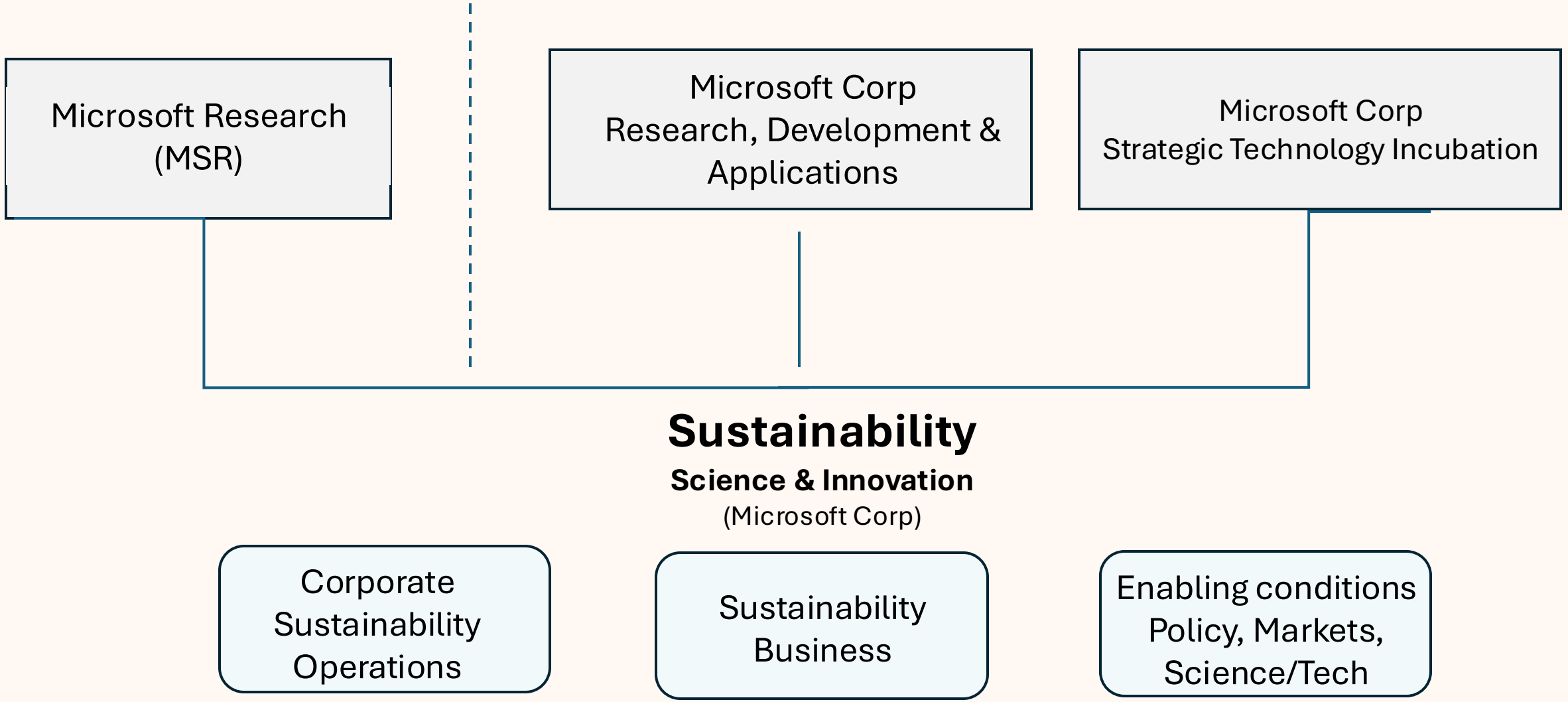
Knowledgee for Sustainability Action: A corporate perspective

