Microsofts Reise zur Nachhaltigkeit

Lernreise: Die Fabrik der Zukunft

15. Dezember 2021

Alexander Britz

Microsoft

Our journey started more than a decade ago

2009
First carbon emission reduction goal

2012
100% carbon neutral + carbon tax

2013
First renewable energy PPA

Smart Building solution deployed

2016
Set first renewable energy target of 60% by 2020

Zero-waste campus certification

2017
Launched AI for Earth

Announced net zero-potable water campus

2018
Launched supplier carbon engagement in China

2019
Set water replenishment target

$15 carbon tax

Migrating to the Microsoft cloud reduced our carbon footprint

Microsoft moved over 2000 applications from **on-premises to the cloud**

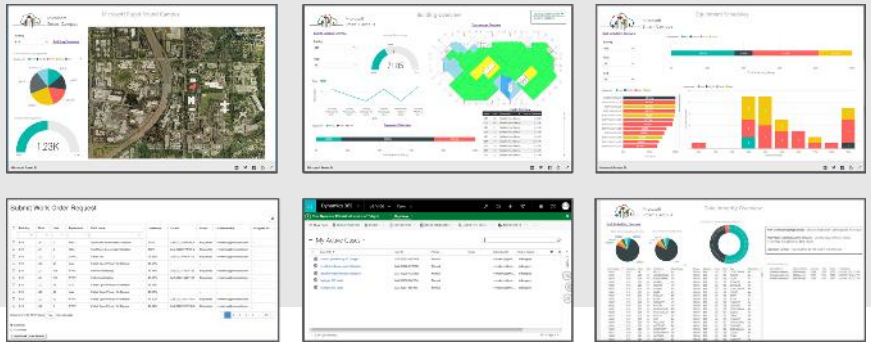
Moving on-premises datacenter operations to the Microsoft cloud **can reduce your carbon footprint up to**

98% *

*Carbon footprint reductions will vary depending on your specific server usage, renewable energy purchases you make, and other factors. For details please refer to **The carbon benefits of cloud computing** published by Microsoft in 2018.

Application of Artificial Intelligence to reduce energy consumption

Microsoft's Smart Campus



2 million
data points configured

500,000
collected every 5 minutes

125 Buildings

3
Decades of construction

4
Generations of controllers

7
BAS & BMS solutions

50 million
transactions added daily to event database

2 billion
transactions added to historian each month

Communicated through an array of different
Protocols, Hardware, & Interfaces

Transforming raw data into
Actionable Information

Assimilating info from
30,000
pieces of equipment

Analyzed and compiled through
Advanced Analytics Dashboards

25,000
faults surfaced per day

50%
of faults corrected within
15 minutes

Energy savings of
20-25% per year
with implementation payback in less than 18 months

