

Sustainable Technology

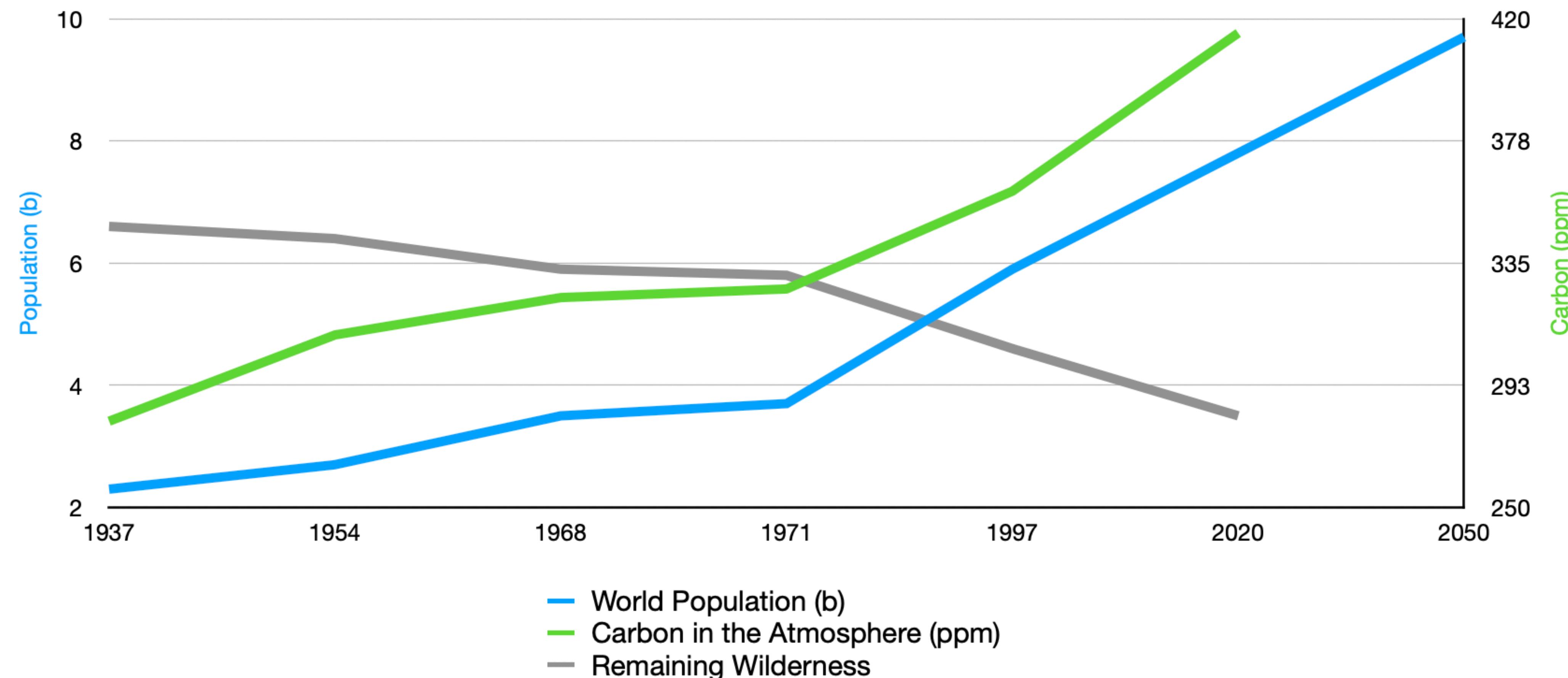


Ben Logan - 2021



- 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?

- Awareness is high
- Most people are doing the right things
- 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**
- My climate promises:
 - Switch to renewable 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)
 - Fight food waste (-0.2 tons)
 - Go on a plastic diet (-0.1 tons)
 - Shop less (-0.3 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
- Fortune 500 Banks - average 736kt
- UBS footprint - 148 kilotons CO2 / year
- The Office vs The Company



Re-thinking Your Footprint

- Home + Work
- Personal Footprint ~10 t/year
- Company Footprint ~150000 t/year
- 73000 employees **+ 2 t/year**

Focus on your *whole* footprint!



UBS Climate Strategy

What is UBS doing?

- No landfill waste
- 100% renewable power (2020)
- Business Travel - offsetting (2007)
- Print/Paper Reduction
- Global Visionaries
- Sustainable Offices

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

- International Standard for Environmental Management Systems
- 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”

