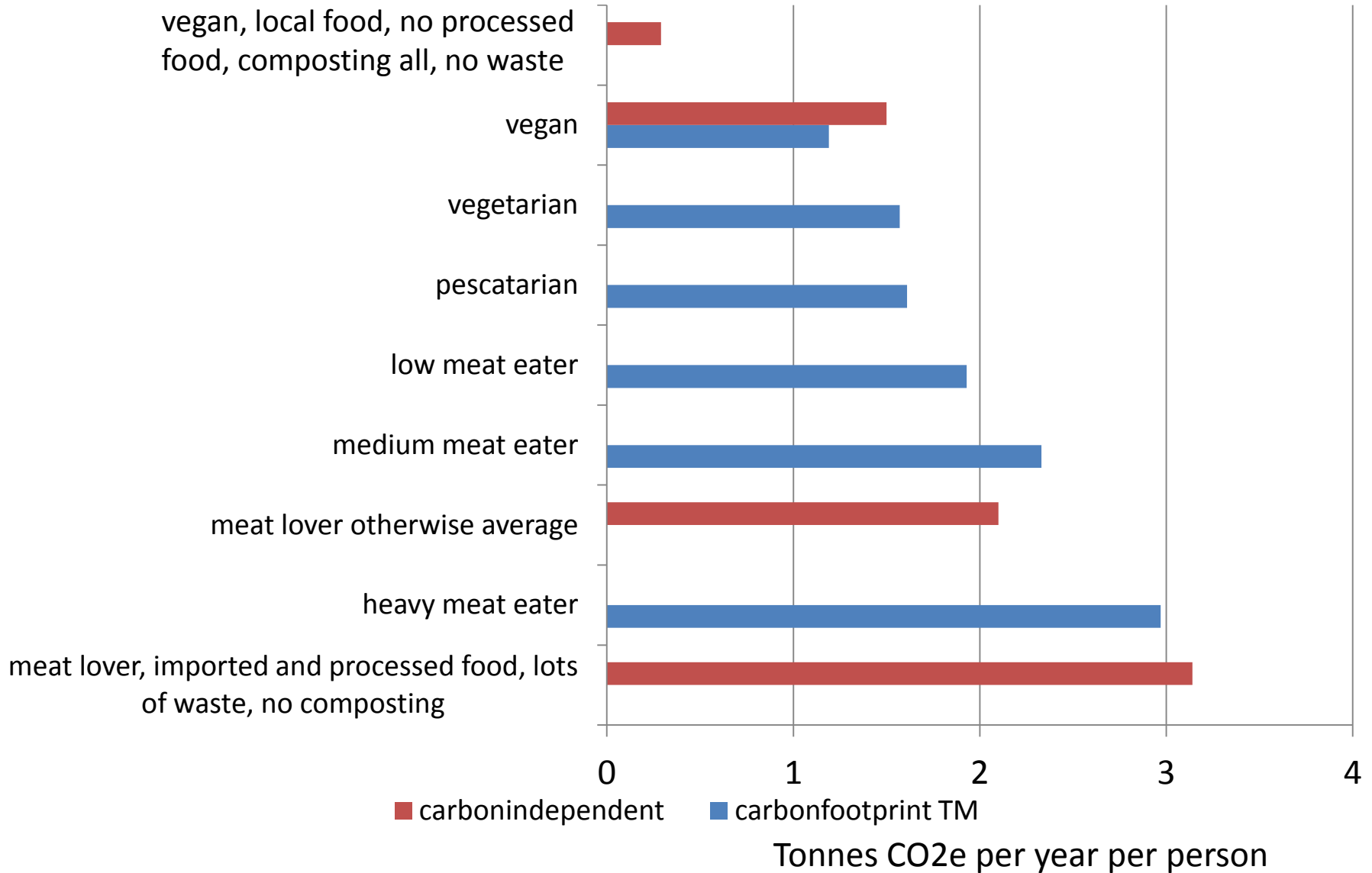
How your total compares to the rest of the world

Your total	10.35	
World average	4	
UK average*	13.4	
USA	20	
Sweden, Switzerland	6.1	
China	3.2	
India	1.2	
Tanzania	0.1	
Sustainable	1.5 ?	

