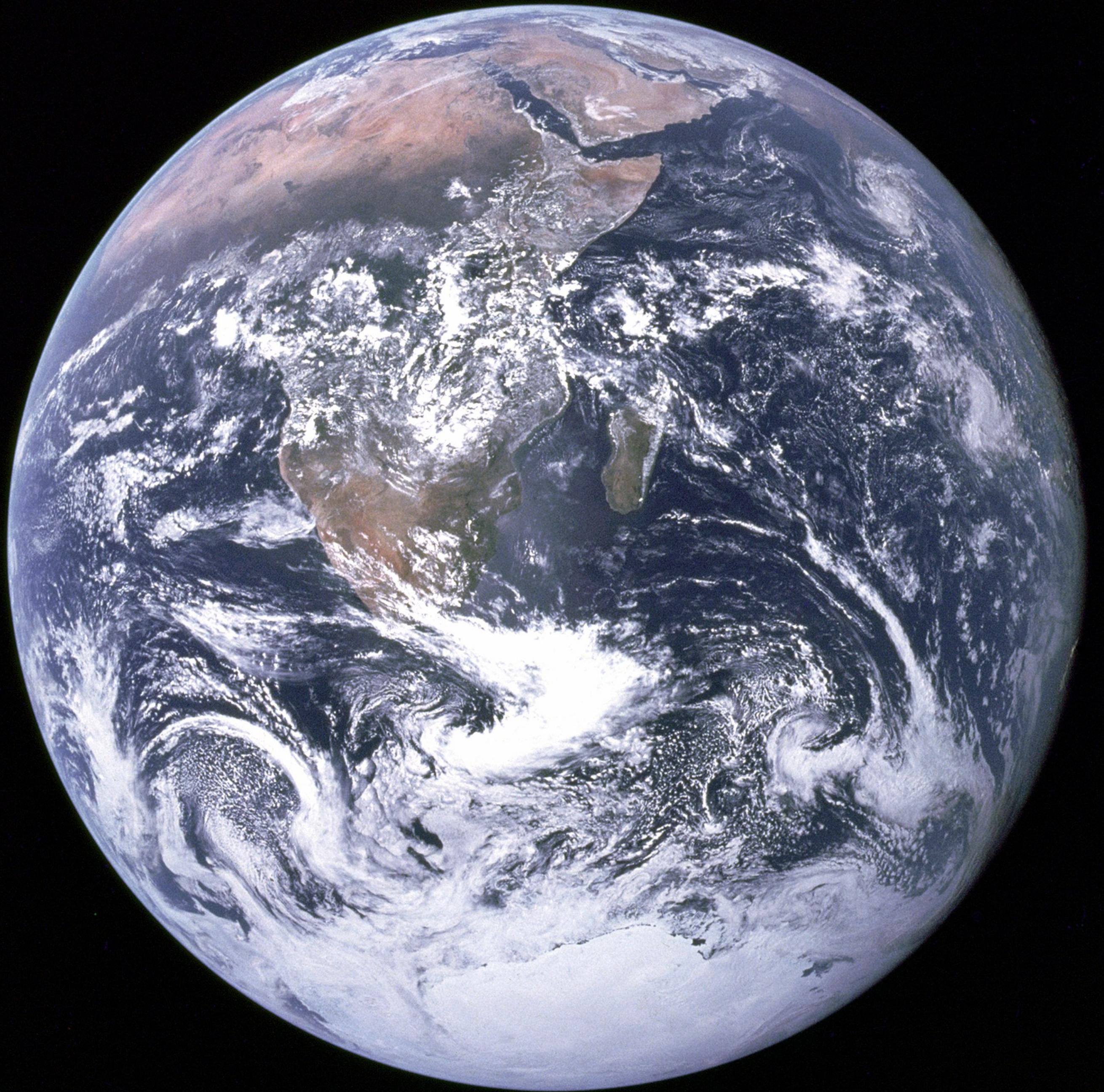


Sustainable Technology

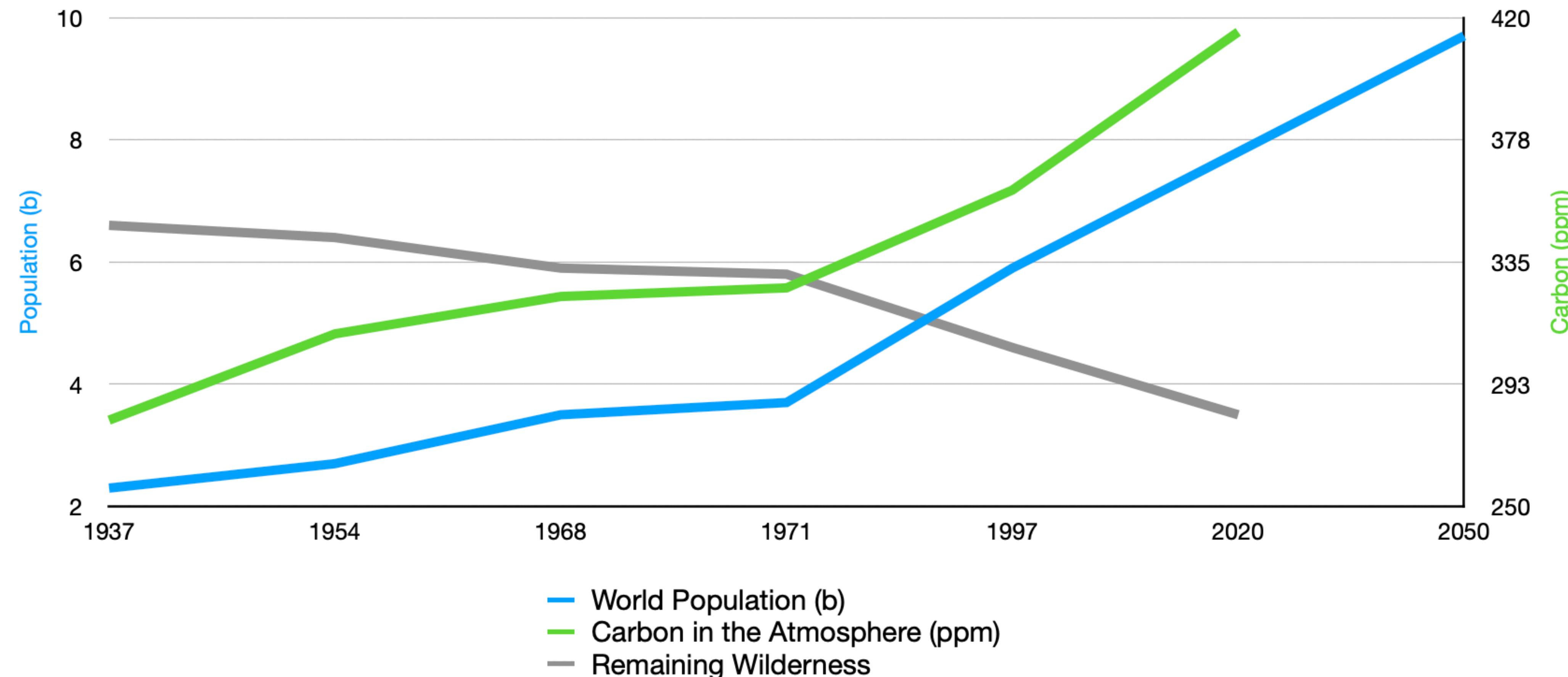
Ben Logan - 2021



Quiz!

- go to menti.com & input the code
- World Population Today?
- World Population in 2050?
- Remaining Wilderness (%)?





“We have a finite environment - the planet.
Anyone who thinks that you can have
infinite growth in a finite environment is
either a madman or an economist”