Improves technician efficiency with
32,300 work orders
per quarter

More than 50,000 buildings work with ICONICS

Microsoft 587 Bldgs

Heathrow Terminal 5

Defense Info System Agency

Malpensa Airport

Hong Kong Inter. Airport

US Pentagon

Ascendas 33 High Rises

LGA – Terminal 3 Delta

ExxonMobil Houston 23 Bldgs

JTC Singapore 32 Bldgs

Xian Xianyang Airport

Cadillac Fairview 21 High Rises

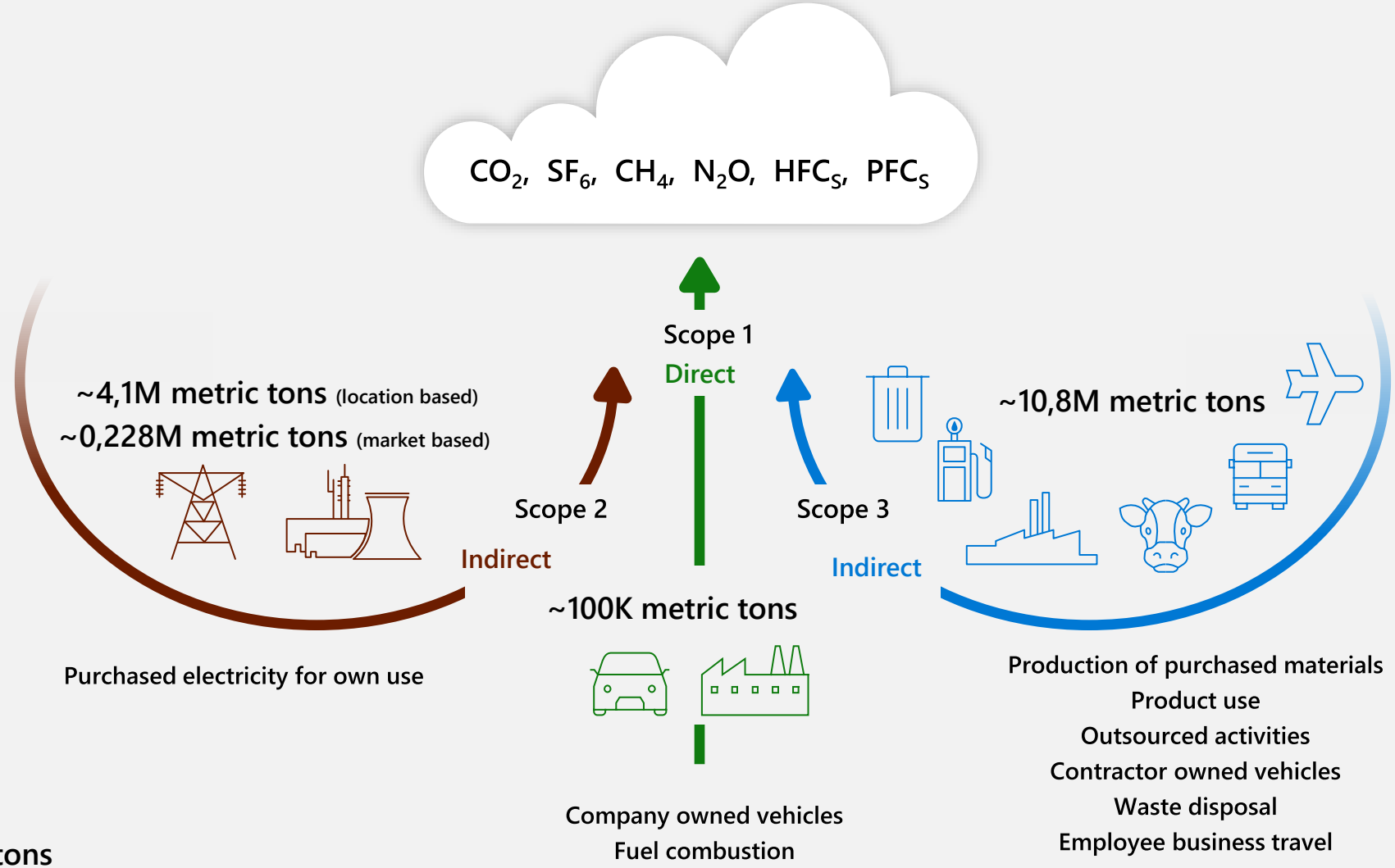
Schiphol Airport

US Telecom 900+ Bldgs

Aerospace 60+ Bldgs

Retail Stores 1830 Bldgs

Microsoft's carbon emissions



∑ 11,1M metric tons

Our 2020 sustainability commitments

Carbon

- **Carbon negative** by 2030
- Remove our historical emissions by 2050

Water

- **Water positive** by 2030

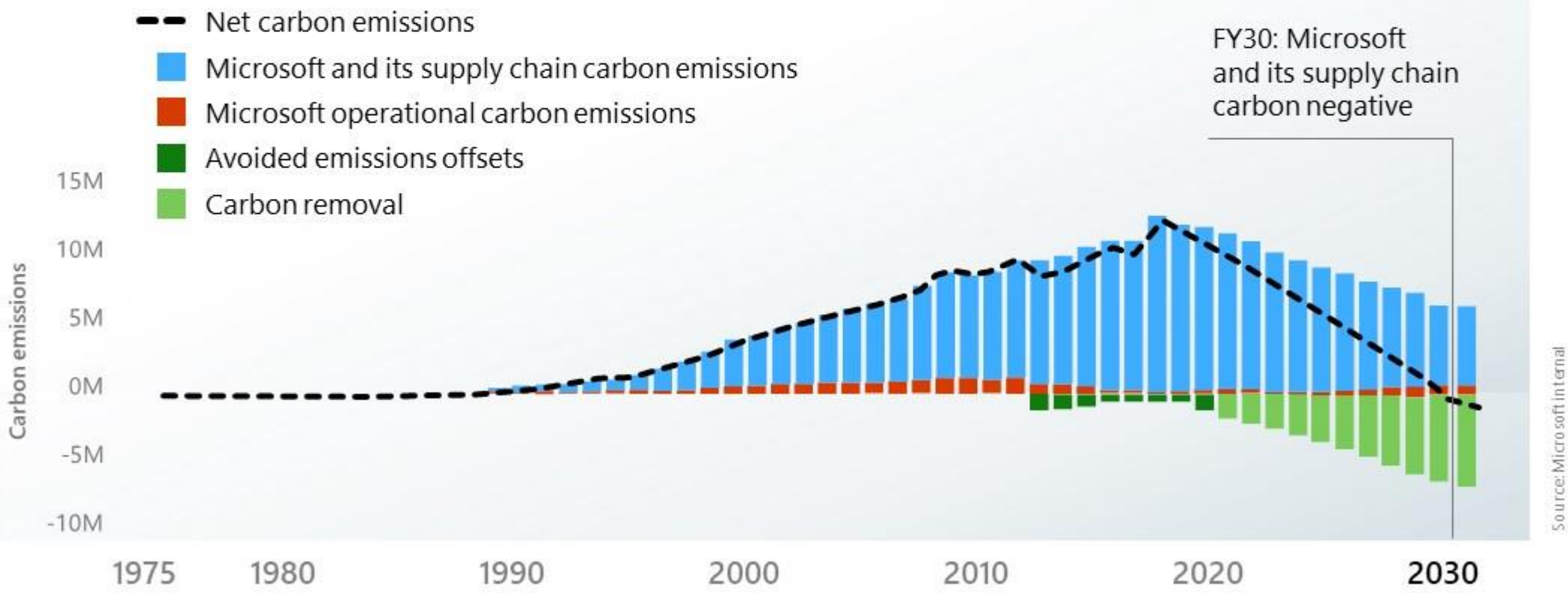
Waste

- Achieve **zero waste** by 2030 for Microsoft's direct operations, products and packaging

Ecosystems

- **Protect more land than we use** by 2025
- Build, deploy, and accelerate a **Planetary Computer** through AI for Earth program

Annual carbon emissions



Source: Microsoft internal

Microsoft

Microsoft's FY21 Carbon Removal Portfolio

Download data

Carbon negative | **Contracted projects** | Worldwide map | Project details

Category	Total Contracted	Contracted Volume	Contracted Durability (years)
Forestry	1,1 ...	Green Diamond 240.000	100
		Natural Capital Partners 209.800	35
		The Nature Conservancy 202.369	88
		SilviaTerra 200.000	* TBD
		Cumberland Forest, LP managed by TNC 153.000	100
		Climate Care Oxford 100.000	49
		Shell Energy North America 9.000	13
		Rabobank 500	10
Soil	193 Tsd.	Land O'Lakes 100.000	20
		Regen Network 93.338	25
Bioenergy	2 Tsd.	Charm Industrial 2.000	10.000
Biochar	2 Tsd.	Carbon Cycle 1.000	800
		Carbofex Oy 500	800
		ECHO2 400	600
Direct air capture	1 Tsd.	Climeworks 1.400	10.000

Volume axis: 1 | 100 | 10.000 | 1.000.000 — Log Scale

Durability axis: 1 | 10 | 100 | 1.000 | 10.000 — Log Scale

Total

1,3 Mio.

Learn more

Visit aka.ms/carbonremoval for more information

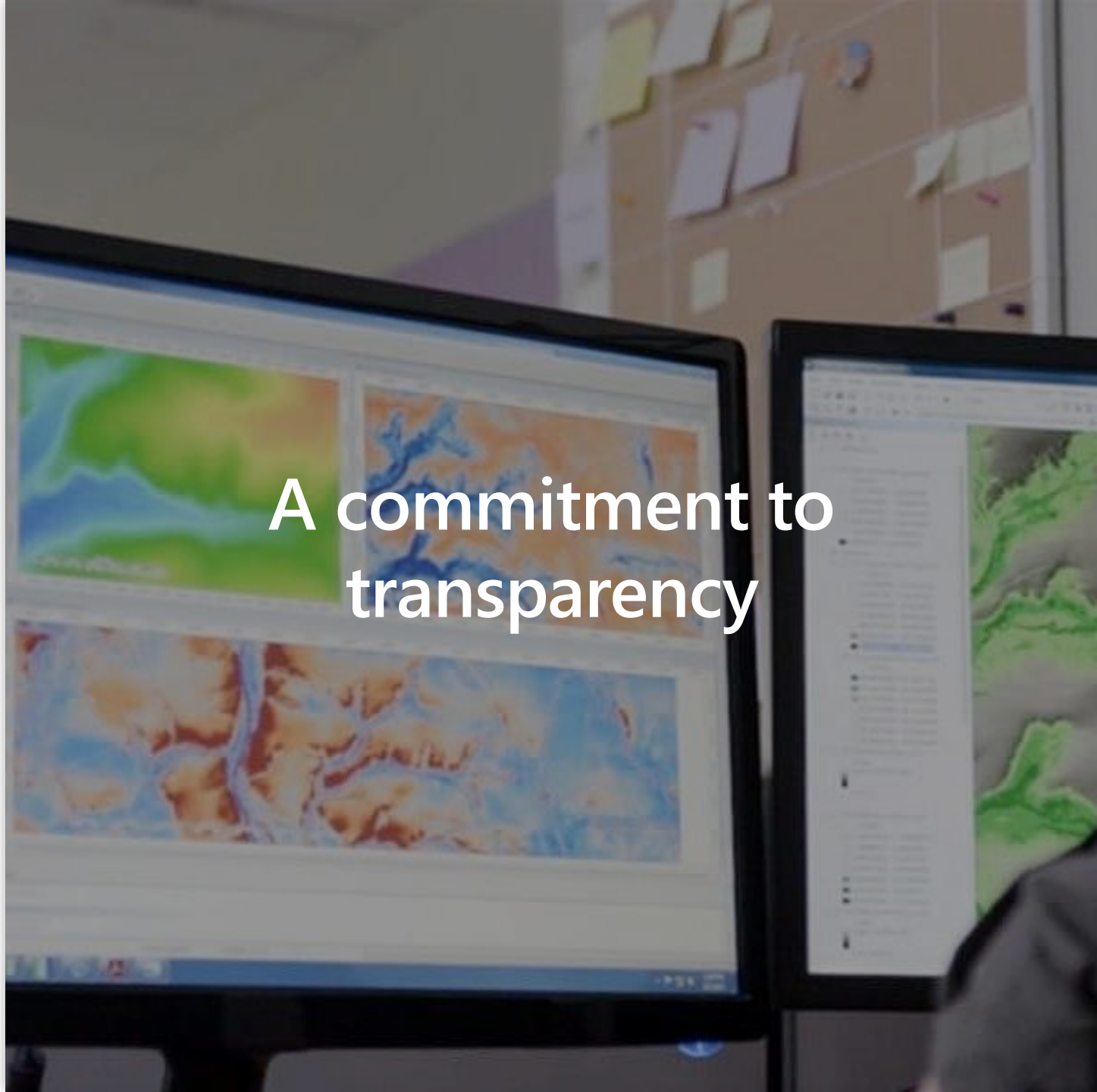
New transparency report, and a new public pledge

Disclose the carbon footprint of our services and solutions.

Support **strong industry-wide standards for transparency and reporting** on carbon emissions and removal, and we will apply these ourselves.

We have **signed the United Nations' 1.5-degree Business Ambition Pledge** and encourage other companies to join us.

We will publicly track our progress with a **new annual environmental sustainability report**.



Emissions Impact Dashboard

Dashboard | Emissions details | Emissions savings | GHG Preparation report | Usage report | Calculation methodology | Learn more | Legal information | Manage data

Contoso (Demo)