Output from the 3 calculators



Food



Food

vegan, local food, no processed food, composting all, no waste

vegan

vegetarian

pescatarian

low meat eater

medium meat eater

meat lover otherwise average

heavy meat eater

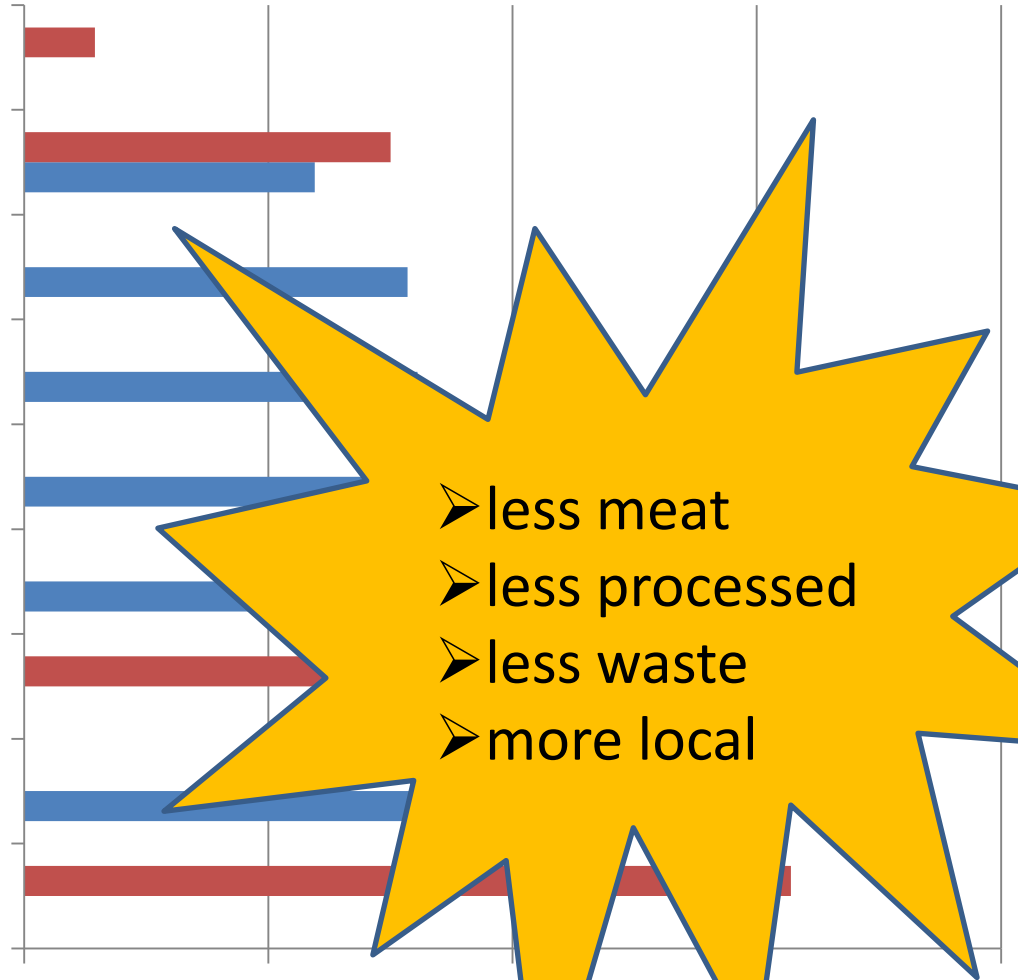
meat lover, imported and processed food, lots of waste, no composting