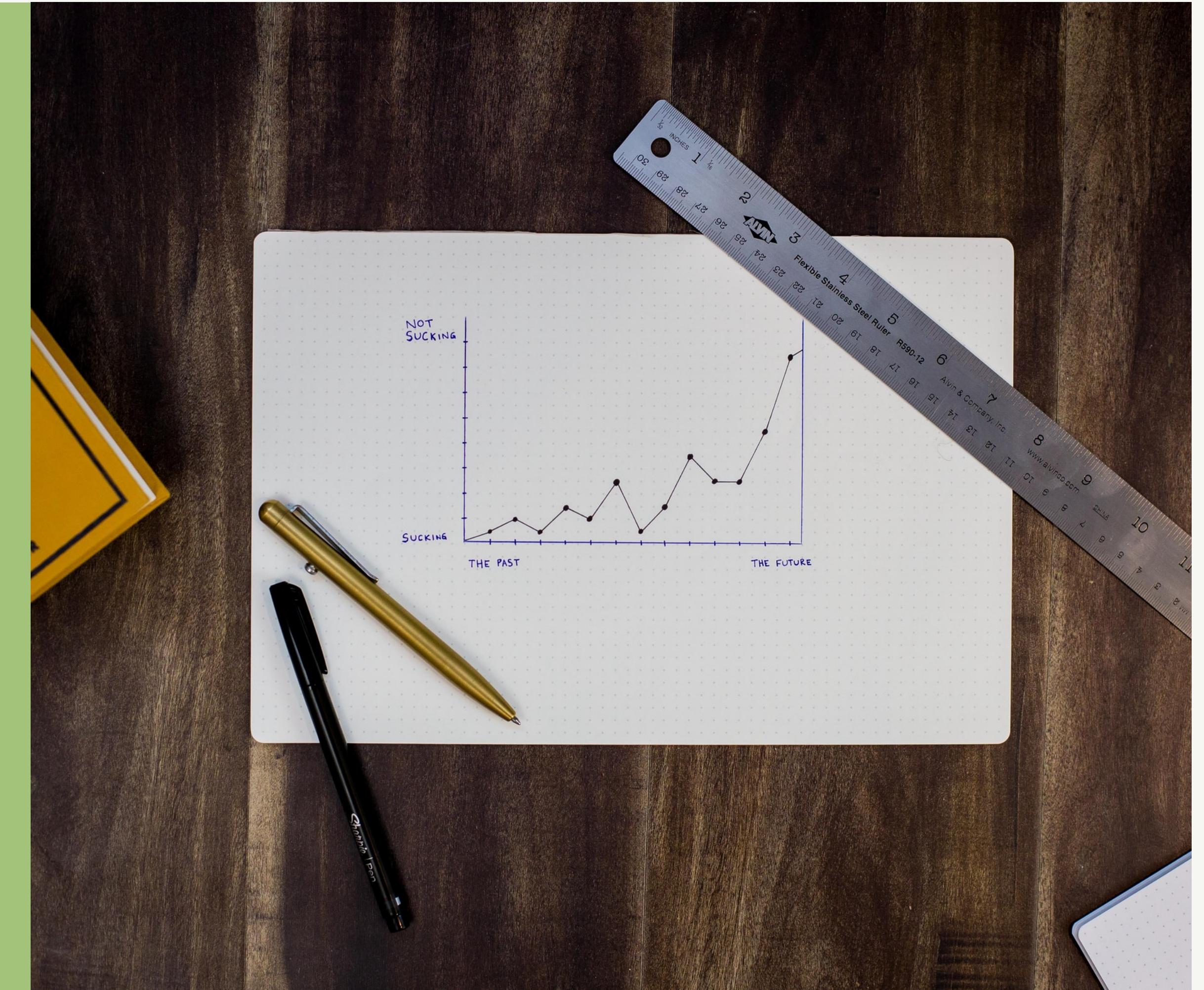
David Attenborough

Global Warming

- We are producing more carbon dioxide (and other greenhouse gasses)
- These gasses create a blanket around the earth
- This traps heat, preventing the sun's rays from radiating back into space
- This results in the temperature of the earth rising
- This warming triggers the melting of the ice caps
- Rising sea-levels and various adverse weather effects
- The planet is less hospitable for plants, animals and, of course, humans

Data Quality

- Non-trivial. Surprisingly difficult!
- Don't take it too literally
- Should allow relative comparison
- A sense of the scale of the problem...





Impact Analysis

At Home?

- Most people are doing the right things
- Awareness is high
- 9.8T of CO2 pp, per year (average UK citizen)
- Try a Carbon Survey...



CO2 Survey

- Carbon footprint before promises is **5.5 tons CO2/ year**
- Your climate promises:
 - Switch to environmentally friendly electricity (-0.7 tons)
 - Replace your car with a green vehicle (-0.6 tons)
 - Walk or bike more (-0.1 tons)
 - Eat less beef and lamb (-0.5 tons)
 - Eat more vegetarian food (-0.2 tons)
 - Fight food waste (-0.2 tons)
 - Avoid products containing palm oil (-0.1 tons)
 - Go on a plastic diet (-0.1 tons)
 - Shop less (-0.3 tons)
 - Prioritize wooden and bamboo products (-0.1 tons)
- Climate footprint after promises is **2.6 tons CO2/ year**





Offsetting

- A typical tree can absorb ~21 kg of CO₂ per year
- A lifetime of 100 years; 1 tree might absorb ~1 ton of CO₂
- We are creating roughly 40 billion tons of CO₂ each year
- We'd need to plant *at least* that many trees, every year!