Microsoft carbon emissions from my company cloud usage

Reflects activity through Jan 2021

Subscription name
Alle

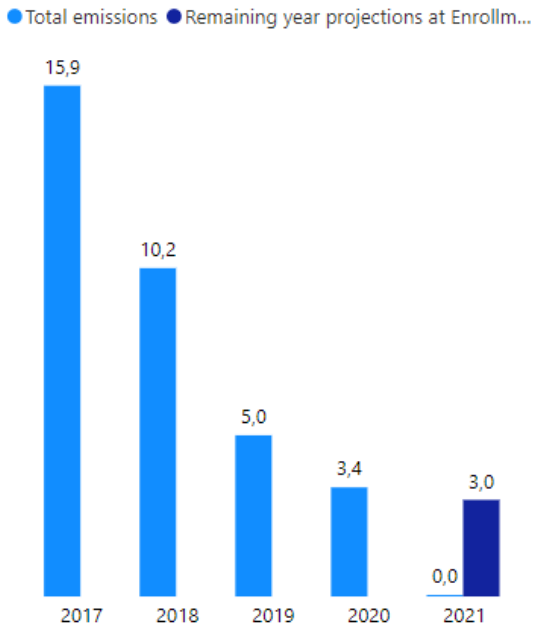
Azure service
Alle

Region
Alle

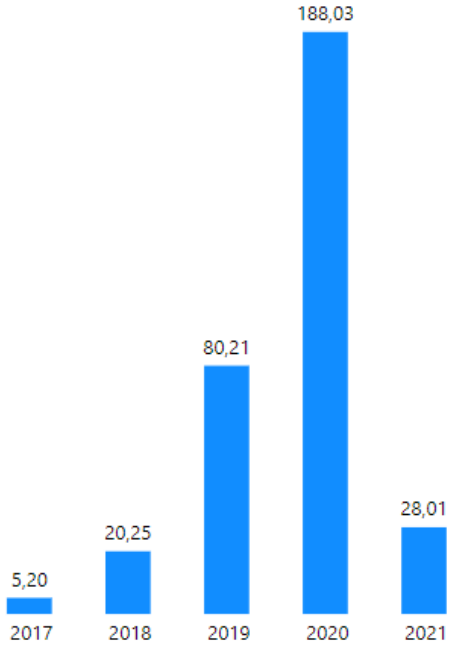
Year
Alle

Month
Alle

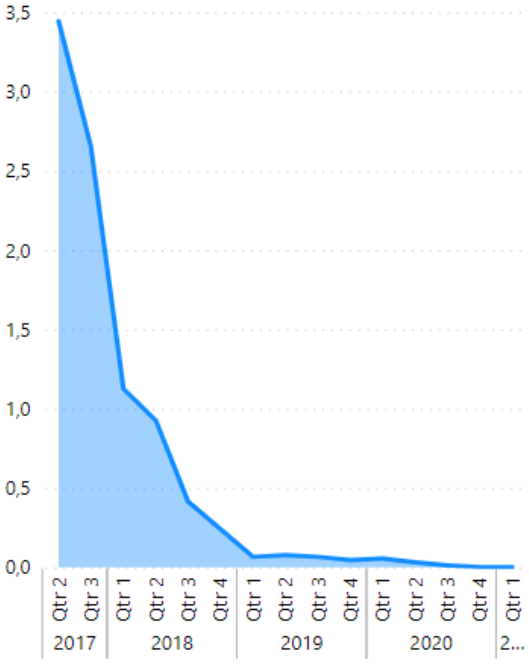
Microsoft carbon emissions from my company cloud usage : scope 1, 2 and 3 (MTCO2e)



My company Microsoft cloud usage



My company carbon intensity (MTCO2e/usage)



Carbon emissions (MTCO2e) for scopes 1, 2 and 3

34,48

Carbon emissions (MTCO2e) for scopes 1 and 2

22,50

Projected end-of-year carbon emissions (MTCO2e)

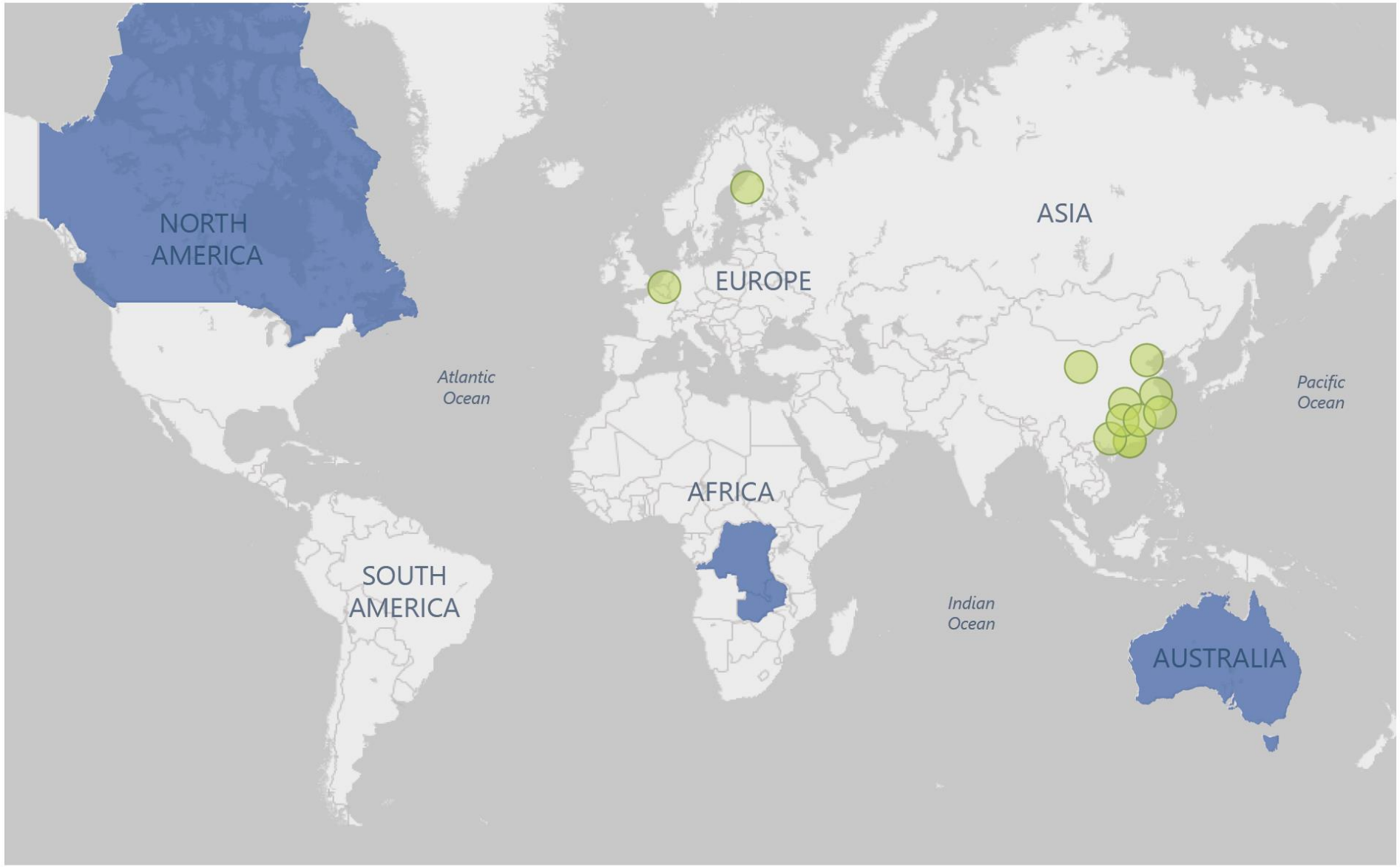
3,04

▼ 10% compared to previous year

Carbon intensity (MTCO2e/usage)

0,1071701

Cobalt due diligence and results



Cobalt countries of origin Cobalt smelter locations

Microsoft Devices

423 active factories

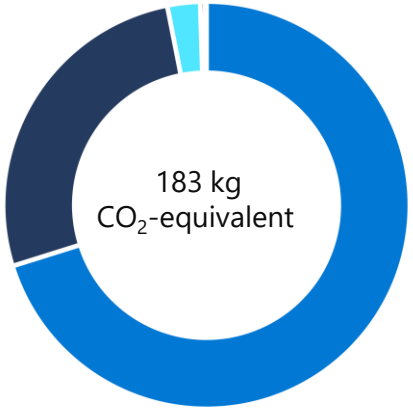
Materials used

Environmental impact

Surface Book 13

- Metal parts (34.9%)
- Battery (20.0%)
- Display (12.4%)
- Power supply unit (11.9%)
- Circuit boards (10.5%)
- Glass (4.7%)
- Plastics (4.2%)
- Cables and wires (0.6%)
- Other (0.8%)

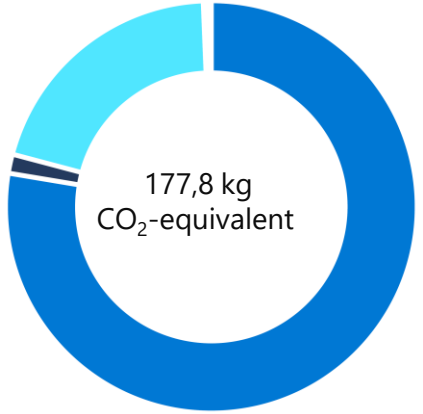
- Manufacturing (70.1%)
- Product use (26.7%)
- Transportation (2.6%)
- Packaging (0.4%)
- End of life (<1.0%)



Surface Laptop 13,5

- Metal (42.9%)
- Power supply (12.5%)
- Battery (11%)
- Display (14.7%)
- Circuit boards (6%)
- Glass (6.2%)
- Cables, cords, and wires (2.2%)
- Plastic (4.4%)

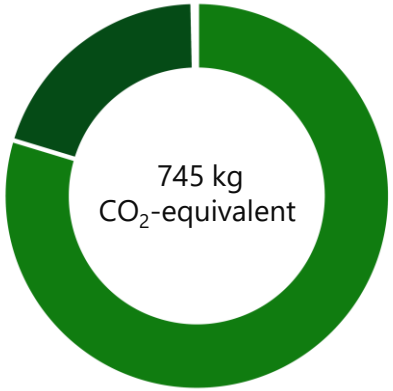
- Manufacturing (138 kg CO2eq)
- Transport (2.7 kg CO2eq)
- Product use (36 kg CO2eq)
- Disposal (0.6 kg CO2eq)
- Packaging waste (0.5 kg CO2eq)