■ carbonindependent

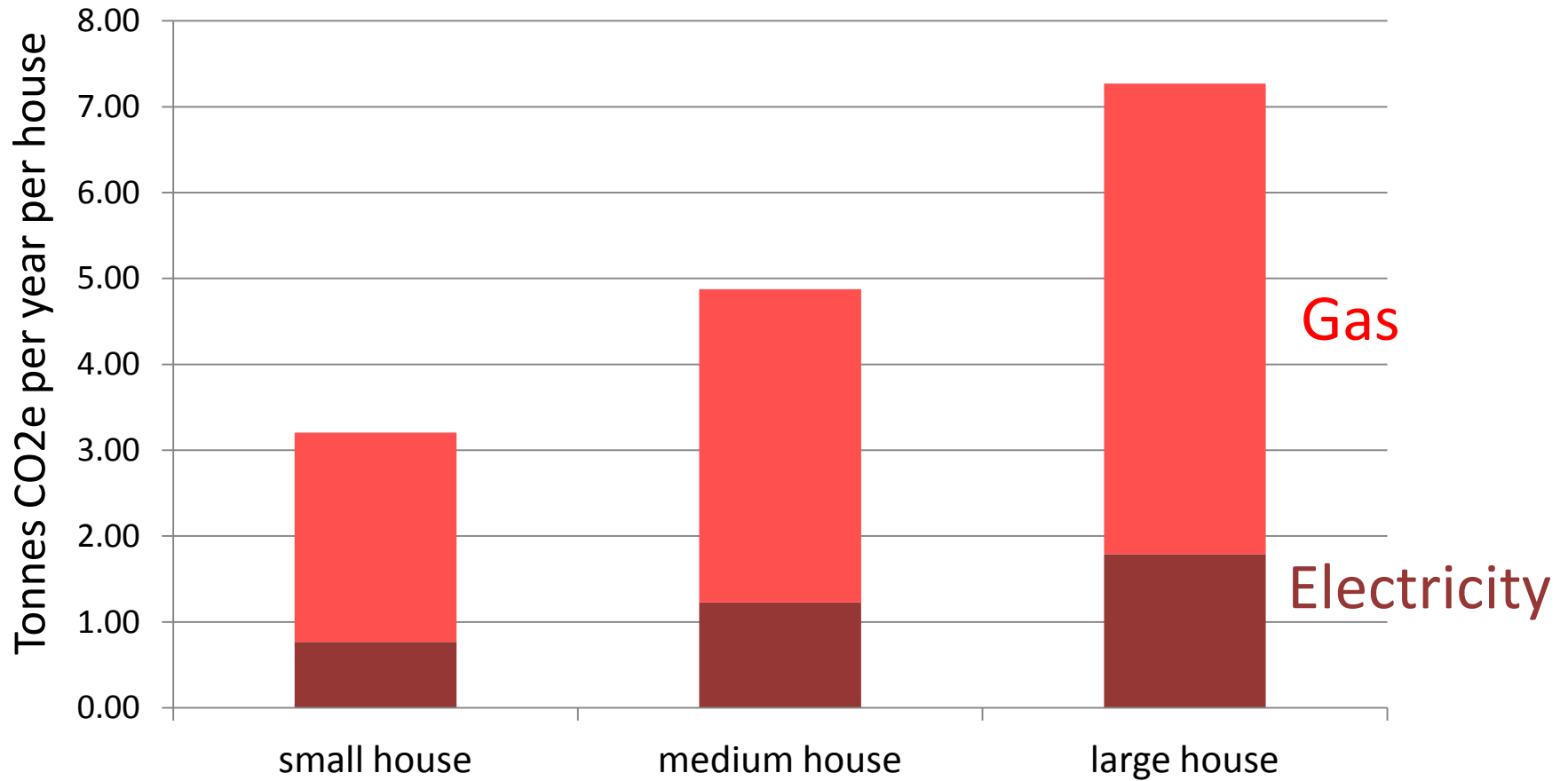
■ carbonfootprint TMM

Tonnes CO2e per year per person

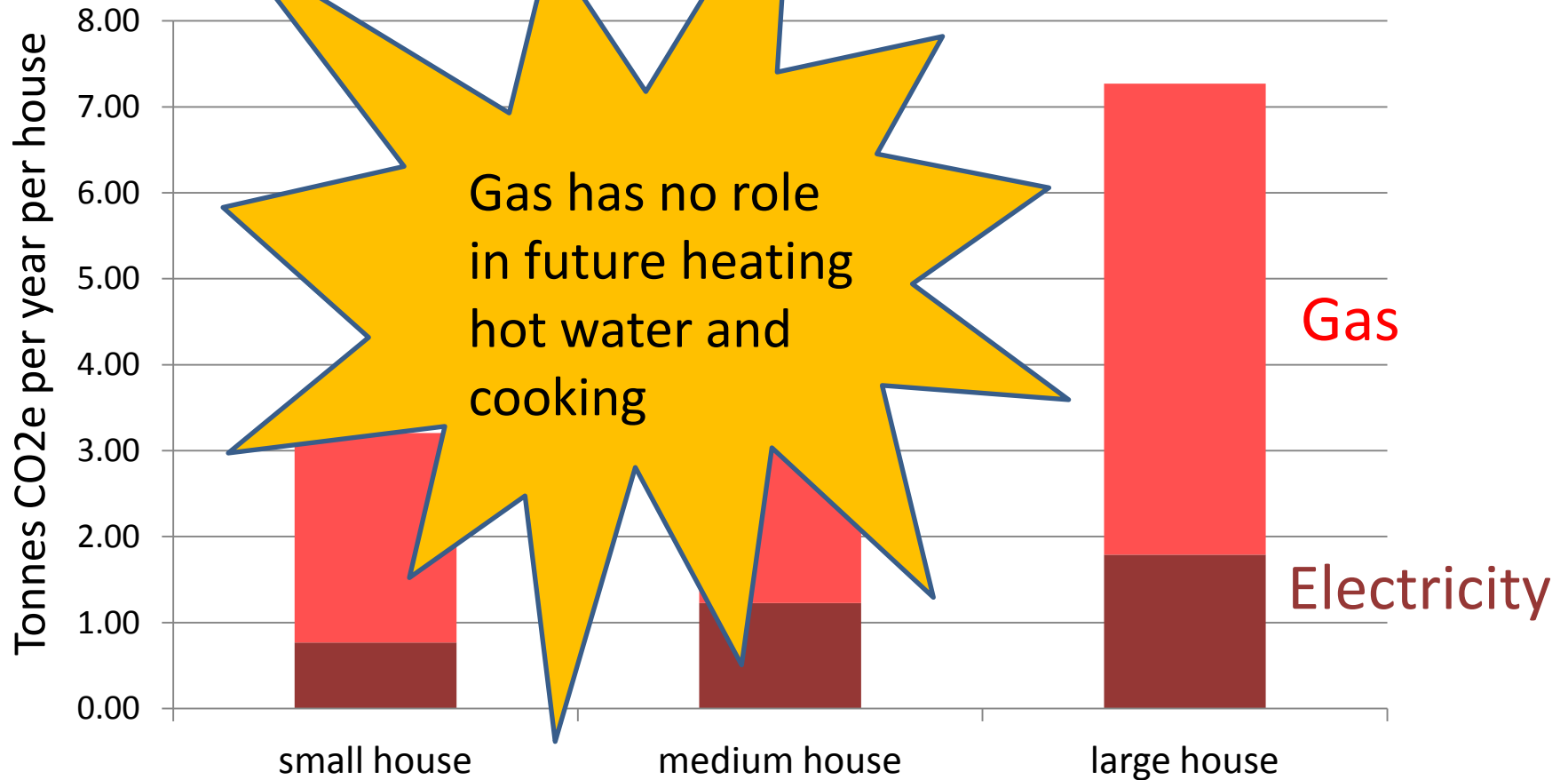
- less meat
- less processed
- less waste
- more local