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

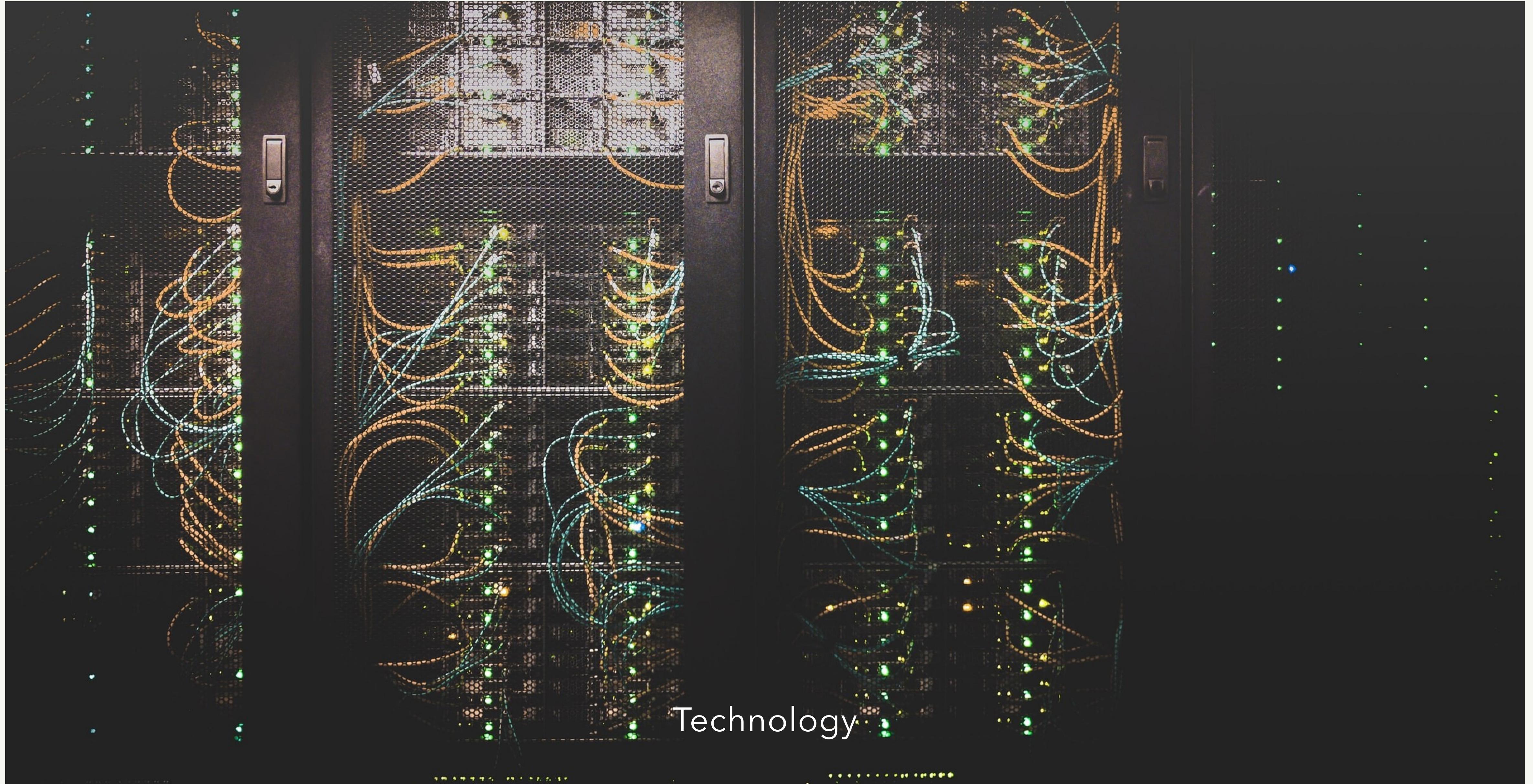
- The World's largest Wealth Manager
- \$488 billion in sustainably invested assets (2019)
- 100% sustainable portfolios our preferred choice



Net Zero

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





Technology

UBS Tech Footprint

- What about CDIO?
- What about your division?
- What about your application?
- Or those you use to do your job?

Impact of Technology

- Data Centres - **bad** for the environment!
- HIGH Energy Consumption
 - Electricity - powering your machines
 - + networks, security & other infra
 - + cooling & other building overhead
- Whatever you *think* you are consuming - double it!

Tech Impact

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



3%

Data Centres

- The world's data centres > UK's total electricity consumption
- 416 terawatt hours vs UK's 300
- DC's 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
- 2040 >14% of the world's emissions - equivalent to the US today