XBOX One X

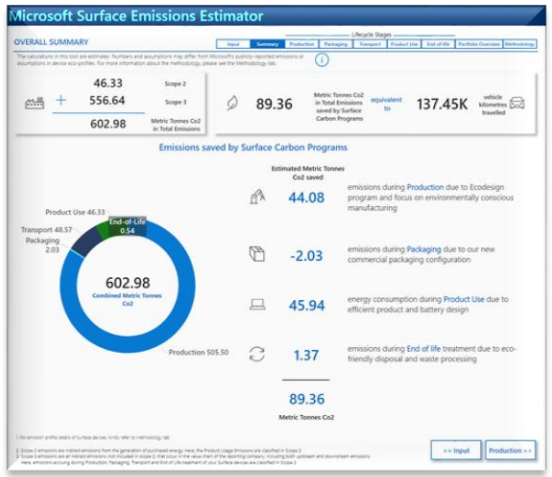
- Metals (37.9%)
- Plastics (21.8%)
- Optical disc drive (11.3%)
- Circuit boards (10.4%)
- Power supply (7.4%)
- Cables, wires (4.2%)
- Motors (3.0%)
- Hard disc drive (2.0%)
- Batteries (1.1%)
- Other (<1%)

- Product use (79.7%)
- Manufacturing (20%)
- Disposal (<1%)
- Transport (<1%)



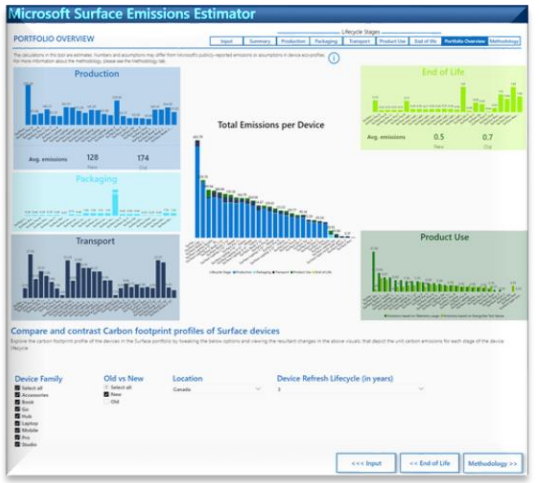
The Surface Emissions Estimator Helps You Understand the Footprint of Your Surface Device Purchases

View the overall summary of your estimated carbon footprint



Deep-dive into emissions in each stage of the device lifecycle

Understand the emission reductions from Surface's Ecodesign and sustainability programs



The Microsoft commitment: zero waste by 2030

Eliminate single-use plastics in packaging by 2025

Reuse and repurpose 90% Cloud hardware by 2025

100% Recyclable Surface devices & product packaging

Divert 90% operational waste

Divert 75% construction and demolition waste

Free cooling

Rainwater harvesting

Circular Centers

Renewable diesel for backup power

Campus Waste Report

Download Data

6%
Waste to Landfill
Data on August 2021

592 tons of total waste, which is roughly equivalent in weight to 349 mid-size cars
243 lbs of waste per person

Campus

Suchen

- [x] Puget Sound

Waste Category

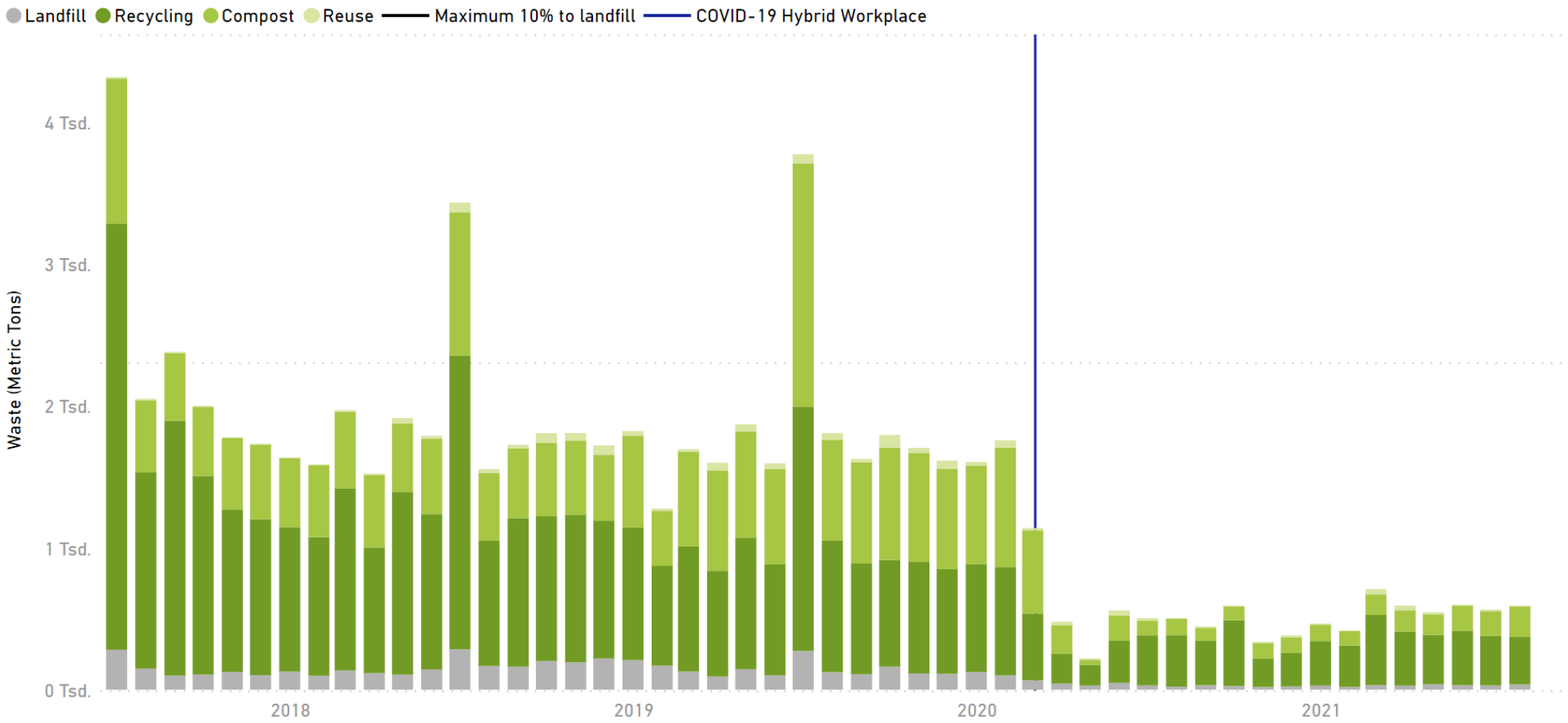
- [x] Landfill
- [x] Recycling
- [x] Compost
- [x] Reuse

Total Waste | Per Person Waste

View: Chart | Tabular

To achieve zero waste, we should send no more than 10% of our waste, averaged across the year, to landfill.
Learn more

Progress to Zero Waste Chart View



Microsoft Sustainability

Data Source RE&S

Contact us at: Sustainability Inquiries

Microsoft Responsible Sourcing: Non-conformance data

This dashboard provides fiscal year 2019 (FY19), 2020 (FY20) and 2021 (FY21) audit data for our Devices hardware and packaging suppliers. The Microsoft Devices Strategic Sourcing and Manufacturing, and Responsible Sourcing teams work with our suppliers to ensure that corrective action plans will remedy the audit findings, address the identified risks and root causes, and implement fixes in a timely manner. Follow-up audits are conducted to ensure that corrective actions are implemented and effective to close the findings. To ensure continuous improvement, suppliers must evolve their focus from reactive risk management to strong management systems and a preventive mindset. Further information on each requirement can be found in our SEA Supplier Manual. In FY19, we completed 211 full third party audits and 263 corrective action audits at 220 factories for the Devices hardware and packaging suppliers. There were 419 active Devices factories and we conducted risk assessments on all 415 of these factories, thereby conducting a prioritization assessment of 99% of our active factories. In FY20, we completed 240 full third party audits and 266 corrective action audits at 262 factories for the Devices hardware and packaging suppliers. There were 418 active Devices factories and we conducted risk assessments on all 417 of these factories, thereby conducting a prioritization assessment of 99.8% of our active factories. In FY21, we completed 242 full third party audits and 298 corrective action audits at 259 factories for the Devices hardware and packaging suppliers. There were 414 active Devices factories and we conducted risk assessments on all 414 of these factories,