Gas and electricity per house

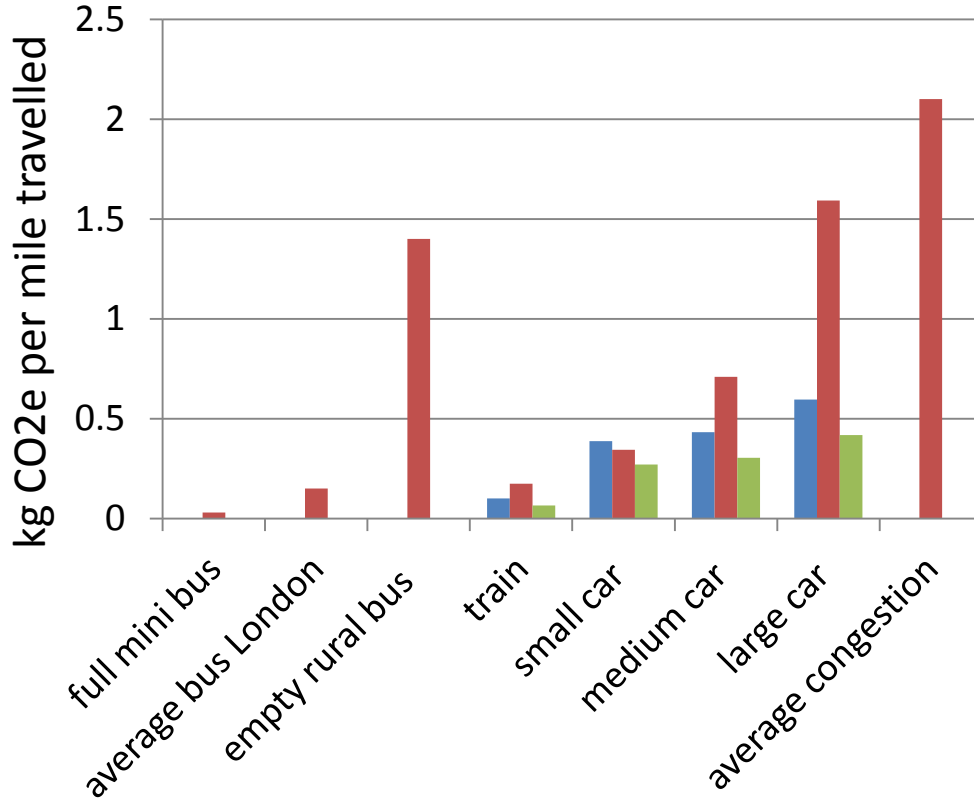


Gas and electricity per house



Cars

car	engine	mpg
small	< 1.5 L	37
medium	1.5 - 2.0 L	33
large	> 2.0 L	24

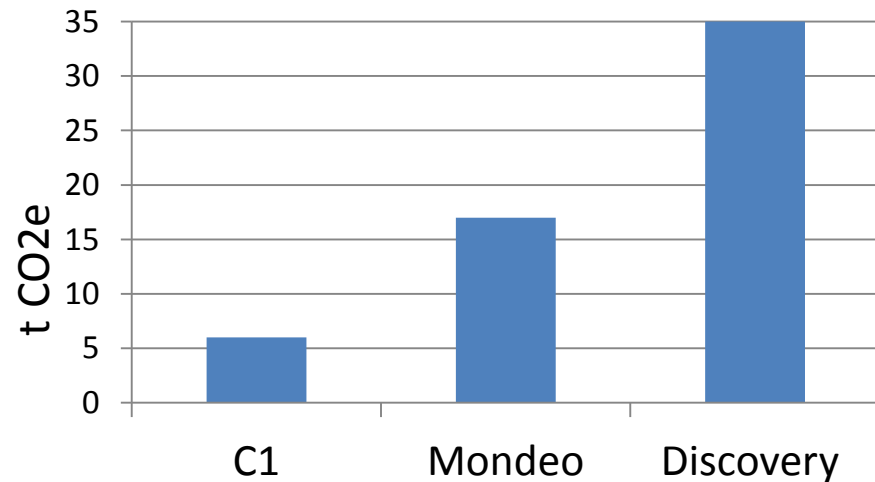


- carbonindependent
- How bad are bananas?
- carbonfootprint TM

The red bars are higher because they include extracting, refining and transporting fuel, and the embodied carbon of the car

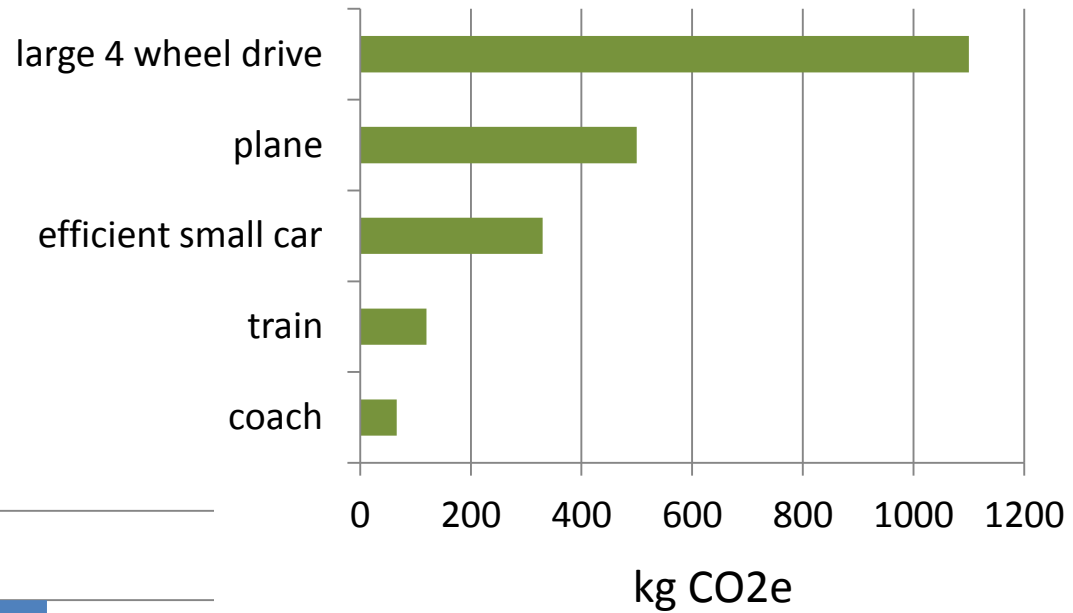
Embodied carbon

How much carbon does it take to make a new car?