UBS DC's

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

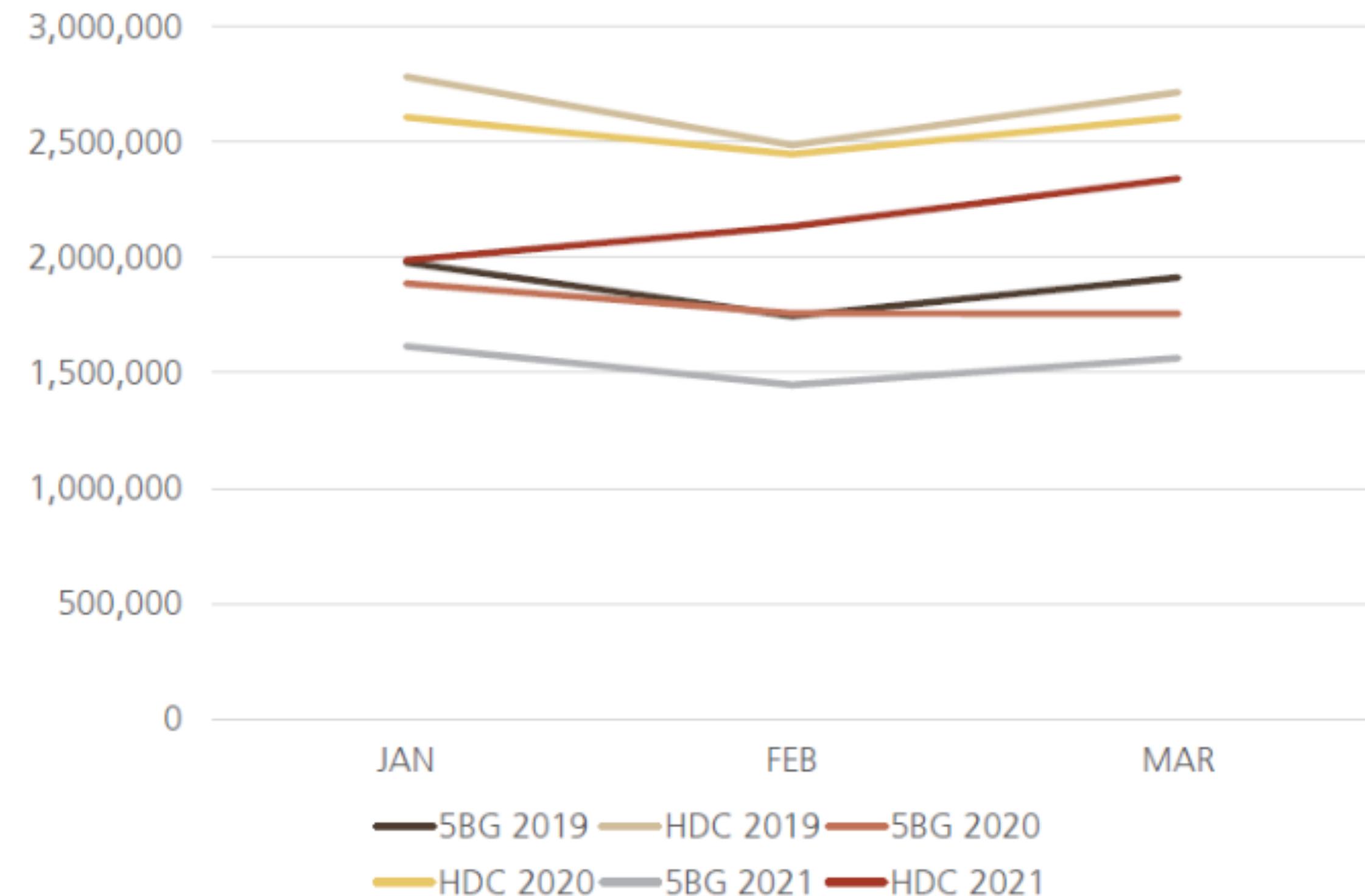




Office vs DC

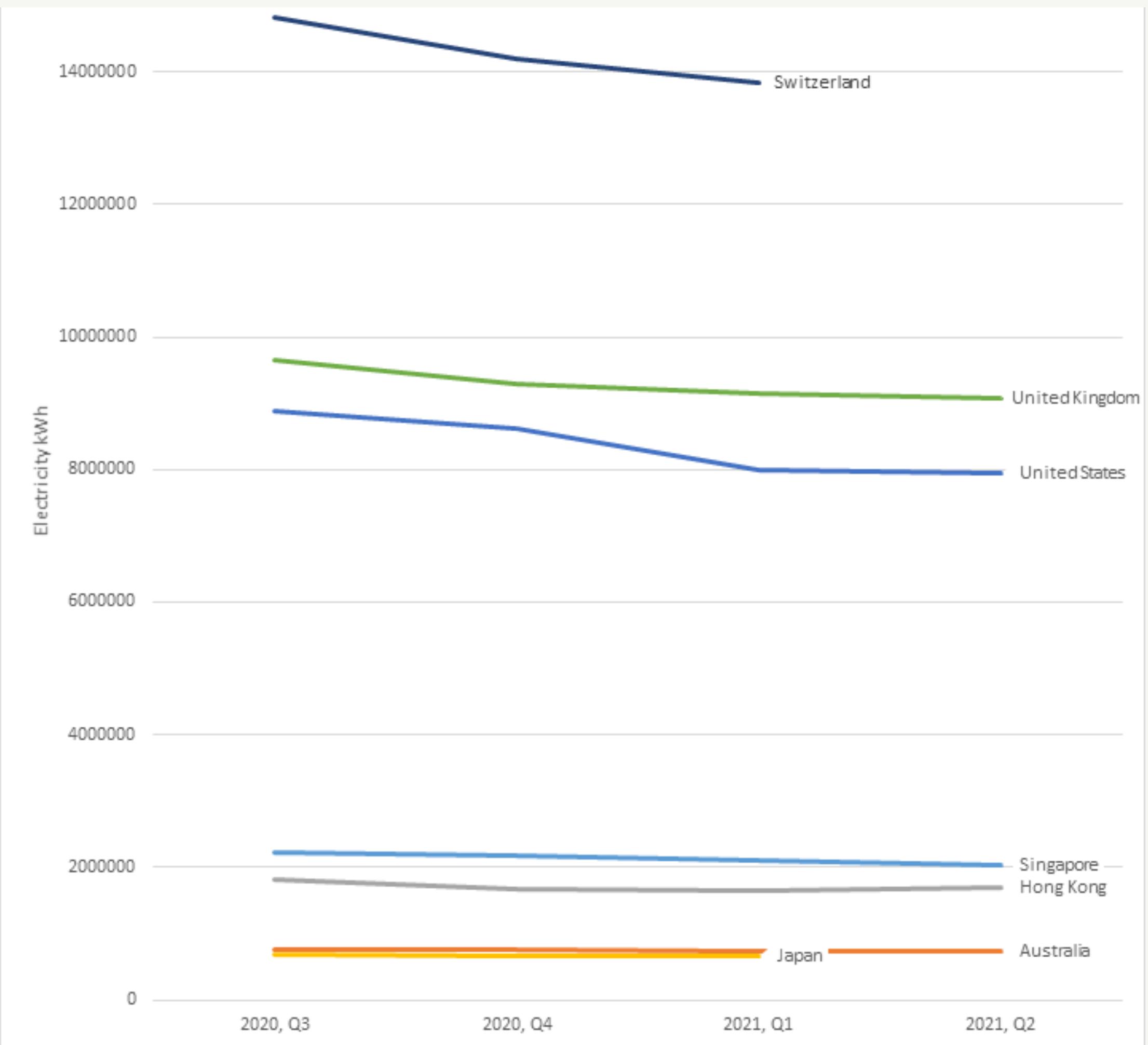
- 5BG > 1m sq/ft!
- We have 2 DC's in the UK
- Hayes (Heathrow)
- Ironwood (Slough)