FILTER BY FISCAL YEAR

FY18 FY20 FY21

CLICK BELOW TO FILTER BY AUDIT TYPE

ICA RBA SMA

CLICK BELOW TO FILTER BY SEVERITY

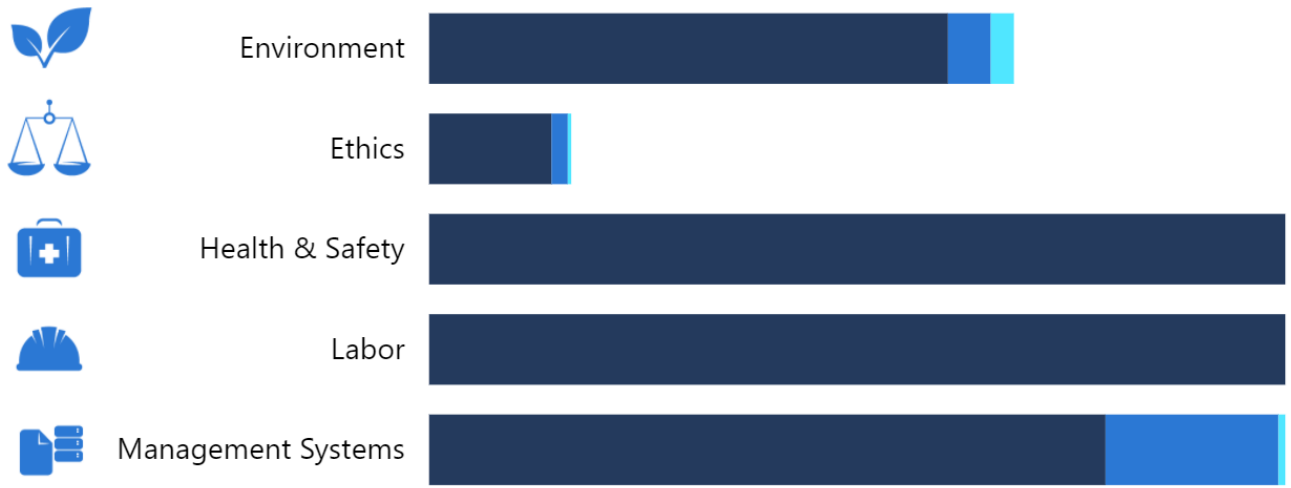
Critical and Serious Major

RESET

CLICK BELOW TO FILTER BY COUNTRY/REGION

China Costa Rica Czech Republic France Germany Hungary India Ireland

Non-conformance



CLOSURE STATUS

Closed Open Overdue Open Within Timeline

Total NCs: 5.177

FURTHER DETAILS

2020 Progress

In 2020, we announced our four commitments that will guide our sustainability work for the next decade. While we have much to do, we have already begun to see progress.

- Carbon negative by 2030
- Water positive by 2030
- Zero waste by 2030
- Build the Planetary Computer

Ecosystems

700+

Grew the AI for Earth grantee community to over 700 grantees in over 100 countries.

Zero waste

$30M

Invested $30 million in Closed Loop Partners' funds to help build a circular economy.

Water positive

$10M

Invested $10 million in the Emerald Technology Ventures' Global Water Impact Fund to support innovative technologies for water conservation, access, and quality.

Carbon negative

500MW

PPA with Sol Systems will advance clean energy and environmental justice.

Carbon negative

1M

Secured one million metric tons of carbon removal via projects from RFP process for FY21.

Zero waste

10,500

Over 10,500 employees engaged in Ecochallenges to reduce personal waste footprints.

Carbon, water, and waste

$129M

Invested $129 million across funds and organizations innovating in carbon reduction, water management, and circular economy.

Ecosystems

10PB

On-boarded 10 petabytes of environmental and Earth observation data to Azure that is now freely available for the conservation community.

Zero waste

90%

Circular Centers, piloted this year, can contribute to increased reuse of servers by 90 per cent by 2025.

Zero waste

60K

In FY20, diverted over 60 000 metric tons of waste from landfills.

Water positive

7X

Increased our replenishment project portfolio by nearly 700 percent from FY19.

Carbon negative

21M

Top suppliers reduced their collective footprint by 21 million tons CO_2e as reported by CDP.

Carbon negative

First

Delivered first tool to provide CO_2 transparency for cloud via the Microsoft Sustainability Calculator.

Zero waste

Zero

Achieved Zero Waste Certification of datacenters in Dublin, Ireland and Boydton, Virginia.

Carbon negative

586,683

Reduced emissions across all scopes by 586,683 metric tons CO_2e in FY20.

Water positive

1.5M

Launched water accessibility work to provide 1.5 million people access to safe drinking water and sanitation.

Carbon negative

100%

All suppliers must report their GHG emissions through updated Supplier Code of Conduct.

Water positive

20

To date, funded nearly 20 replenishment projects in six states and two countries.

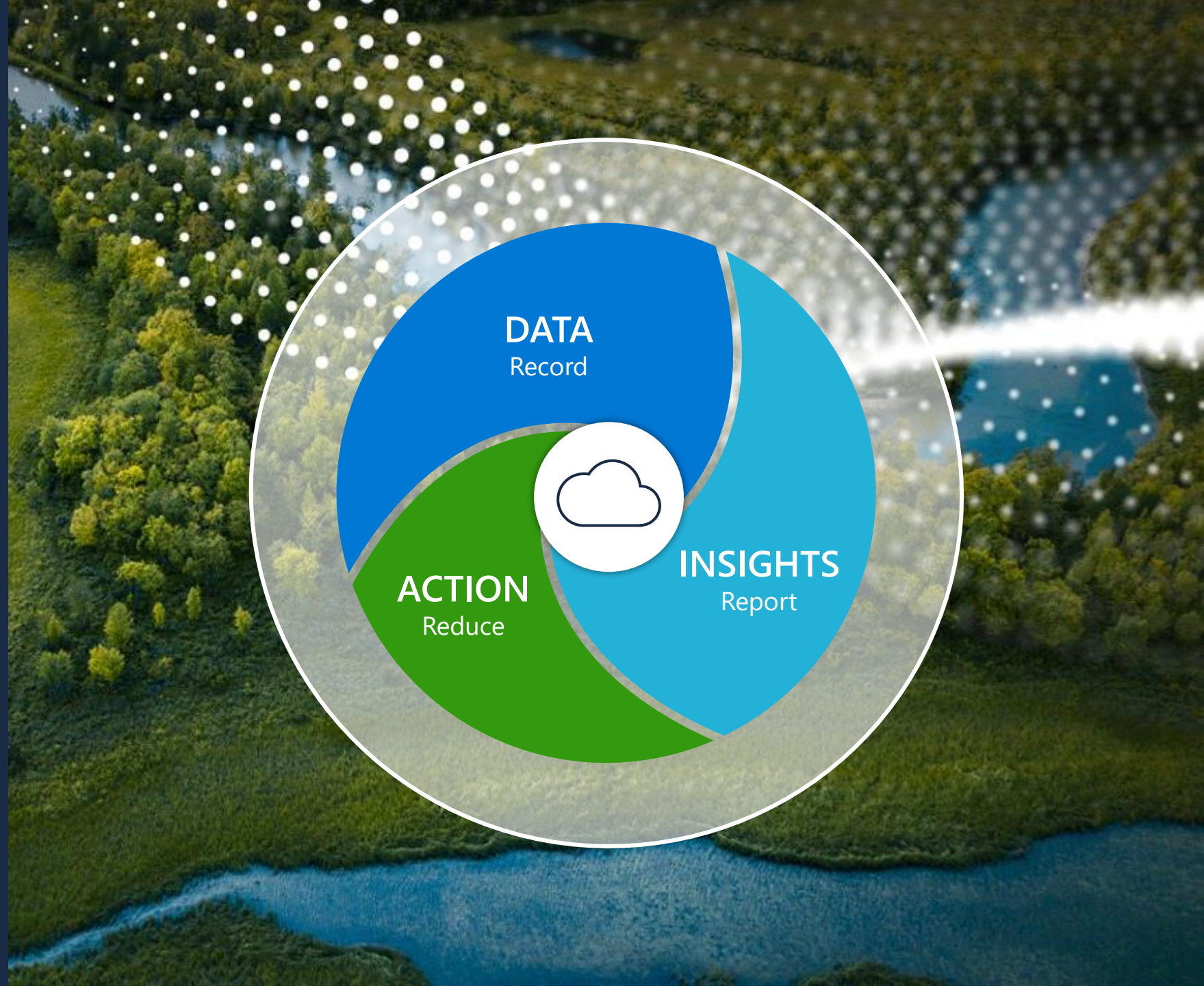
Microsoft Cloud for Sustainability

Delivering intelligence to help you accelerate every stage of your organization's sustainability journey