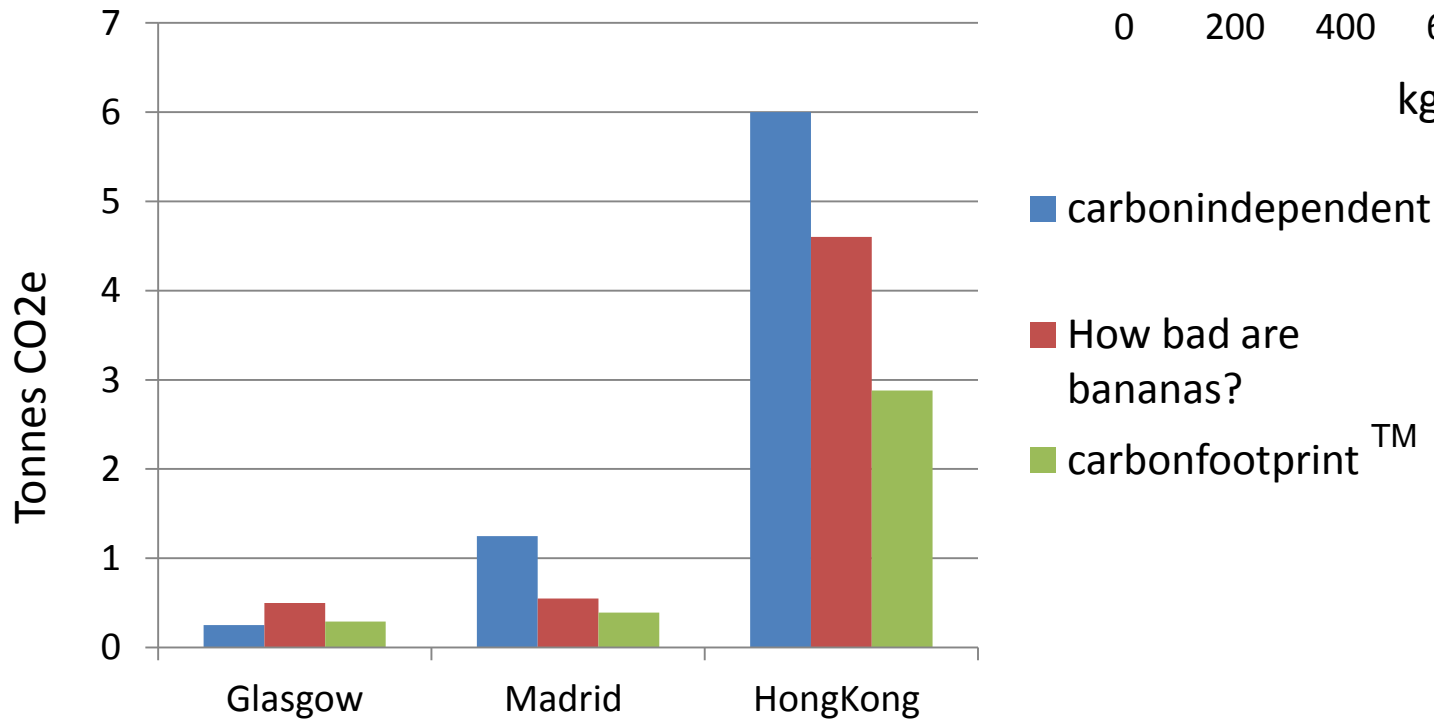


Other transport

London to Glasgow return

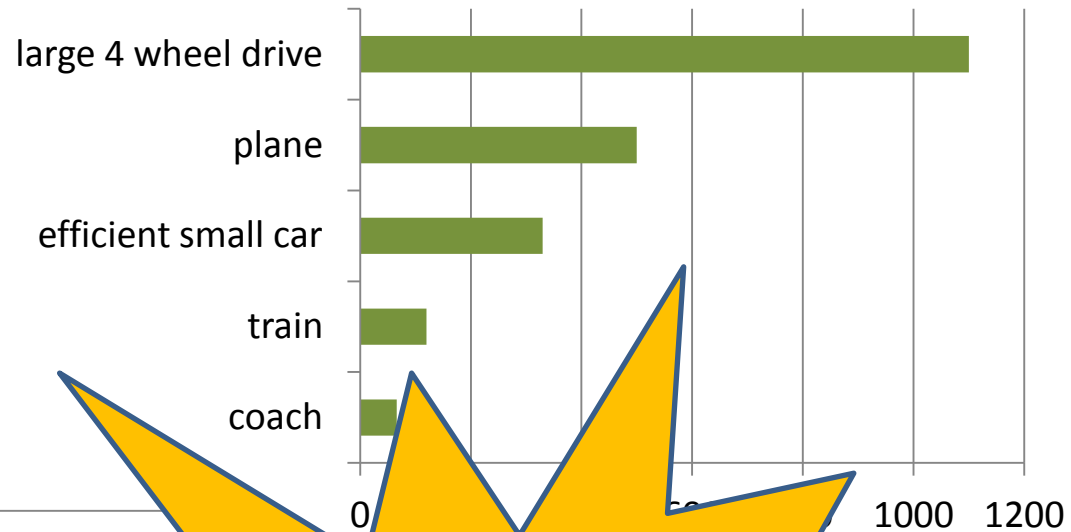


Return flight from London

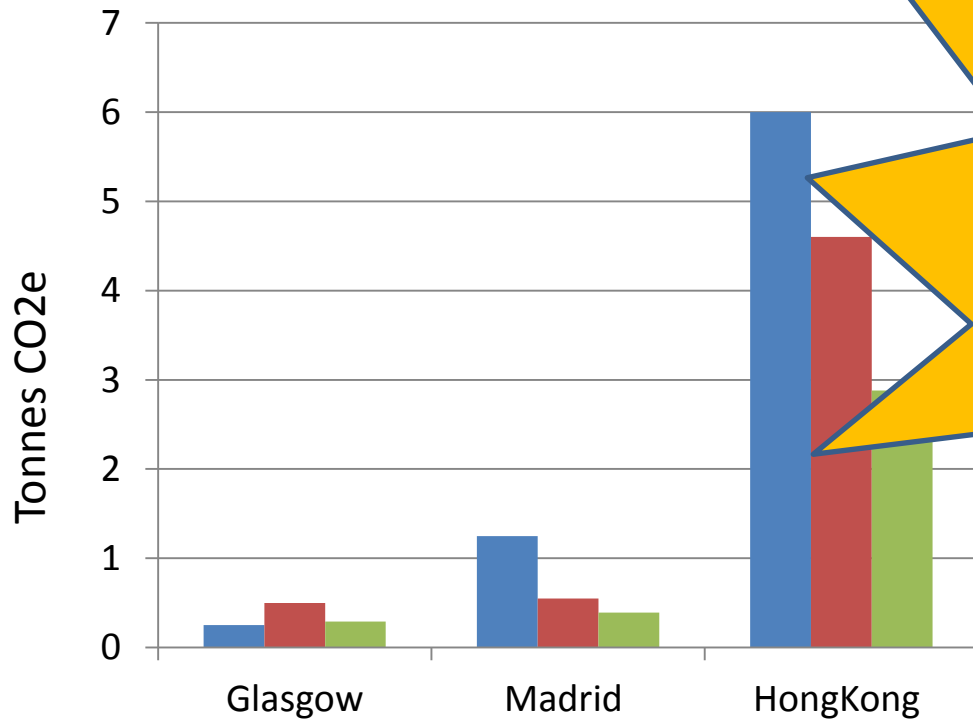


Other transport

London to Glasgow return