UK Energy Performance - Buildings



Global

- 13 Big DC's
- Switzerland in a league of its own!
- UK & US on par
- Rest of the World - much less impact



35%

Your Server

- Average PC - 175 kg CO₂/year
- Average Server? 428W
- US 417g CO₂ / kWh
- > power & > uptime = **over 1.5 t/year**



Your App

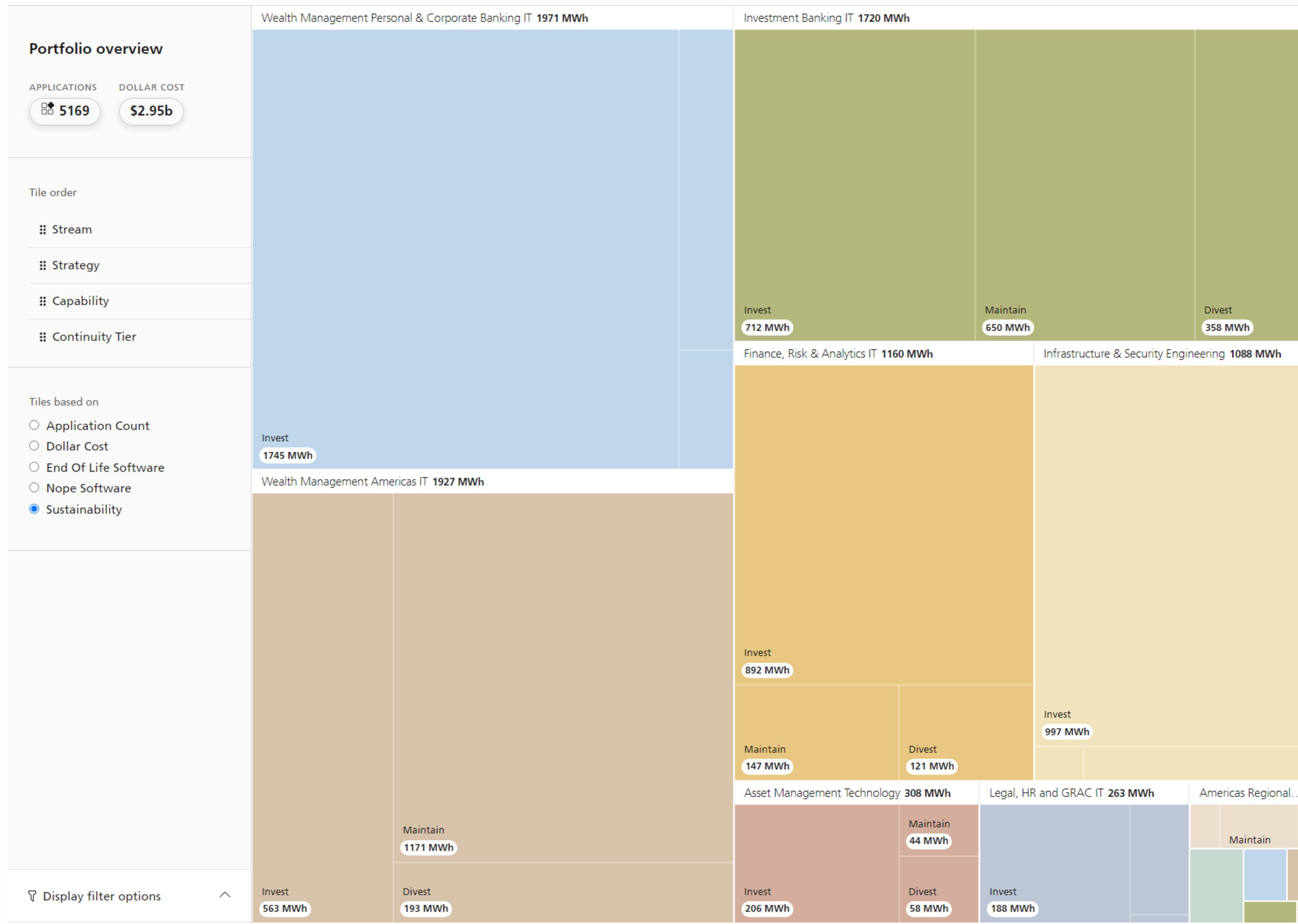
- A small app in UBS? ~34 Servers
- Low estimate - 51 tonnes CO₂ / year!
- Equivalent to 5 people
- NOT inc. supporting infra or cooling



Calculator

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







Research 59 MWh Data Analytics 40 MWh

Portfolio overview
- Legal, HR and GRAC IT
- Invest

APPLICATIONS DOLLAR COST
79 \$59m

Tiles based on
 Application Count
 Dollar Cost
 End Of Life Software
 Nope Software
 Sustainability

Display filter options

Legal, HR and GRAC IT / Invest / Research

APPLICATIONS DOLLAR COST
26 \$14m

Sort by consumption

Filter

Category	Consumption
Human Resources	12 MWh
Information and Document Management	10 MWh
Risk Management	10 MWh
Regulatory Interface	10 MWh
Client Relationship Management	10 MWh
IBD Advisory	10 MWh