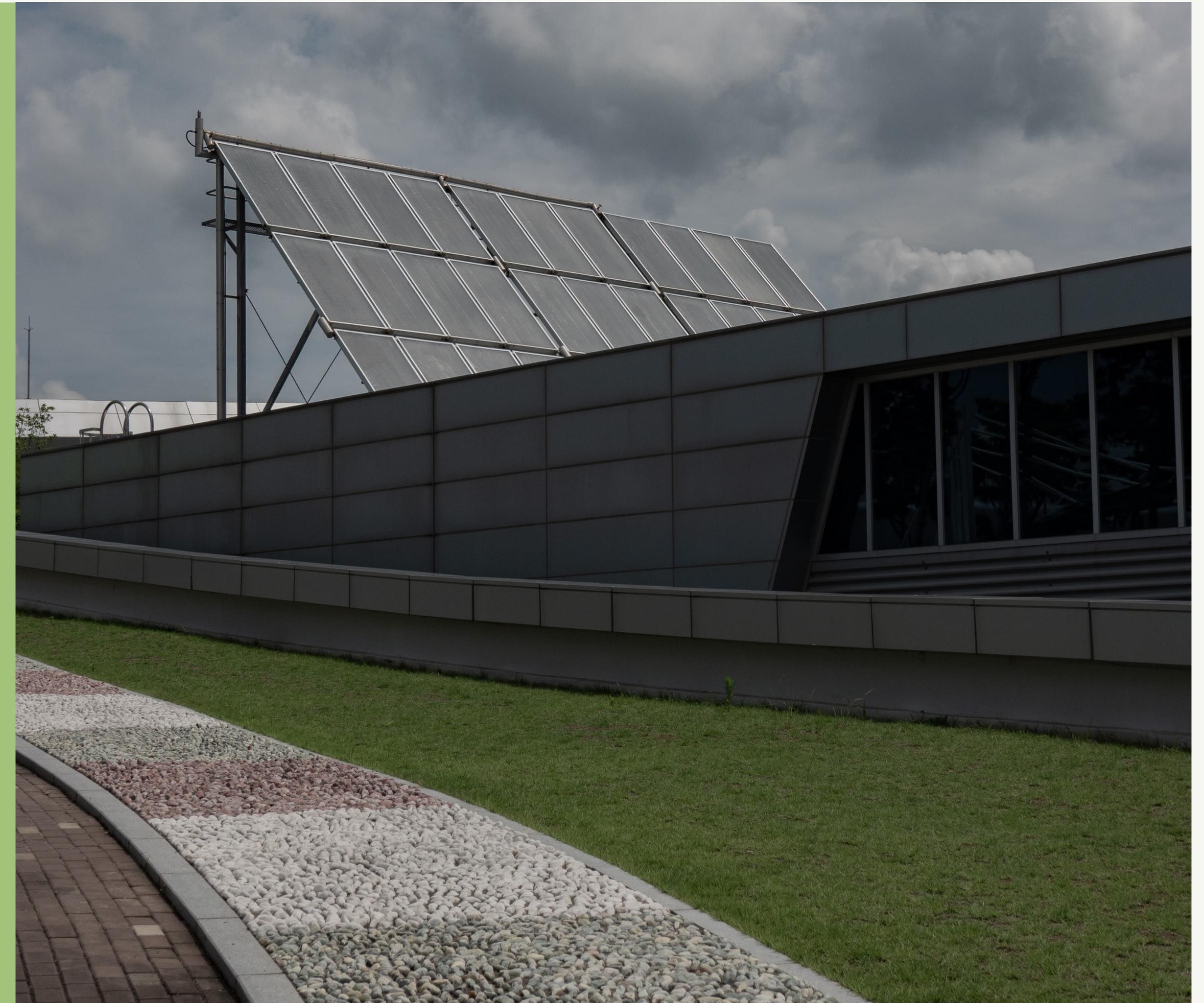
Offsetting

- 700 mile round trip to the Lake District
- Audi CO2 emissions ~319 g/km
- $1126\text{km} * 319 = 359194\text{g}$
- 0.36 imperial tons! Wow!



At Work?

- Awareness is low
- UBS footprint - 148 kilotons CO2 / year
- Fortune 500 Banks - average 736kt
- The Office vs The Company



Re-thinking Your Footprint

- Personal Footprint ~10 t/year
- Company Footprint ~150000 t/year
- 73000 employees **+ 2 t/year, for every employee**
- Focus on your *whole* footprint!



UBS Climate Strategy

What is UBS doing?

- How do we compare? Very well!
- No landfill waste
- 100% renewable power (2020)
- Business Travel - offsetting (2007)
- Print/Paper Reduction
- Sustainable Offices (e.g. London)

5 Broadgate

- By employing a **carbon tracking model** from the outset the designers ensured that **sustainability featured in a quantitative manner** throughout the design process, influencing decisions on layout, structure, facades and foundations.
- The designers have shown how a seemingly conventional solution can be **modified in several respects** so as to achieve a true optimum and thus to embody the **principles of sustainable construction**.

Judge's comments, The Institution of Structural Engineers Structural Awards 2016

ISO 14001

- ISO 14001 is the international standard for Environmental Management Systems
- In May 1999, UBS was the **first bank** to obtain full certification
- “For UBS it is self-evident that we should take as much care of natural resources as we do with the assets our clients entrust to us. A precondition for this is a forward-looking assessment of the ecological and social impact of our actions.”
- “We observe international environmental standards in all that we do – not only with respect to our own conduct but also in terms of our financing transactions.”