Return flight from London

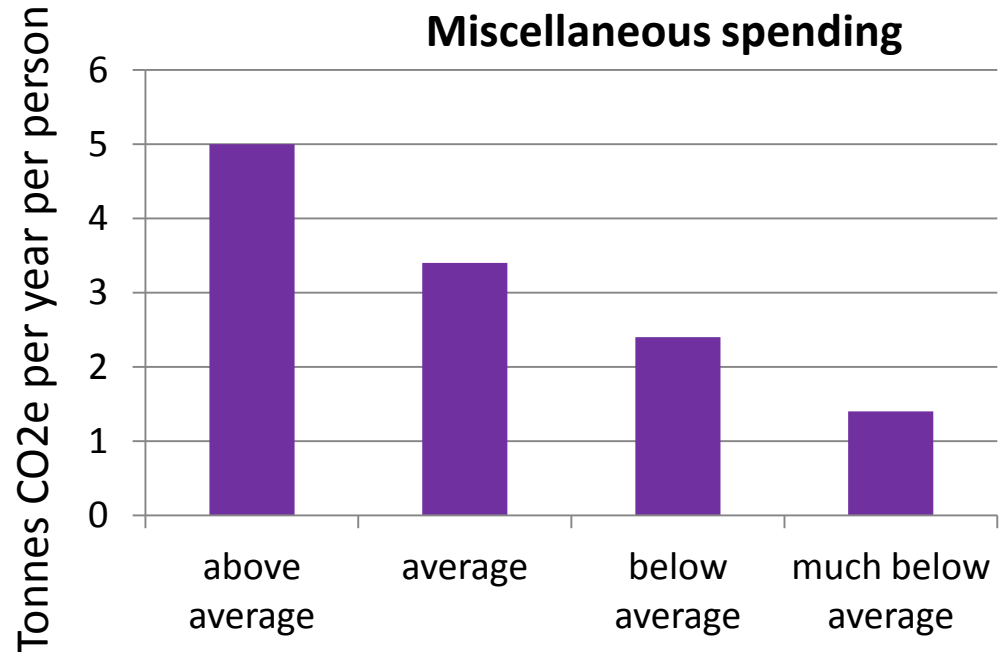


Small cars
Less driving
Less flying

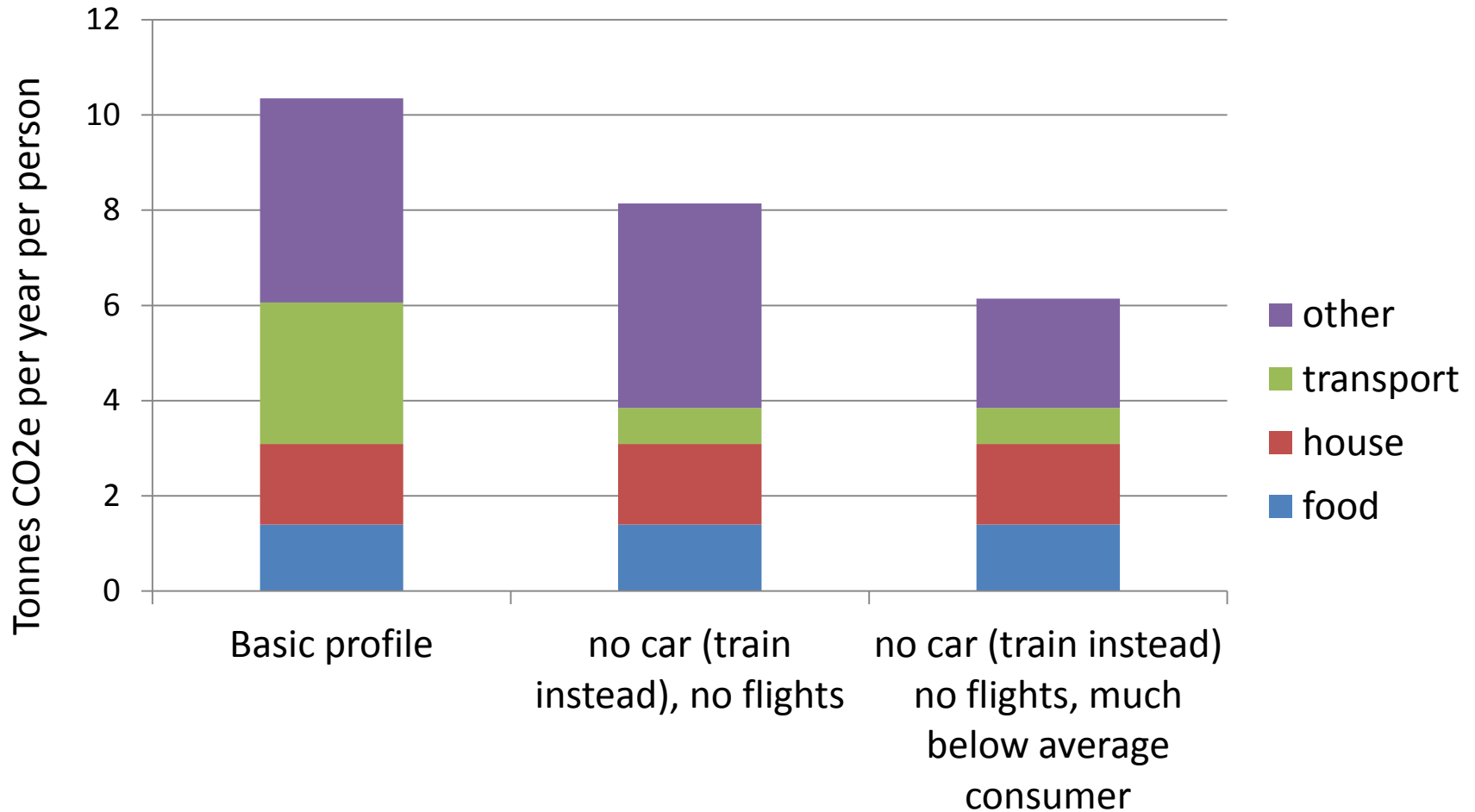
Miscellaneous spending

- Includes:
 - recreation and leisure
 - housing