RESEARCH WIRE
WIRE consists of a suite of applications for analysis and forecasting... **14 MWh**

CONTENT DISTRIBUTION ENGINE
The Content Distribution Engine is a multi-region application for the... **9 MWh**

RESEARCH AEM
The implementation of Adobe Experience Manager within the... **8 MWh**

EVIDENCE LAB 1TRUTH
1TRUTH is an application to digitize and streamline the business... **7 MWh**

EVIDENCE LAB DISTRIBUTION
Client-facing platform for Evidence Lab. Used to distributed Evidenc... **6 MWh**

RESEARCH API
Research API consists of a suite of applications, which provides web... **5 MWh**

Data360
Lavastorm is a self-service data preparation and analytics tool used b... **4 MWh**

VERINT EFM
Verint Enterprise Feedback Management System for use by Evidence... **2 MWh**

EVIDENCE LAB ESRI
ESRI is a COTS geographic information system (GIS) providing analyst... **1 MWh**

EVIDENCE LAB JIRA
A dedicated JIRA instance for managing workflows and creation of... **1 MWh**

WIREWEB
WIREWEB is an information only website that supports the Research... **961 KWh**

Windows PowerShell



APPLICATION

RESEARCH WIRE

 Share
This resource ▾

Overview

Hardware

Software

People

Incidents

Network

Hardware

Type
AllEnvironment
AllDeployment
All

Filter by server

PROD (31)

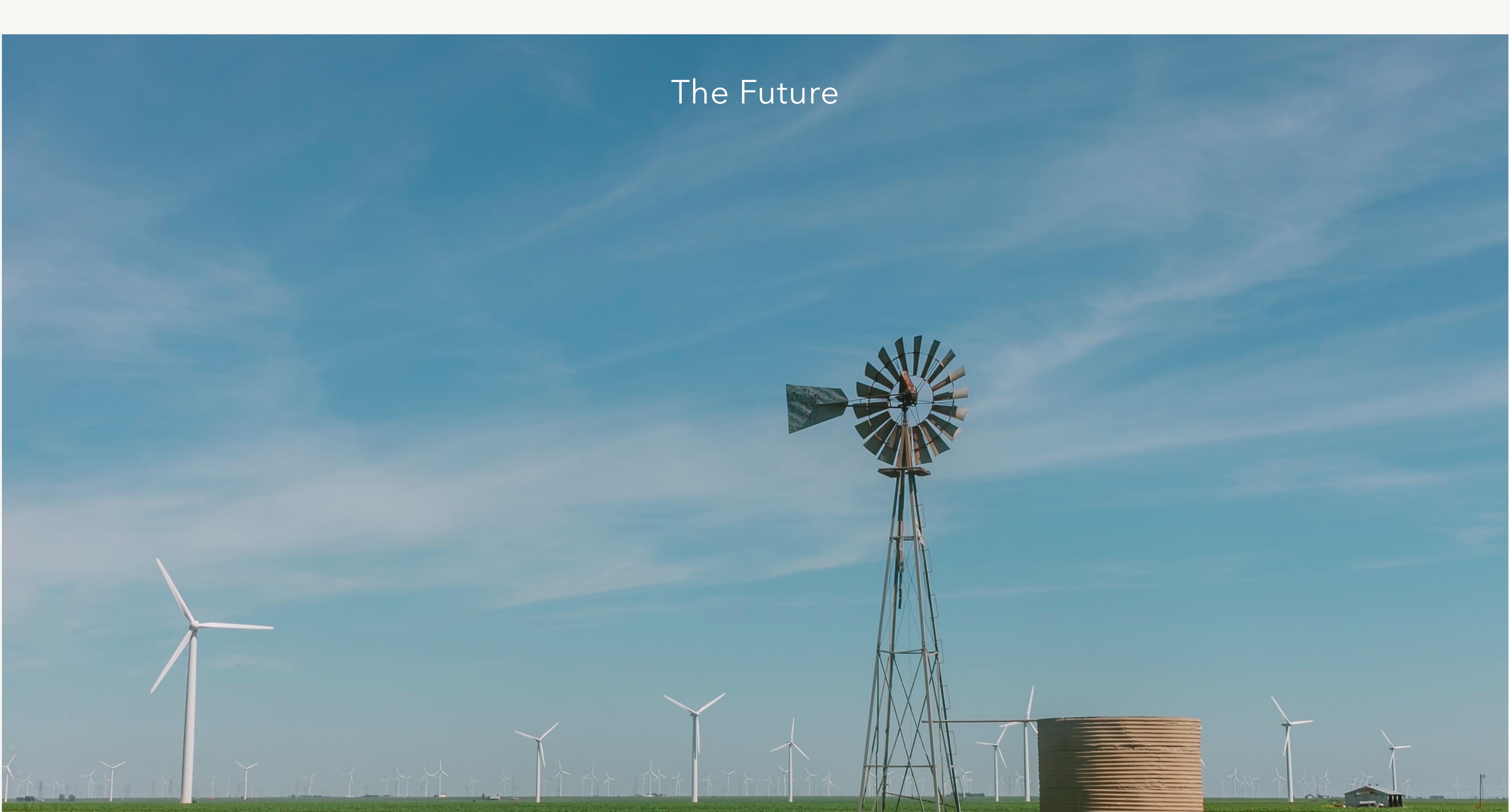
RESEARCH WIRE PROD (AT3037)

a302-4899-3641 Server 800W	a301-6949-9200 Server	a301-9738-7678 Server	xsyd4000vbsy Server	a302-7930-4062 Server
a301-7942-5938 Server	a301-5562-2895 Server	a301-7786-8340 Server	a301-5561-0173 Server	a301-5561-0902 Server
a301-6123-6336 Server	a302-8132-7882 Server	a301-5135-6596 Server	a302-7844-9380 Server	a301-7941-3714 Server
a301-8837-9582 Server	a301-6399-0502 Server	a301-6140-3898 Server	a301-8718-1829 Server	a301-6938-3291 Server