Sustainable Development Goals

- UBS is an inaugural member of the UN Alliance; committed to scaling up and accelerating efforts to align business with the UN Sustainable Development Goals
- UBS will focus on delivering concrete long-term finance and investment solutions, including through its USD 5 billion commitment to SDG-related impact investing



Our Business

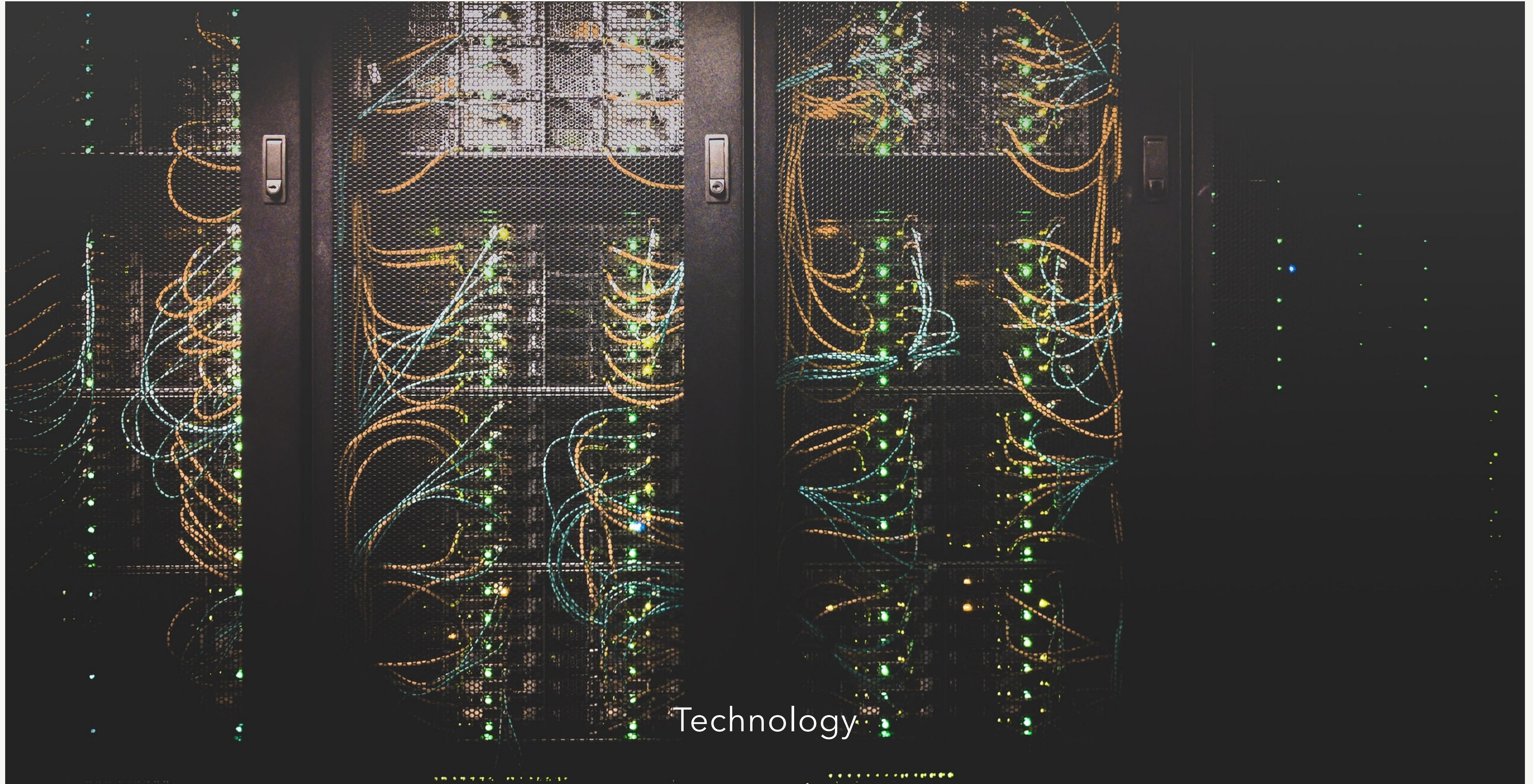
- The World's largest Wealth Manager
- UBS held \$488 billion in sustainably invested assets at the end of 2019
- 1st WM to make 100% sustainable portfolios our preferred choice



Net Zero

- **2025** - target **net zero** emissions (1&2)
- Identifying & investing in credible carbon removal projects
- Cut **energy consumption** by 15%, by 2025





Technology

Re-thinking Your Footprint

- Focussing on your *whole* footprint...
- What about CDIO (formerly Group Technology)?
- What about *your* application?
- Or those that you use to do your job?
- What's the footprint of the tech you use at UBS?

Impact of Technology

- Data Centres - **bad** for the environment!
- Energy Consumption, a LOT of energy...
 - Electricity - powering the machines
 - Not just *your* machines; networks, security & other infra
 - Don't forget cooling! & other building overhead...
 - Whatever you *think* you are consuming - double it (or more)!