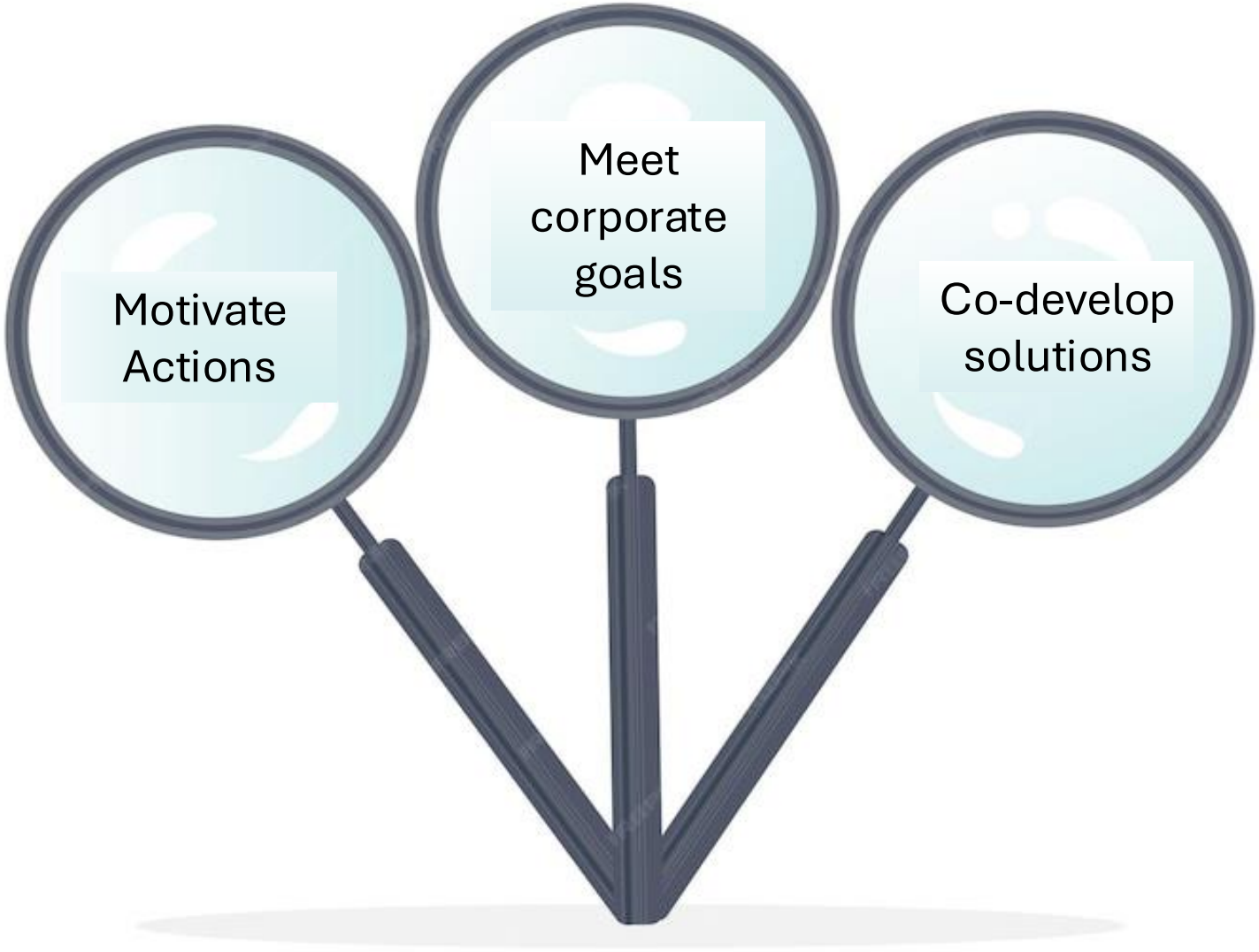
MIT Global Change Forum
March 28, 2025

Amy Luers, PhD
Sr. Global Director Sustainability -- Science & Innovation
Microsoft