 - household appliances
 - hygiene
 - hotels and holidays
 - furnishings
 - clothing & footwear
 - alcohol & tobacco
 - post, phones
 - books, newspapers etc

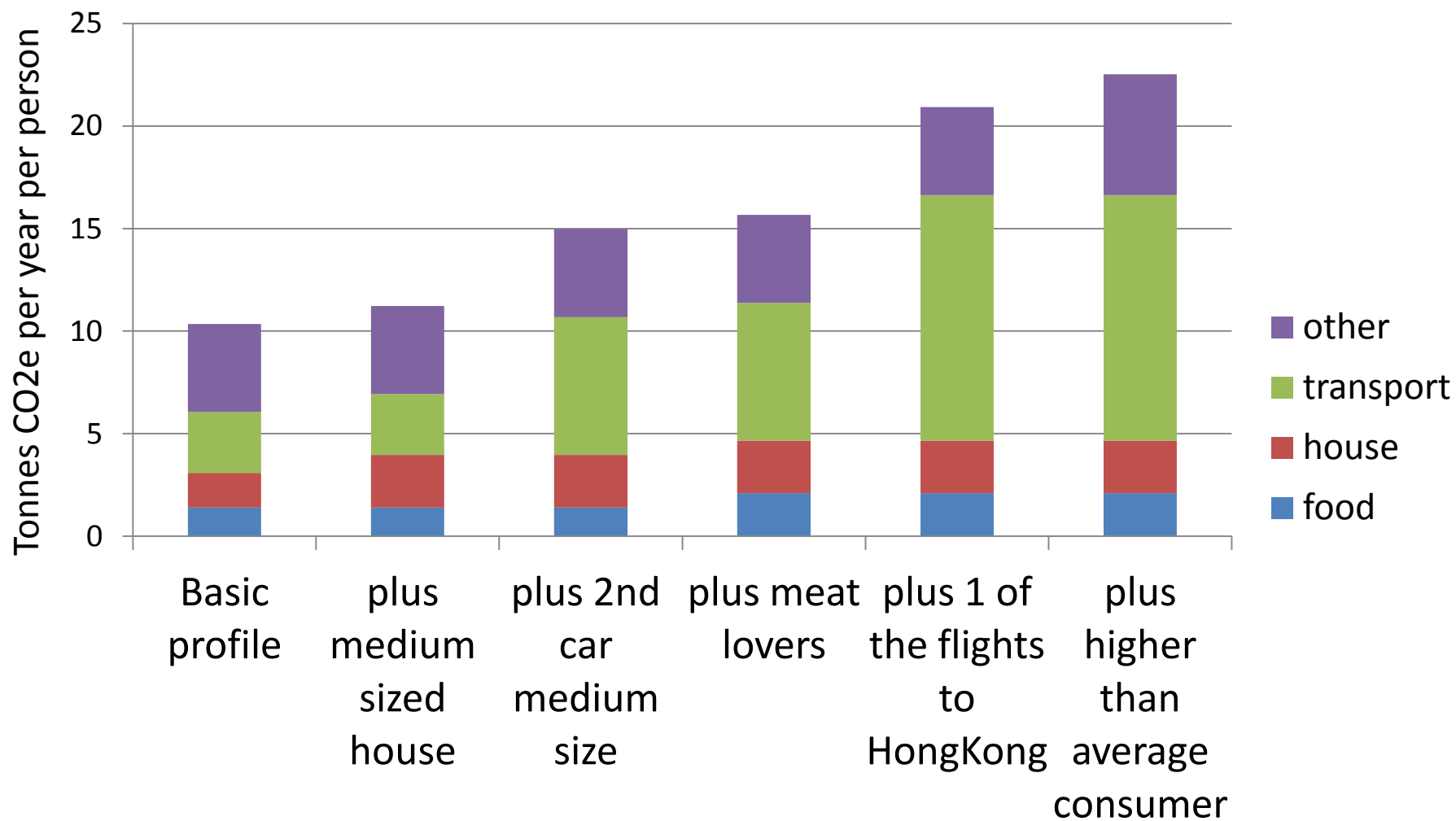
[CO₂e on these tends to follow size of income]