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RESEARCH WIRE BCP (AT3036)

a301-8738-8591 Server	a301-8802-1766 Server	a301-7787-8650 Server	a301-6951-0906 Server
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The Future

Microsoft & Azure

- 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
- 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?



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

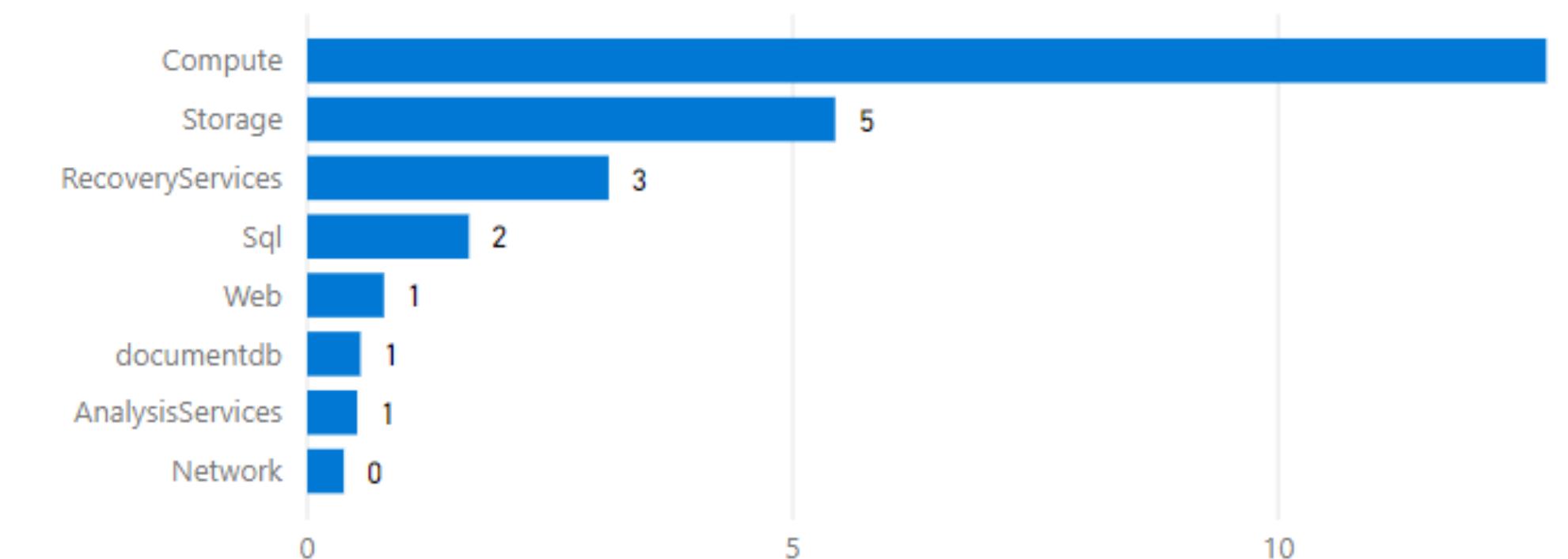
**↓ 1M**

Equivalent reduction in vehicle miles travelled