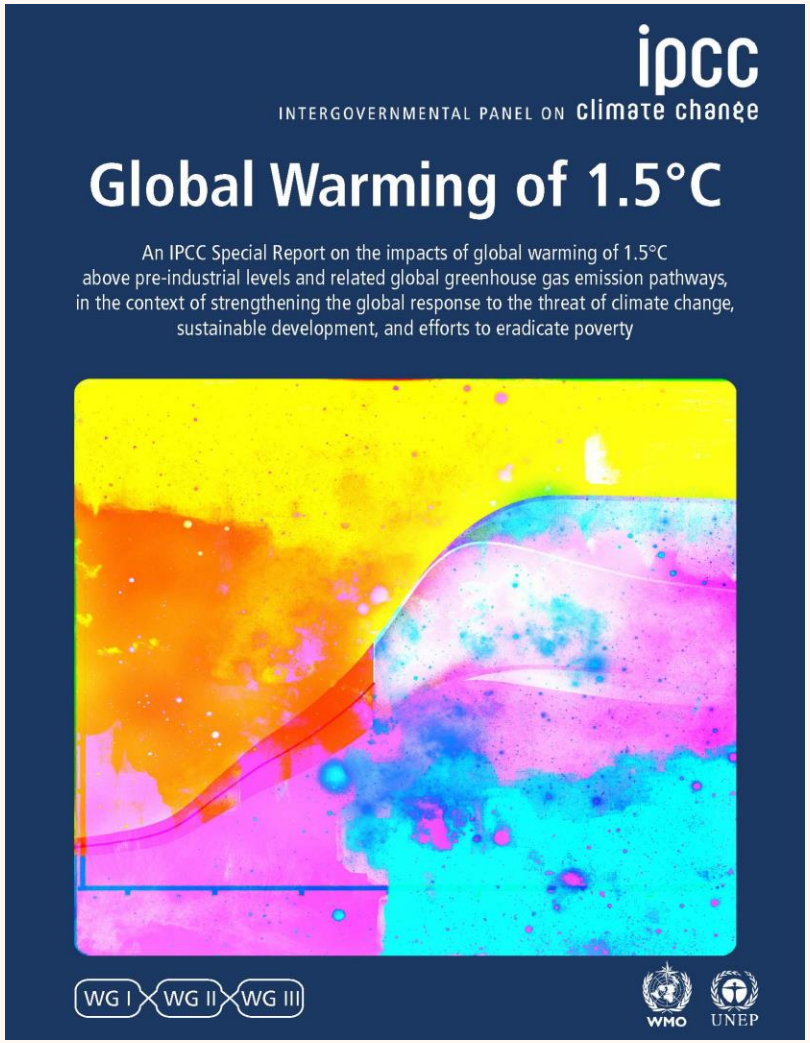
Microsoft Science and Innovation



Three Lenses – on knowledge to sustainability action



Lens #1:
Motivate Action




Carbon negative by 2030
Remove our historical carbon emissions by 2050
$1 billion climate innovation fund
Microsoft

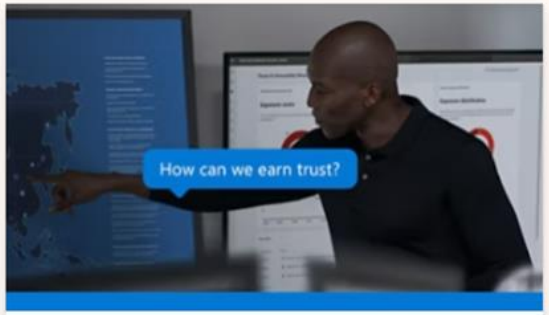
Added sustainability to our core corporate commitments

MISSION: *Empower every person and every organization on the planet to achieve more*

We focus on four enduring commitments that are central to our mission, serving as a guide to ensure our actions align with our mission.

Expand opportunity

We expand economic opportunity and growth for all.



Earn trust

We create a safe, secure, and responsible digital world.

Protect fundamental rights

We support and advance people's fundamental rights.

Advance sustainability

We are committed to meeting our own climate goals while enabling others to do the same.