Tech Impact

- Email
- Search
- Video Conferencing?
- *they all depend on the Data Centre...*



3%

Data Centres

- The world's data centres use more than Britain's total electricity consumption
- 416 terawatt hours vs the UK's 300 terawatt hours
- Data Centres have the same carbon footprint as the aviation industry
- 3.2 percent of the total worldwide carbon emissions by 2025
- Consuming no less than a fifth of global electricity
- By 2040, >14% of the world's emissions - the same proportion as the US today

UBS DC's

- We have 16 DC's, globally distributed
- Power hungry & expensive
- Further consolidation planned
- Business Critical!





UK

- We have 2 DC's in the UK
- Hayes (Heathrow)
- Ironwood (Slough)
- Office vs DC



Your App

- Average desktop PC - 175 kg CO₂/year
- Average Server?
- > power & > uptime = over 0.5 t/year
- 1/5th of my personal footprint!



Your App

- Average small app in UBS? ~20 Servers
- Low estimate - 10 tonnes CO₂ / year!
- Equivalent to 2 people
- NOT inc. supporting infra or cooling



Calculator

- Plug in your i-SAC ID
- Estimate total annual CO₂ emissions
- Aimed at boosting awareness
- Tips on how to reduce your emissions





The Future

What can we do?

- Microsoft & Azure - leading the way...
- By 2030 Microsoft will be carbon negative
- By 2050 Microsoft will remove from the environment all the carbon the company has emitted either directly or by electrical consumption since it was founded in 1975
- Funded in part by expanding their **internal carbon fee**, in place since 2012 and increased last year, to start charging not only their direct emissions, but those from our supply and value chains

Cloud

- Accelerate move to Azure
- Financial *and* Carbon costs come down
- e.g. not running CDD overnight
- An Azure reward or UBS carbon fee?



Architecture

- Do you really need 5 9's of availability?
- Do you really need to be *that* quick?
- Do you really need all those locations?
- Do you really need 4 non-prod envs?