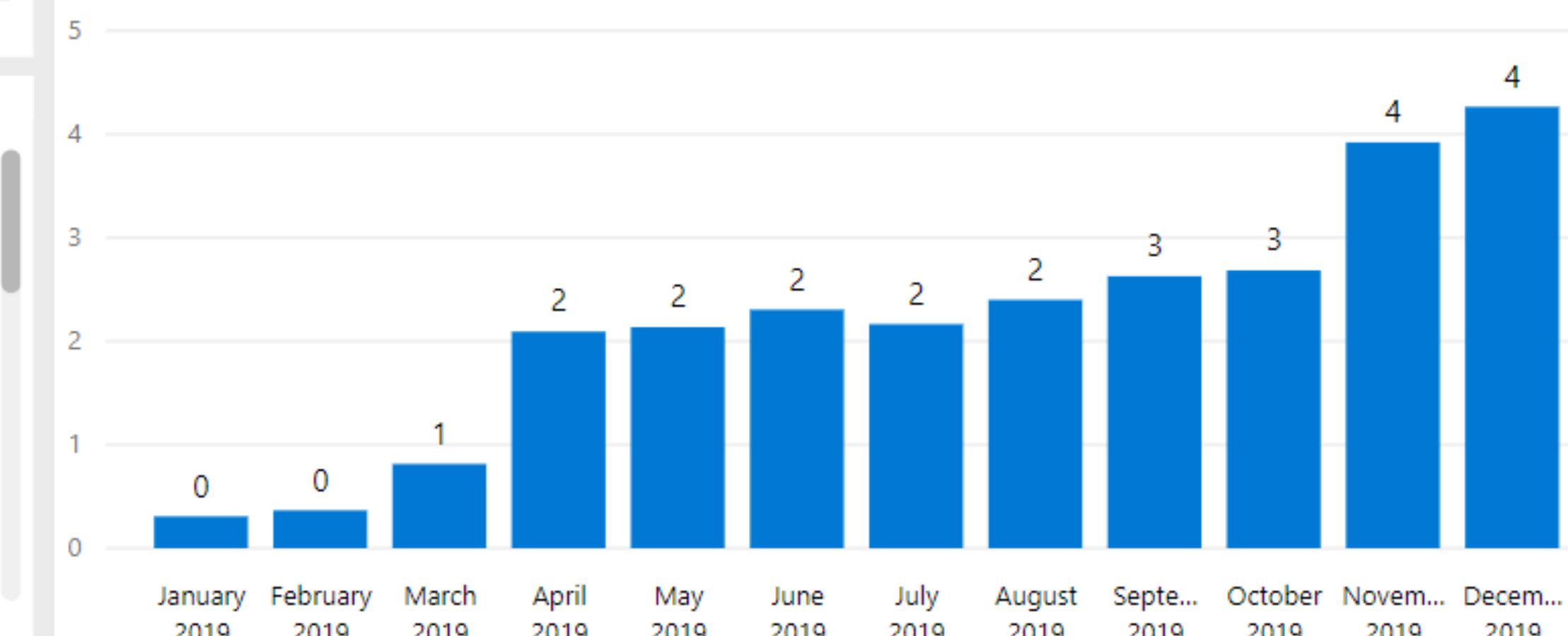
Azure emissions by region

© 2020 Microsoft Corporation [Terms](#)

Emissions by Azure service (MTCO2e)



Azure emissions over time (MTCO2e)



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?



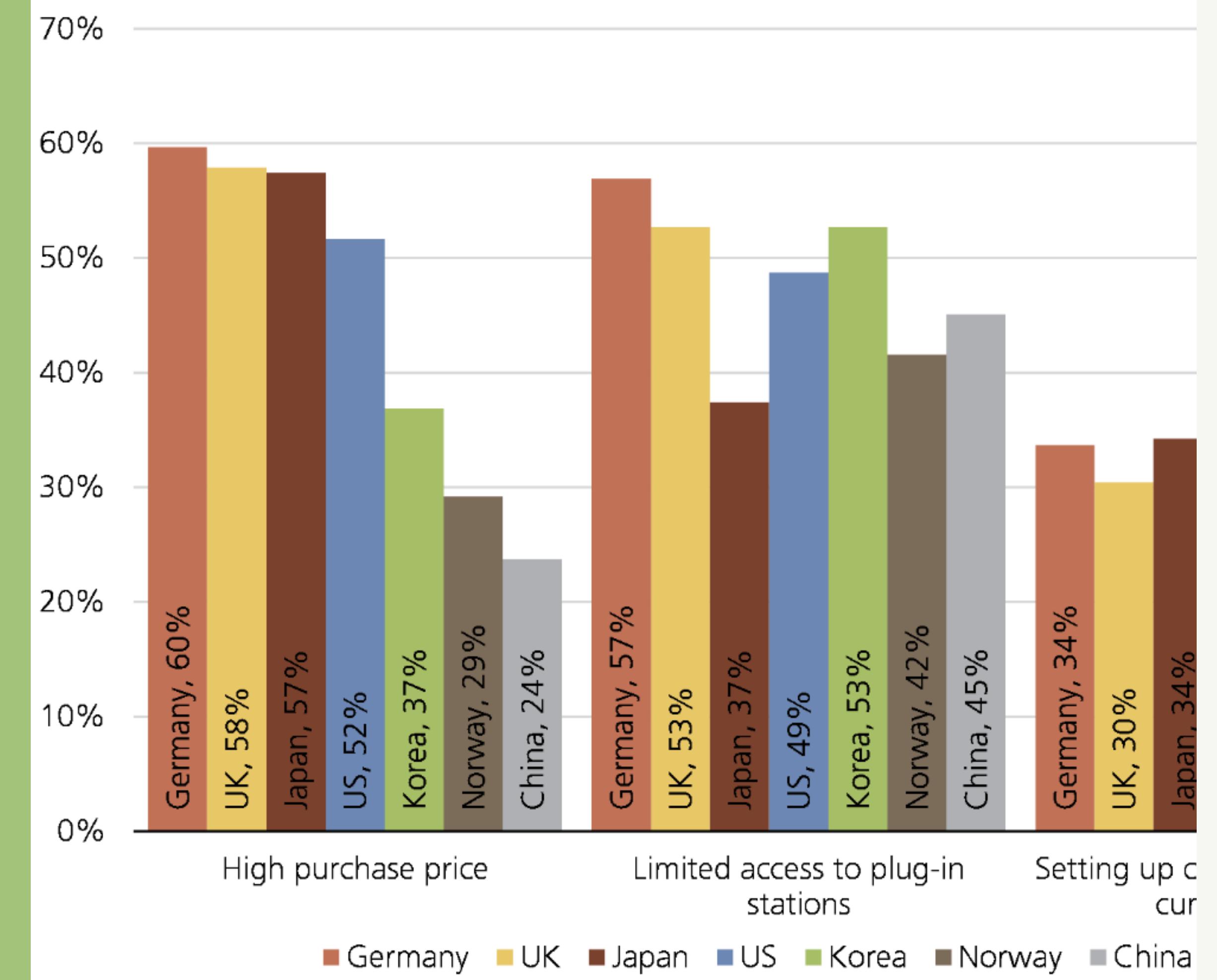
Evidence Lab

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



EL & ESG

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



SusT Guild

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



4 Tracks

- On-Prem
- Cloud
- Projects & People
- App Dev...