Microsoft sustainability strategy includes: Operational commitments

Microsoft 2030 Corporate Commitments

- Carbon — Carbon Negative
- Water — Water Positive
- Land — Nature Positive
- Waste — Zero Waste

Microsoft sustainability strategy includes: Supporting Customers & Partners

Empower every person and organization to do more on sustainability

- Integrate sustainability data and solution providers
- Planetary insights (PC)
- Share best practices
- Co-innovate with customers

Microsoft 2030 Corporate Commitments

- Carbon — Carbon Negative
- Water — Water Positive
- Land — Nature Positive
- Waste — Zero Waste

Microsoft sustainability strategy includes: Global enabling conditions

Research & Innovation, Markets, policy, equity

- Advance solutions research
- Invest to strengthen climate markets
- Influence global policy
- Enable workforce skills
- Advocate for a just transition

Empower every person and organization to do more on sustainability

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Microsoft 2030 Corporate Commitments

- Carbon — Carbon Negative
- Water — Water Positive
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Lens #2: **Meet corporate goals**

Microsoft 2030 Corporate Sustainability Goals

Carbon Negative

Water Positive

Nature Positive

Zero Waste

Companies have set net-zero targets.

We are figuring out how to achieve them...

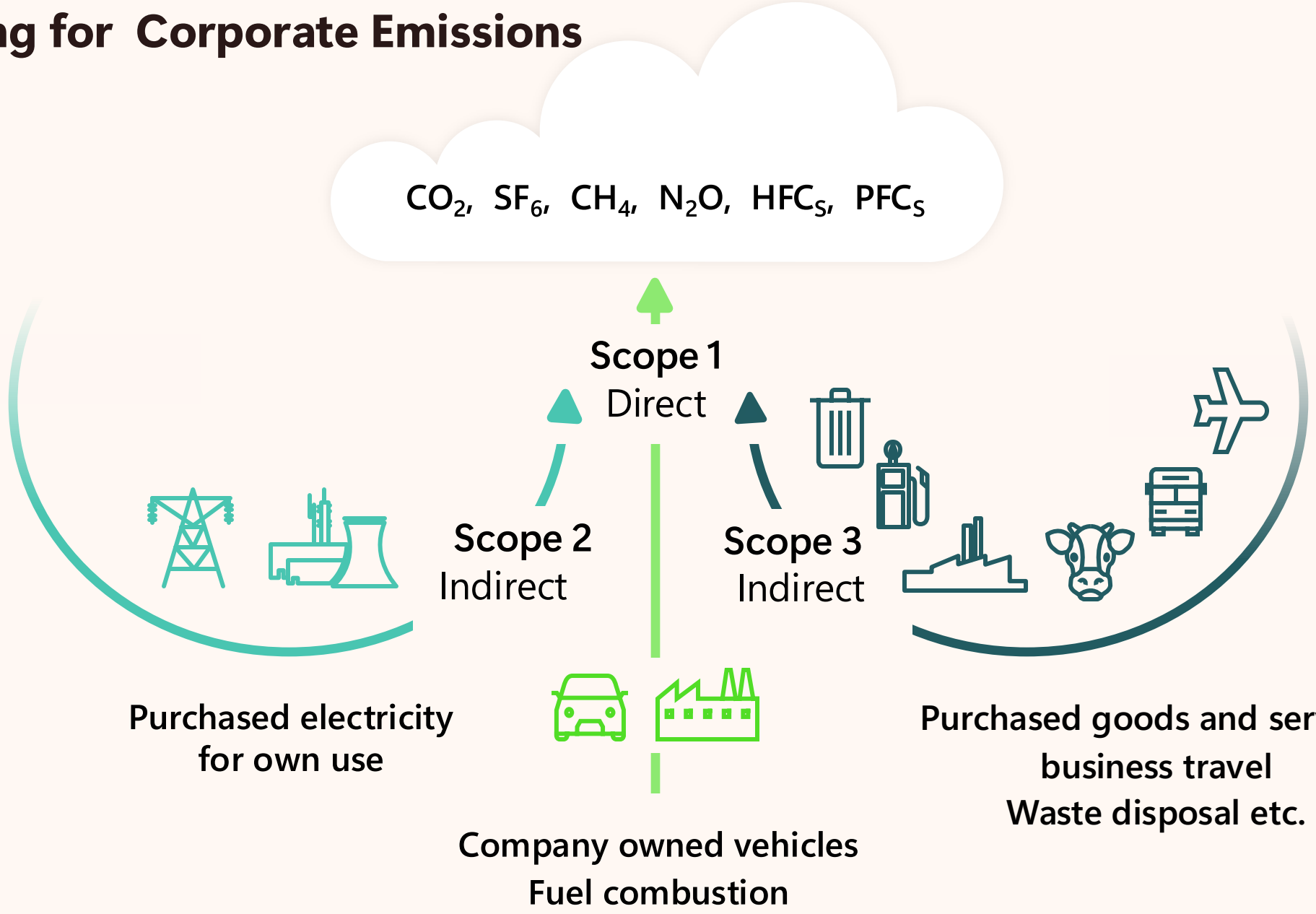
building the bridge as we cross it.