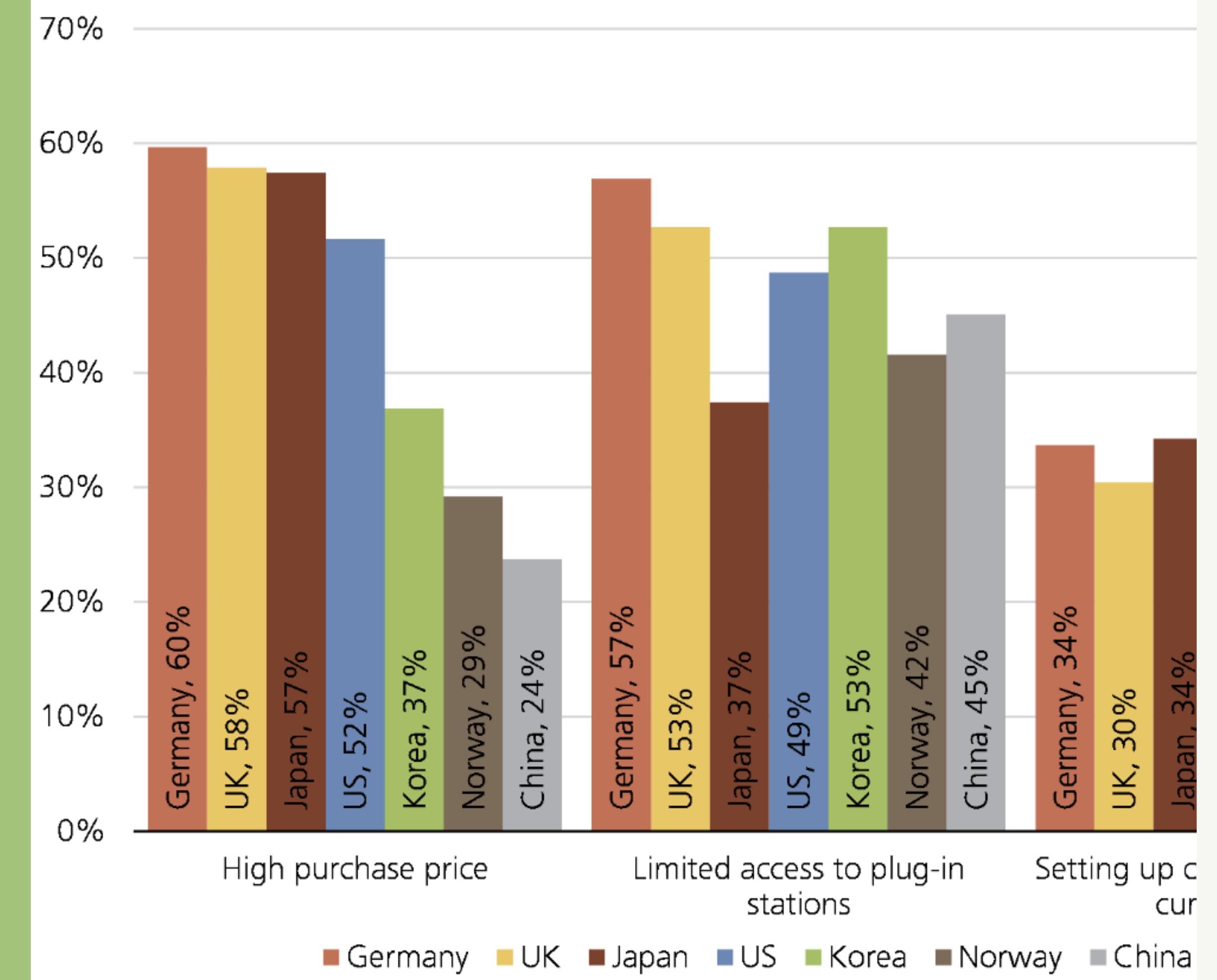
Evidence Lab

- Test Environment Consolidation
- Out of Hours Shutdown
- Streamlining Interfaces
- Accelerating Cloud Adoption



EL & ESG

- What are the main barriers to Electric Vehicle adoption?
- Evidence Lab conducts a global survey of over 11,300 each year to find out
- “High purchase price” - most common reason in Germany, Japan, the UK & US



Calculator

- Calculating *your* footprint on Azure?
- Microsoft Sustainability Calculator
- Power BI-based App
- Coming soon to UBS!





Sustainability Calculator

Customer: Contoso

Months

Multiple selectio...

Region

All

Azure service type

All

Calculations in this tool are estimates, and values may not sum due to rounding. For more information, see the FAQs. [\(I\)](#)

Select the efficiency of your on-premises infrastructure:

Low

Azure emissions and savings (MTCO2e)