Comprehensive

Integrated

Automated

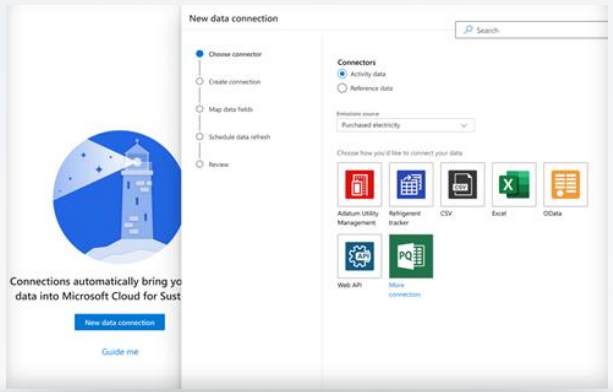


But sustainability is a value chain effort

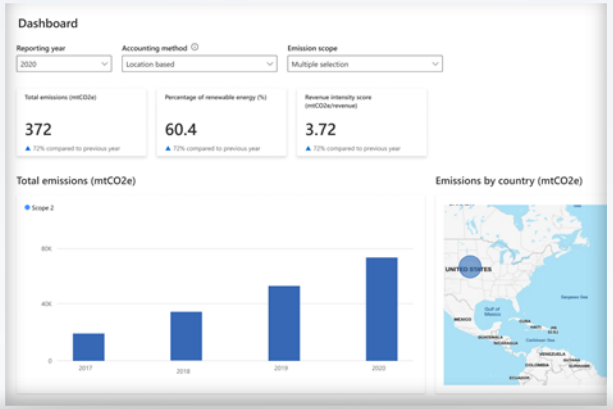
of an average company's resource footprint occurs either upstream or downstream[1]

[1] "Value chain and supply chain sustainability," Carbon Trust

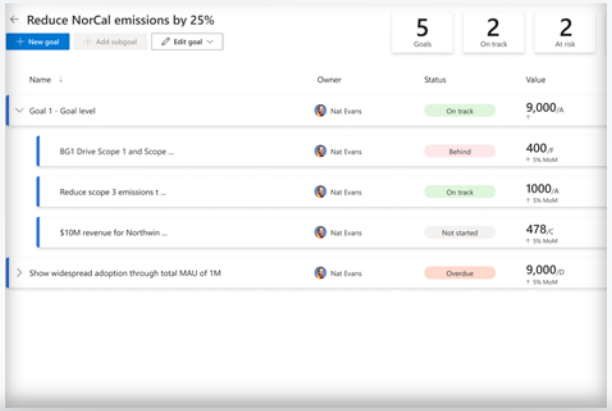
One platform for integrating and accelerating your journey



Connect your **data** and calculate your impact



View data analysis and **insights**



Take **action** to accelerate your sustainability journey

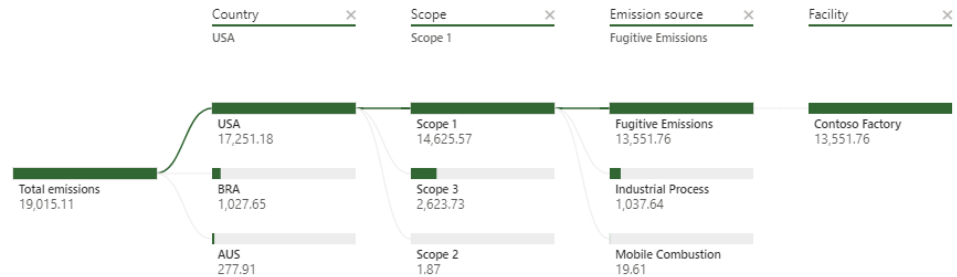
Reporting year: 2021 | Accounting method: Location Based | Scope: All

Total emissions (mtCO2e)
19,015.11
▲ 35% compared to previous year

Percentage of renewable energy (%)
92.05 %
▲ 12% points compared to previous year

Revenue intensity score (mtCO2e/M$)
83.36
▲ 64% compared to previous year

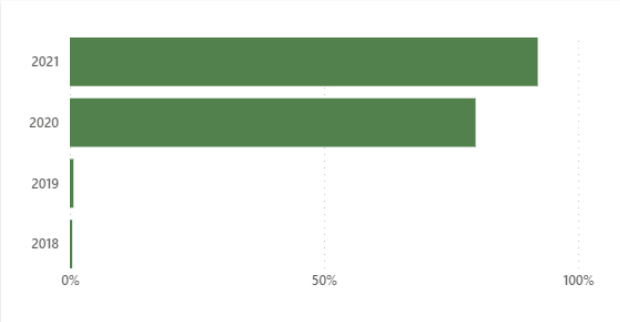
Data exploration



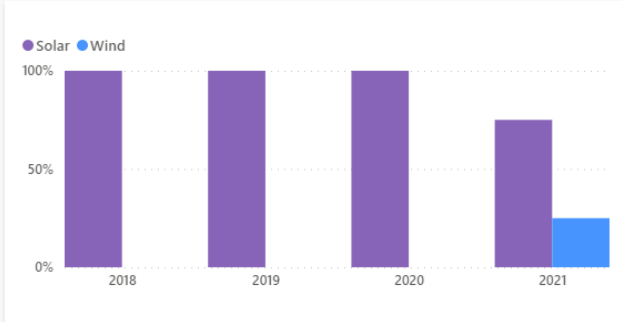
Total emissions (mtCO2e)

Emissions by country (mtCO2e)

Percentage of renewable energy (%)

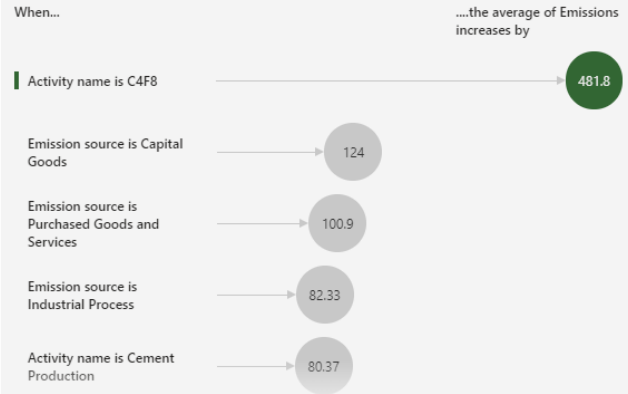


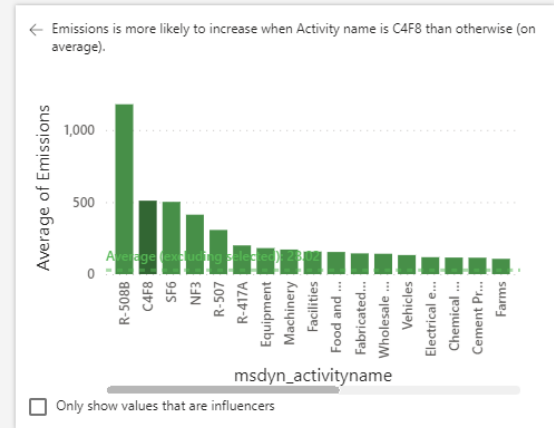
Distribution of renewable energy (%)



Key influencers | Top segments

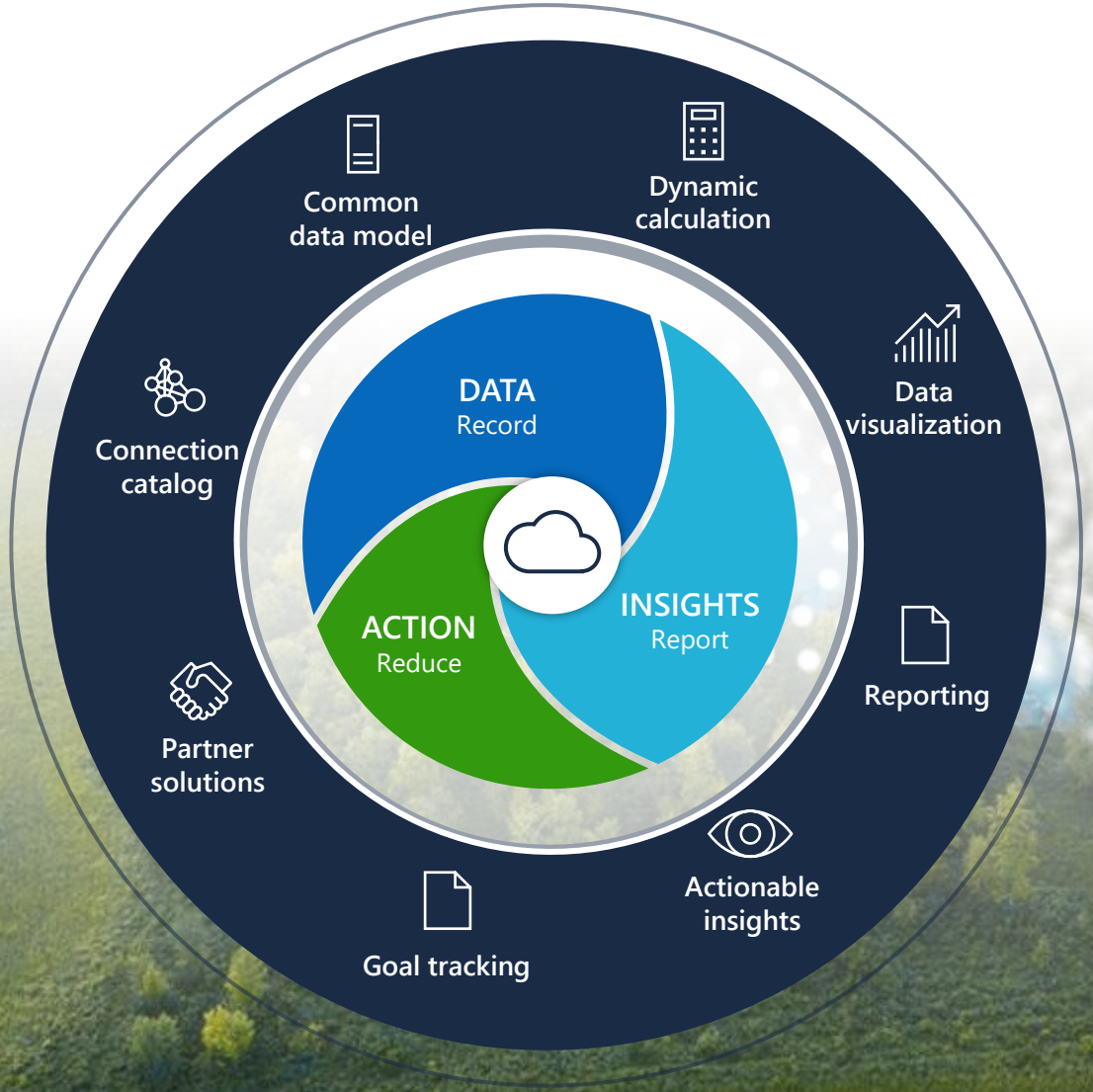
What influences Emissions to Increase ?