Public-private-academic collaborations are needed to:

Build and shape markets, institutions, and infrastructure

To enable continuous, collective and adaptive learning

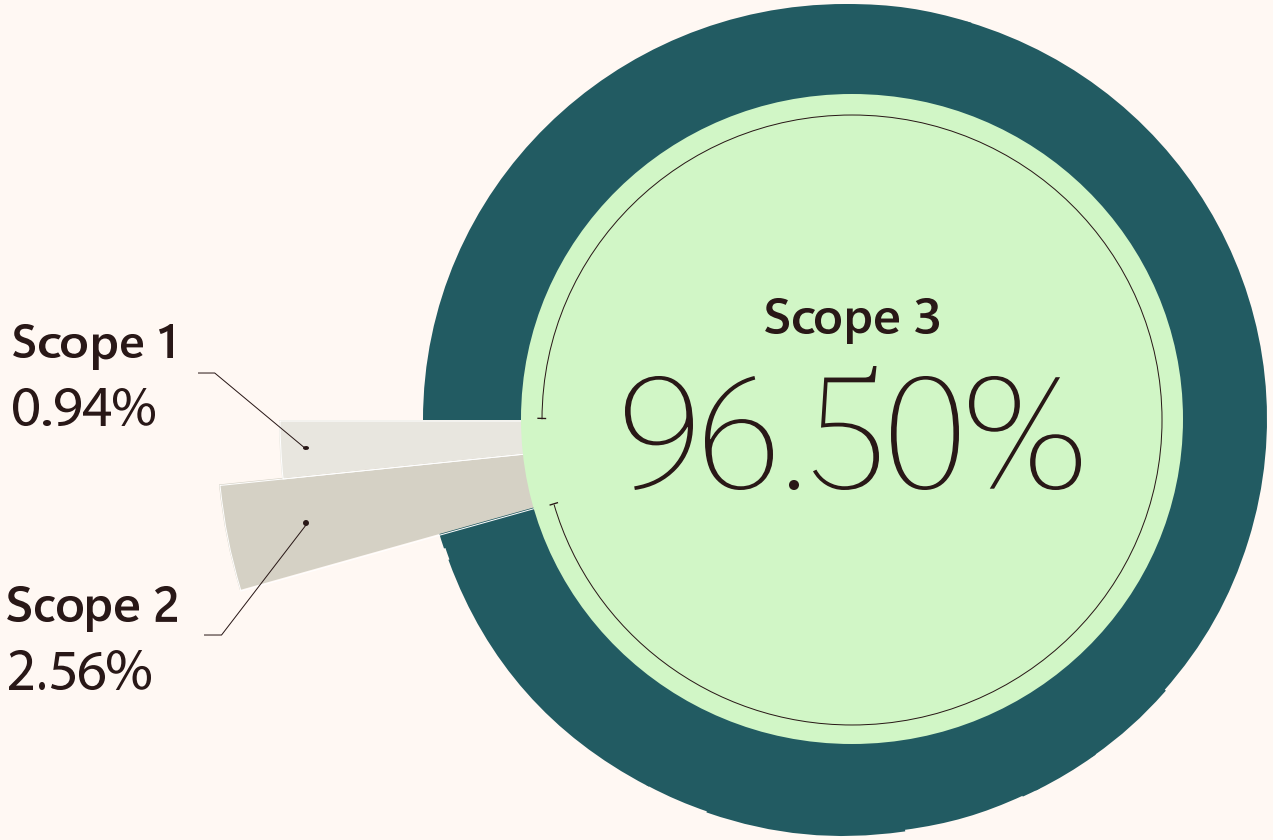
Counting for Corporate Emissions



Based on GHG Protocol

Getting to carbon negative

Biggest challenge:
Solving Scope 3 emissions, over which companies have least control



Microsoft sustainability