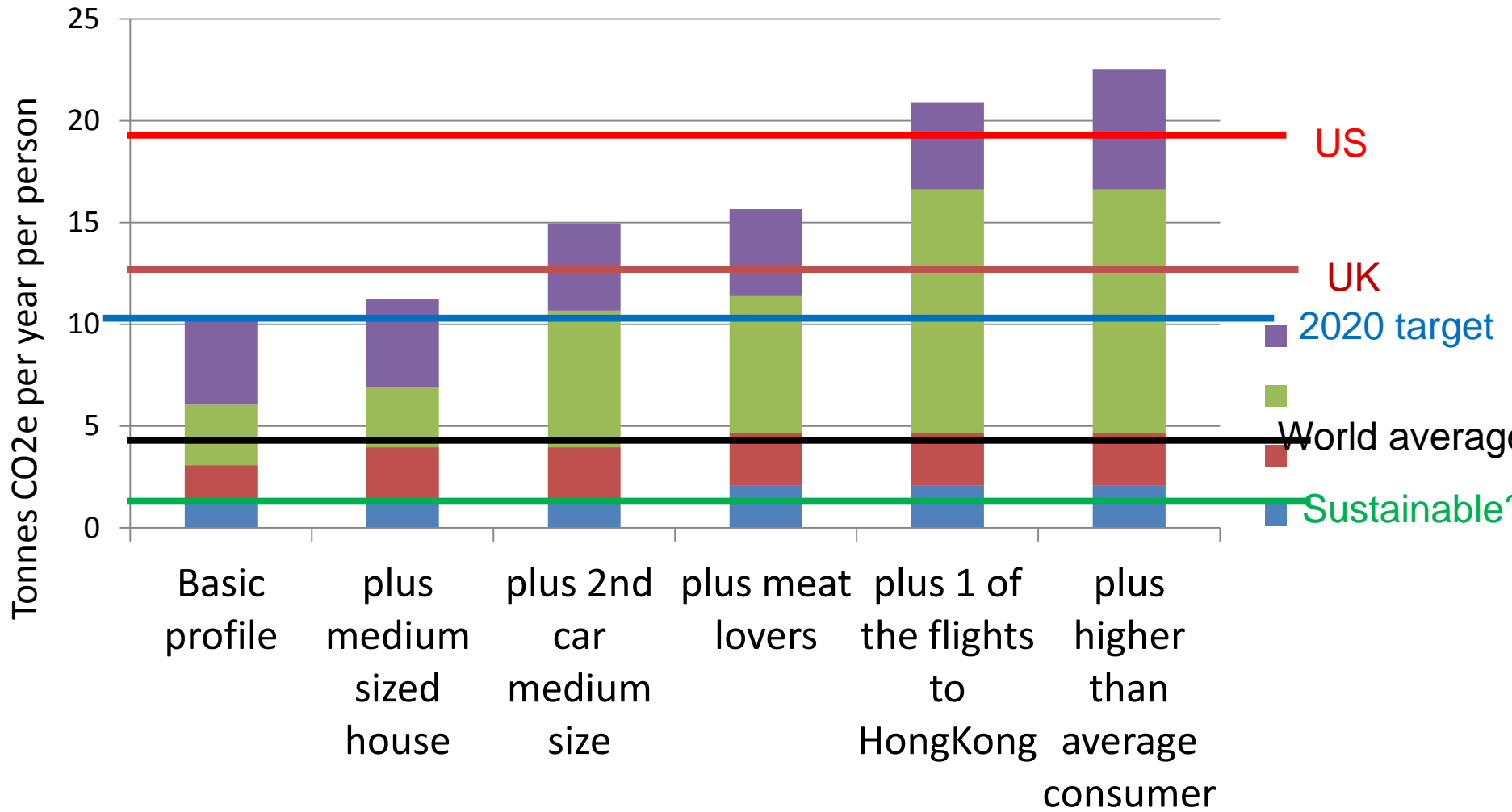
Back to personal carbon footprints



But



.....with benchmarks



We have a long way to go, but can be constructive and positive about it:

- ✓ Lobbying government for policy changes
- ✓ But we as individuals also carry responsibility to make changes in our lives - nothing is going to change if we don't change some of our consumption behaviour
- Differentiate between 'needs' and 'wants'
- 'Want' less of some of the things that are most damaging to the world
 - Enjoy activities that do not use much fossil fuel energy
 - Demand low carbon products and services



**We have the power
of the purse!**