Microsoft Cloud for Sustainability

Coming: First half of 2022



AI for Good

AI for Earth

AI for Accessibility

AI for Humanitarian Action

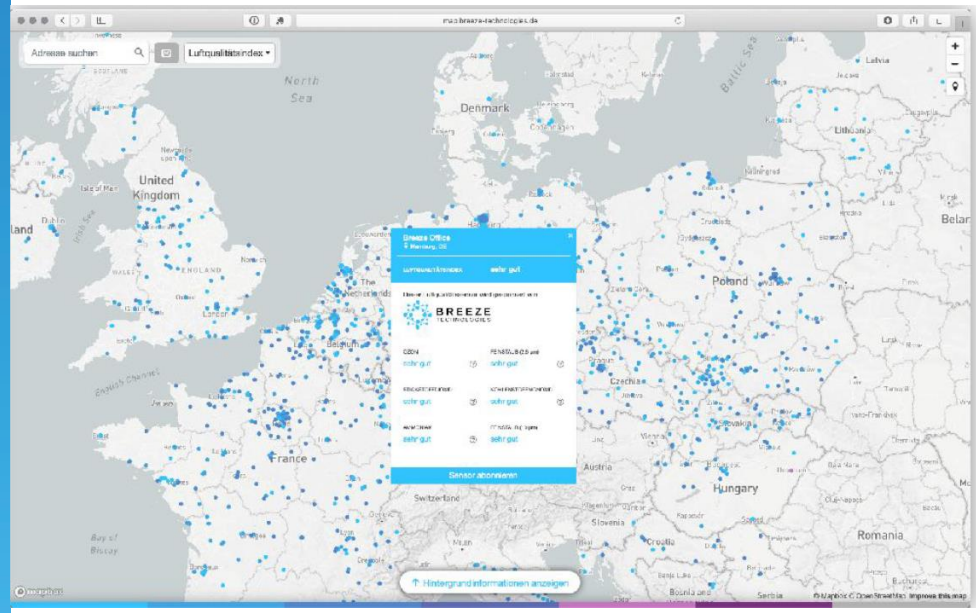
AI for Cultural Heritage

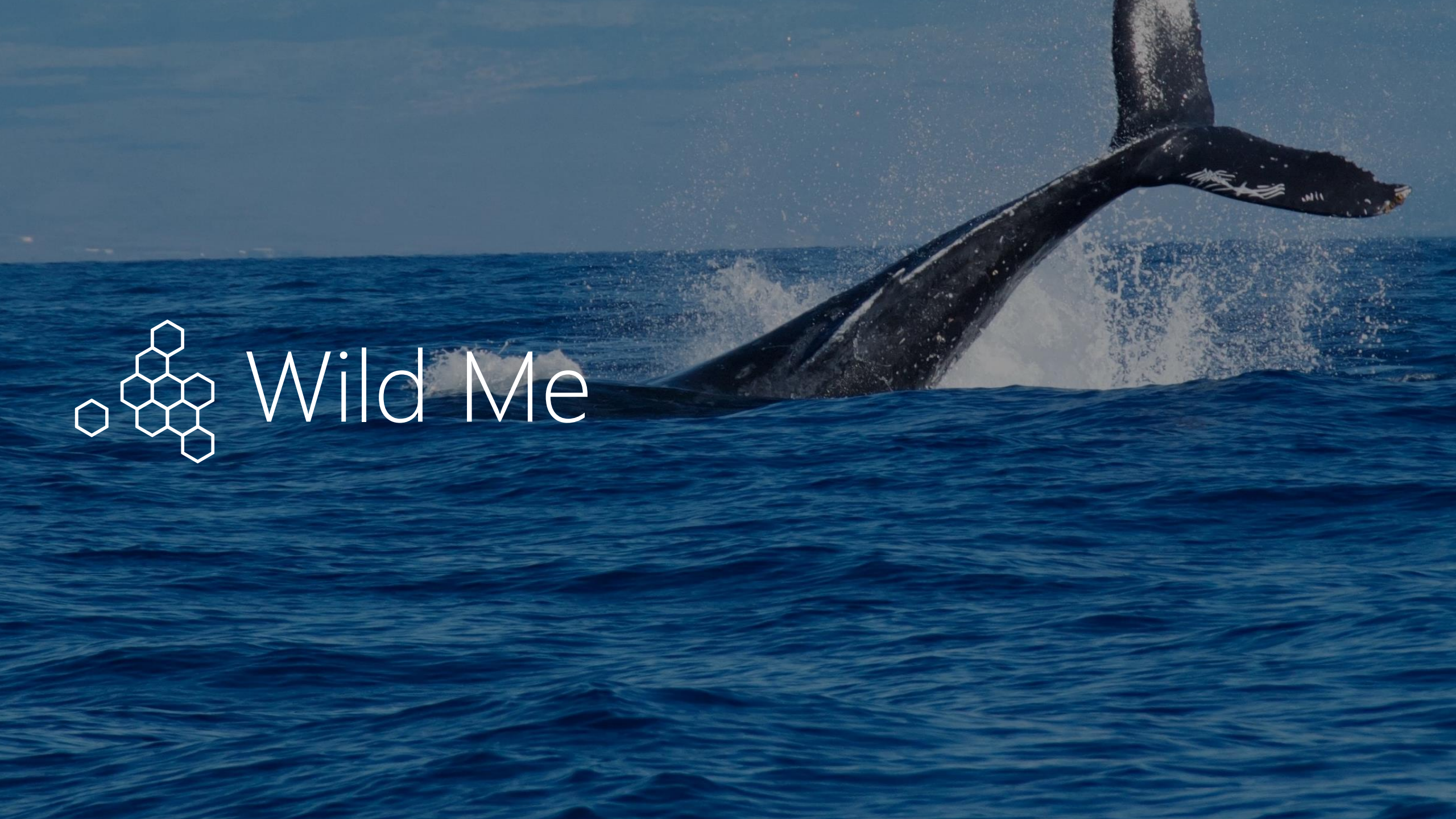
AI for Health

NCX
2,2
Millionen km²
800
Terabytes
10x schneller
92
Mrd. Bäume
Microsoft

BREEZE
TECHNOLOGIES

KÜNSTLICHE INTELLIGENZ GEGEN LUFTVERSCHMUTZUNG




Wild Me

WILDBOOK for Whale Sharks

Whale Shark Intelligent Agent

Researcher
Roger Harui

YouTube Video Source

https://www.youtube.com/watch?v=mn5a3XJhJd4 Process

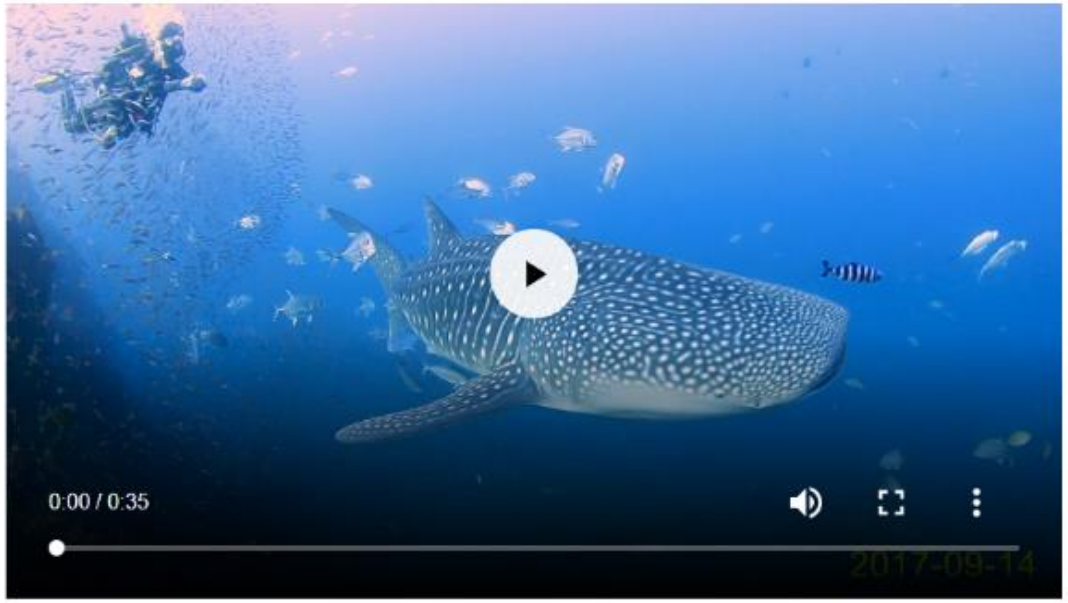
Intelligent Agent Process

Modules	Input	Output	Status
Detect language and translate	120 Spanish	125 English	Complete ⓘ
Text analysis and prediction	125 Words	8 Keywords	Generating ⓘ
Extract video keyframes	-	-	-
Object detection and prediction	-	-	-
Extract text from video	-	-	-
Determine where and when	-	-	-

Output Logs

```
[5:53:58 PM] Analysing video metadata...
[5:53:58 PM] Unique words: ['Diving', 'Dominos', 'amazing experience swimming', 'worlds biggest fish', 'polka', 'Whale Sharks', 'new favorite', 'gentle giant', 'Best dive']
[5:53:59 PM] Generating unique three word combinations...
[5:53:59 PM] Total combinations: 362,880
[5:54:00 PM] Running [video description regression model]. Threshold: 90%
[5:54:00 PM] Regression model complete. Output results: 12,983
[5:54:01 PM] Video is valid.
```

Next



Diving with Dominos

24 views 2 0 SHARE

Nuria Gonzalez
Published on Oct 20, 2017