Scope 2 and 3 emissions included in this chart are market-based.
Scope 3 emissions are management criteria values.

The ability of Microsoft to meet our net-zero targets depends on:

Datacenter efficiencies & innovation

Decarbonization of electricity

Decarbonization of materials

Decarbonization of fuels

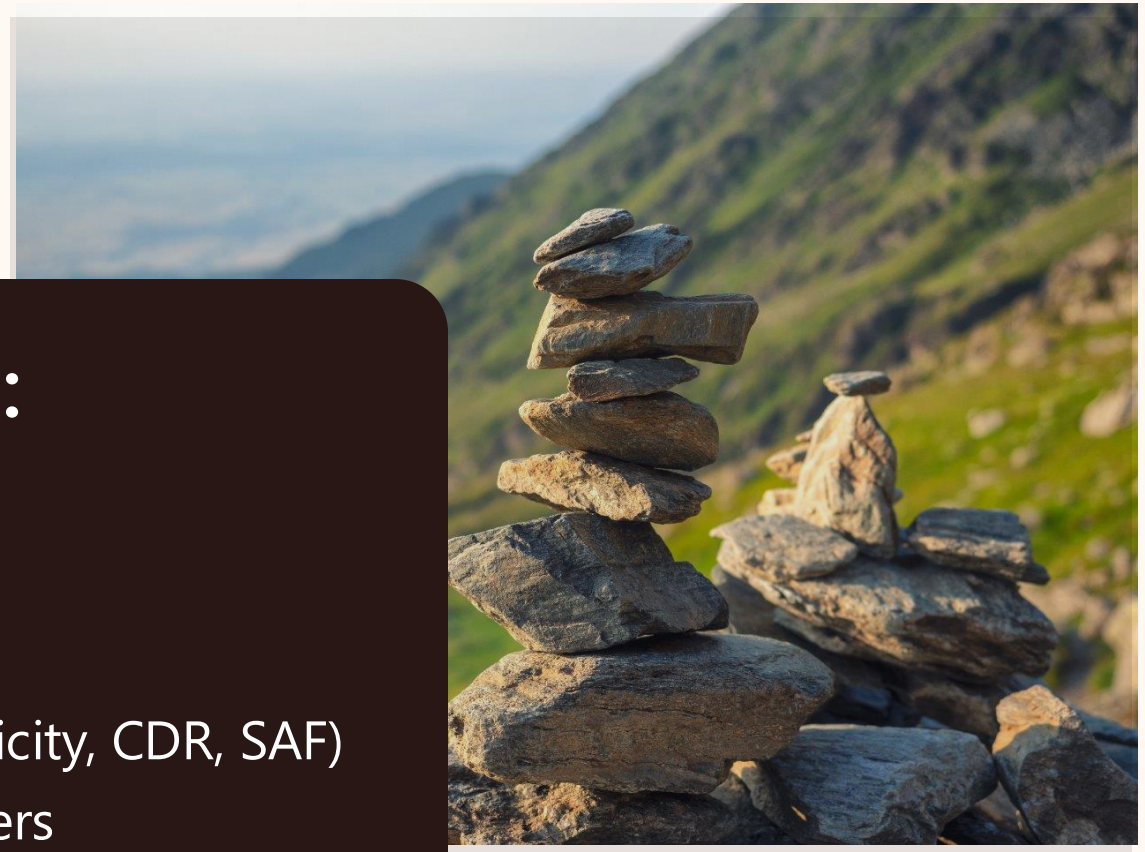
Availability of durable carbon removal

Depends on wide-spread system changes

Systems changes needed include:

- ✓ Supply and demand growth
- ✓ New business models
- ✓ New and expanded infrastructure
- ✓ Workforce development
- ✓ Policy enablers
- ✓ Cultural acceptance

Building and shaping markets



Teams across Microsoft work to:

- → Invest in emerging technologies and companies
- → Aggregate and collaborate to build demand
- → Help establish high-quality standards
- → Develop off-take agreements (carbon-free electricity, CDR, SAF)
- → Educate and advocate —investors, producer, buyers
- → Advocate for enabling policies
- → Apply AI to help expedite deployment incl. regulatory process (e.g. permitting)

Carbon accounting: Making it work.

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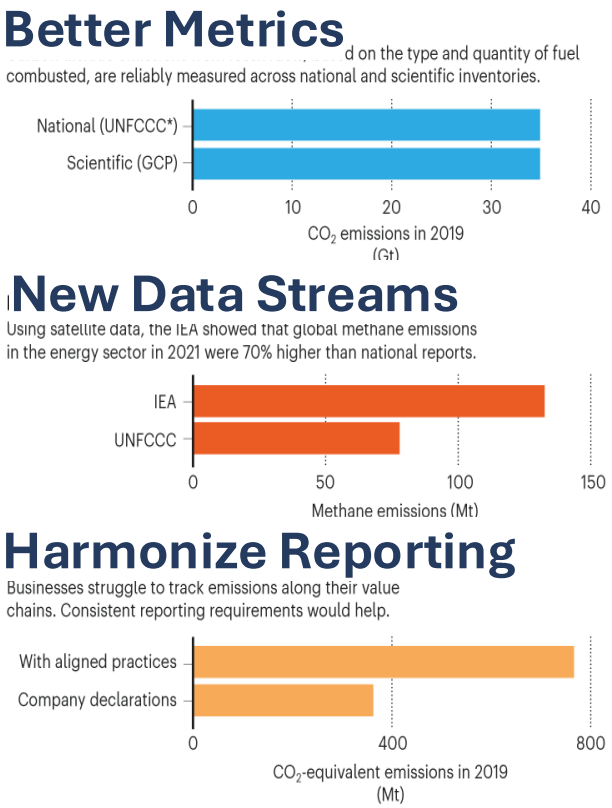
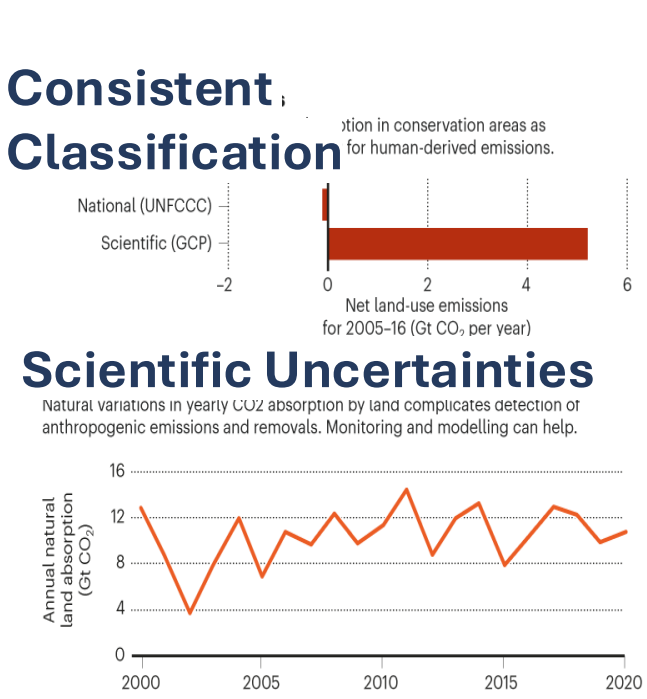
Comment