478

MTCO2e from on-premises alternative

— 380

MTCO2e saved from Microsoft efficiencies

— 72

MTCO2e saved from Microsoft renewable energy purchases

26**MTCO2e emissions from Azure**

MTCO2e: metric tons carbon dioxide-equivalent

**↓ 95%**

Reduction in MTCO2e

**↓ 452**

MTCO2e saved

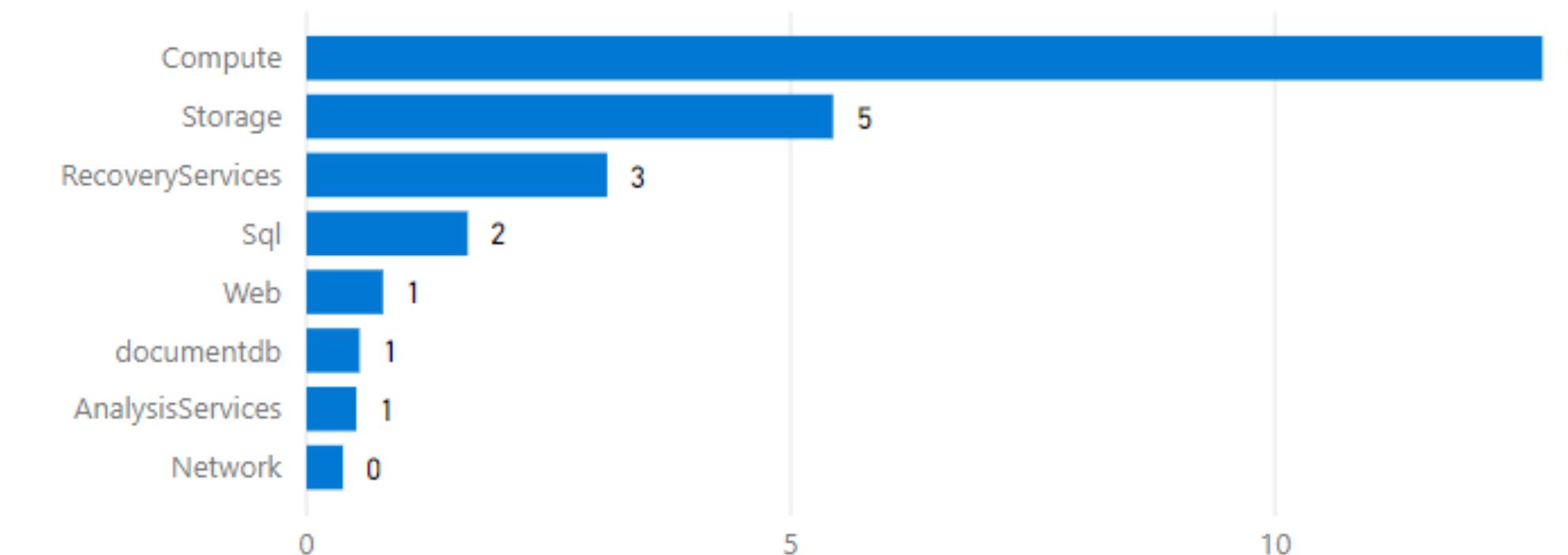
**↓ 1M**

Equivalent reduction in vehicle miles travelled

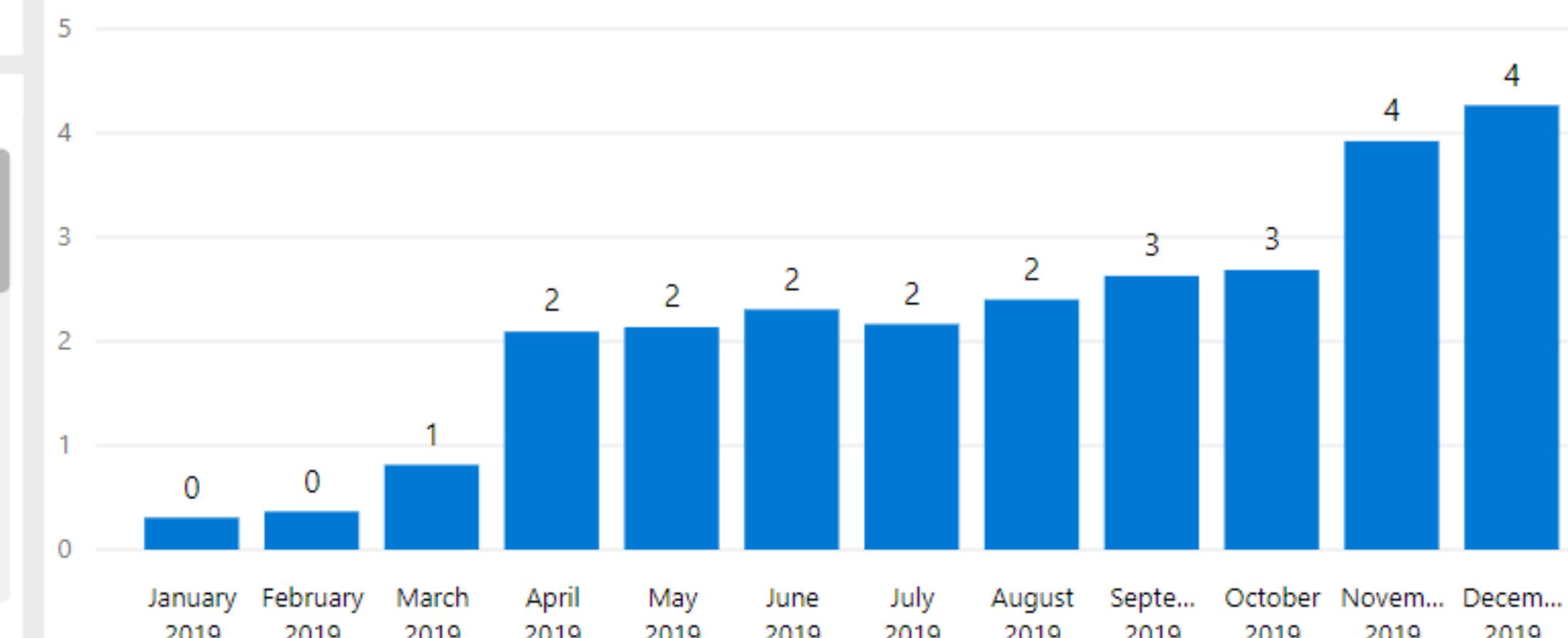
Azure emissions by region



Emissions by Azure service (MTCO2e)



Azure emissions over time (MTCO2e)



SusT Guild

- Vision & Mission?
- Passionate People from across CDIO
- A framework for Impact Assessment
- Monthly Meet-ups & OKR Tracking



App Dev

- Building more efficient systems
- Writing more efficient code
- Awareness & Training
- Standards & Tools

```
51   var b = w.scrollLeft();           //x coordinate of window?
52   var o = t.offsetTop();            //y coordinate of window?
53   var x = o.left;
54   var y = o.top;
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Ideas?

- Please submit *your* ideas
- Help review existing ideas
- Run it past us first, if you like!





Conclusion

Conclusion

- We must act, now!
- UBS is providing real leadership
- *but we can always do more*
- **Don't underestimate the impact of technology!**
- Think twice about that post-covid business trip
- Think twice about that next server

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Next Steps?

- Calculate *your* footprint
- Assess your app(s)
- Start a conversation. Set a target?
- Get involved - we need help



Tech Conf

- Dedicated Sustainability Track!
- Wednesday 6th October
- Microsoft Chief Environmental Officer!
- The Footprint Firm, Bulb, EL & more...



Useful Links

goto/sust

goto/environment & goto/green

<https://ClimateHero.me>

www.woodlandtrust.org.uk



Q & A