SUBSCRIBE 12

What an amazing experience swimming with the worlds biggest fish. Last month I was graced by this polka-dotted gentle giant. Best dive ever! Whale Sharks are my new favorite!

SHOW MORE

2 Comments SORT BY

Add a public comment...

Arturo Lopez 1 year ago

Demo

Child Growth Monitor – Wie Big Data, Cloud Computing und KI helfen, den Hunger in der Welt zu bekämpfen

welt hunger hilfe

Engaging our employees

Microsoft employee-led
Sustainability Community

- Founded in 2018
- **Mission:** make sustainability part of everybody's job
- **5,000** members from **100+** countries
- **30+** regional chapters
- **Executive sponsorship** from Chief Environmental Officer Lucas Joppa

Decades of action

Our history 2009-2019

2009 — First carbon emission reduction goal

2012 — 100% carbon neutral; Internal carbon fee instituted

2016 — Zero-waste campus certification

2017 — AI for Earth launch; LEED Gold certification for new datacenters

2018 — Supplier carbon engagement in China launched; Net zero potable water; Silicon Valley campus groundbreaking

2019 — Carbon fee raised to $15; Water replenishment goal set

Our commitments 2020-2050

2025 — Operate with 100% renewable energy

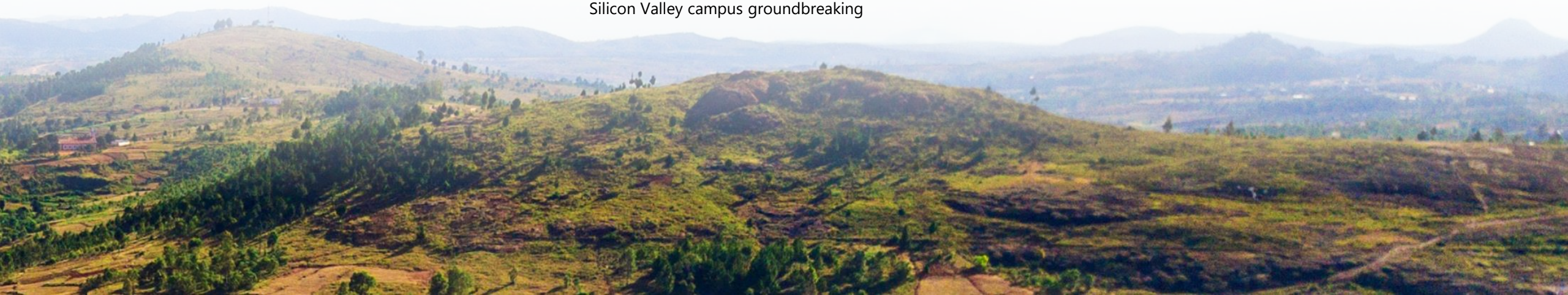
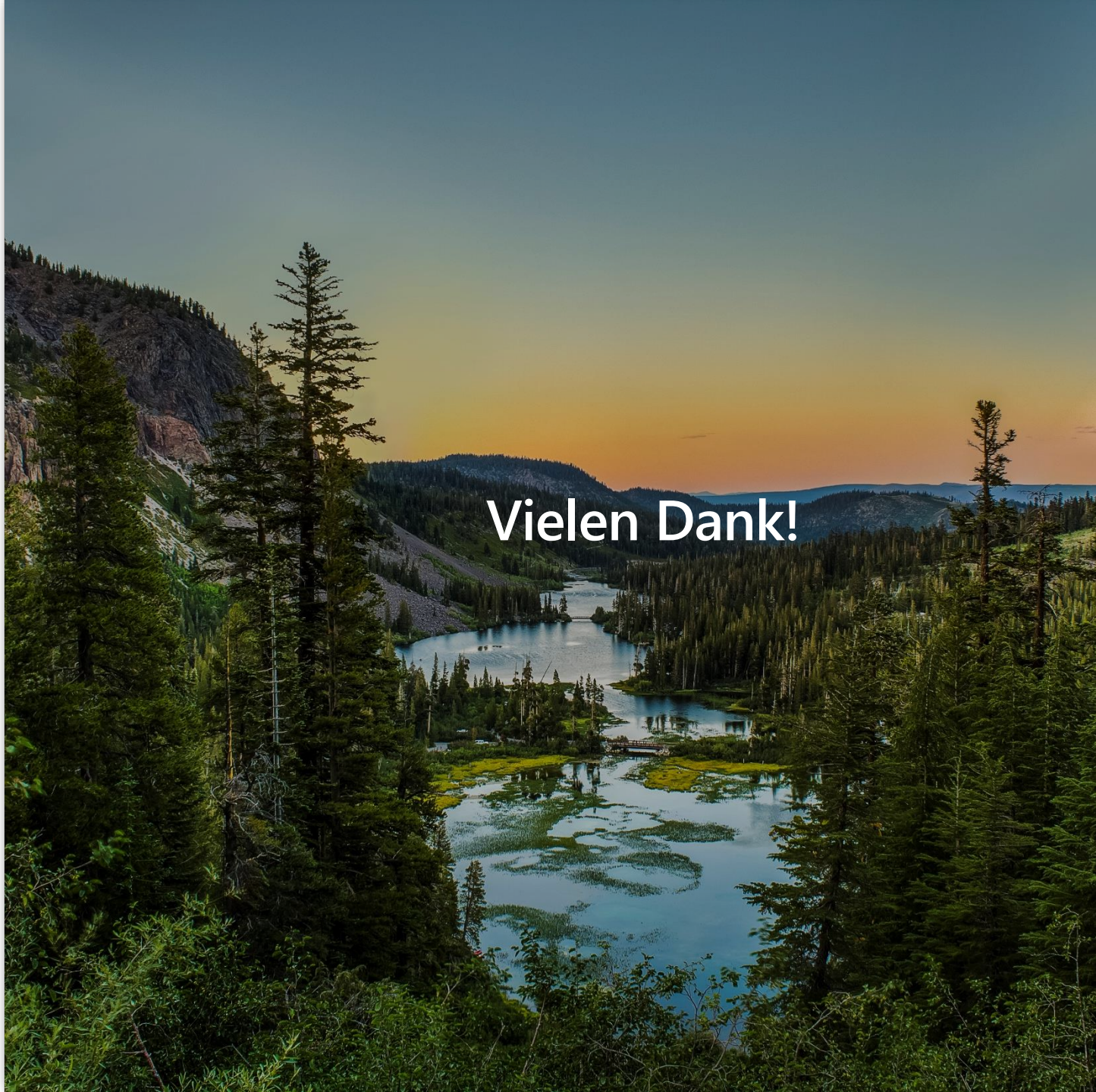
2025 — Protect more land than Microsoft uses

2030 — Become carbon negative

2030 — Become zero waste

2030 — Become water positive

2050 — Remove all historic emissions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