App Dev

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

```
61   var b = w.offset(); //get scroll position of window?
62   var o = t.offsetTop();
63   var x = o.left;
64   var y = o.top;
65
66   var ax = settings.accX;
67   var ay = settings.accY;
68   var th = t.height();
69   var wh = w.height();
70   var tw = t.width();
71   var ww = w.width();
72
73   if (y + th + ay >= b &&
74       y <= b + wh + ay &&
75       x + tw + ax >= a &&
76       x <= a + ww + ax) {
77
78     //trigger the custom event
79     if (!t.appeared) t.trigger('appear', settings.data);
80
81   } else {
82
83     //it scrolled out of view
84     t.appeared = false;
85   }
86
87   //create a modified fn with some additional logic
88   var modifiedFn = function() {
89
90     //mark the element as visible
91     t.appeared = true;
92
93     //is this supposed to happen only once?
94     if (settings.one) {
```

Ideas?

- Please submit *your* ideas
- ideas.ubs.com 'Sustainability at UBS'
- Help review existing ideas
- and join the Guild!





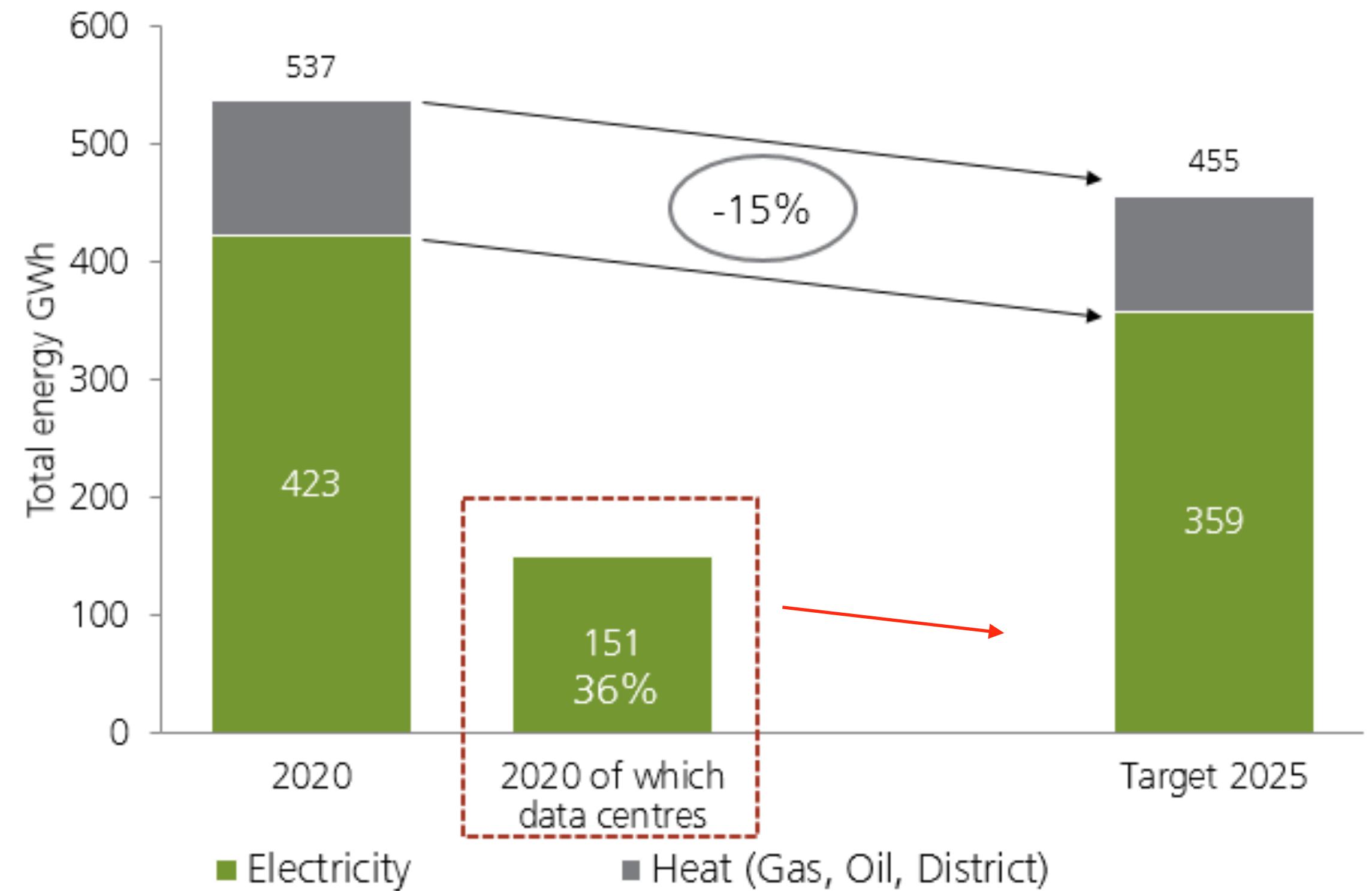
Conclusion

Carbon in Context



Targets

- Net Zero Commitment
- 15% reduction in energy consumption
- DC's account for 36% of UBS electricity
- We'd like to reduce that...



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!

17

Next Steps?

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



Useful Links

goto/sust

goto/green

<https://ClimateHero.me>

www.woodlandtrust.org.uk



Q & A