Make greenhouse-gas accounting reliable – build interoperable systems



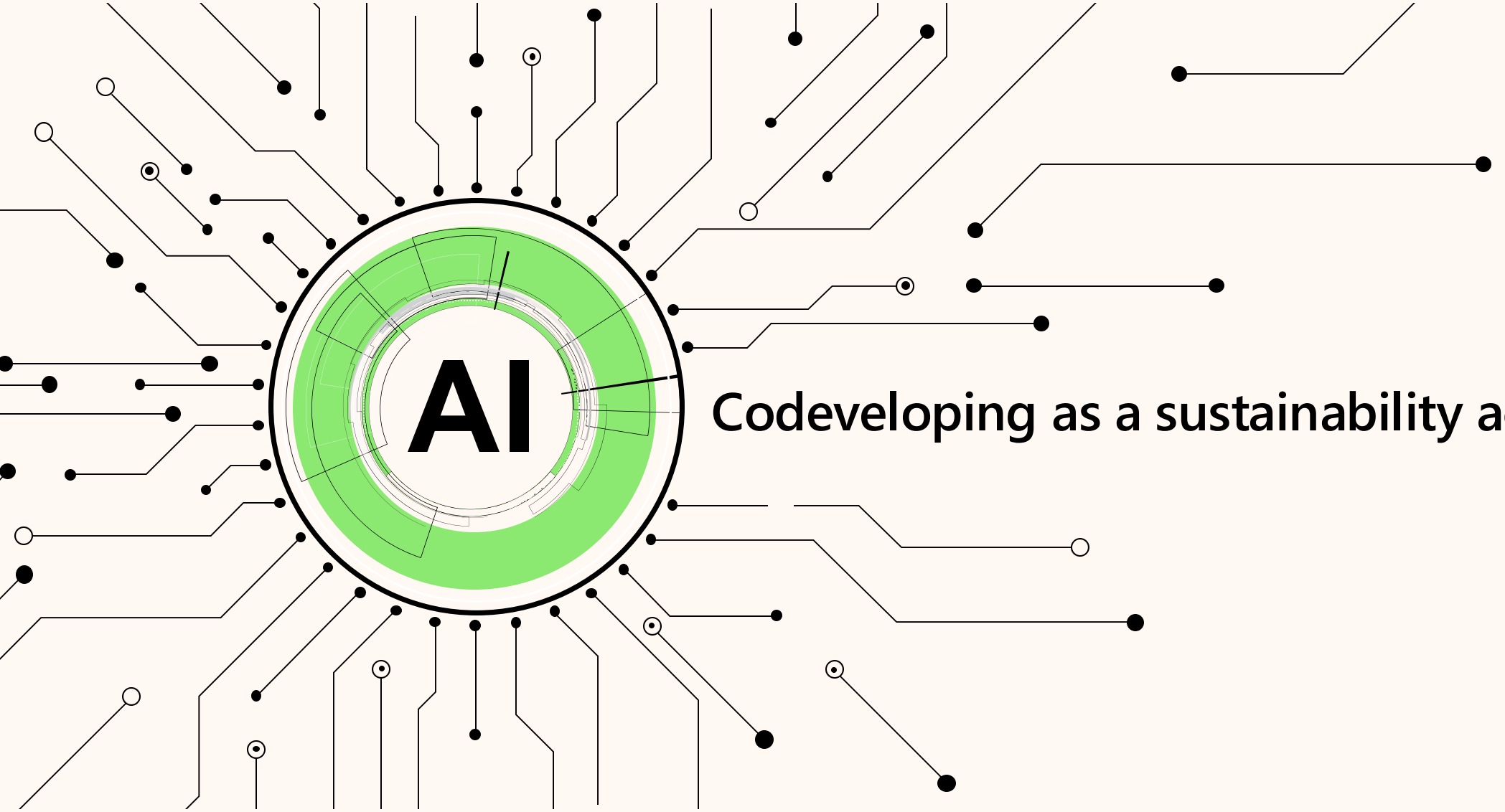


2022

Amy Luers, Leehi Yona, Christopher Field, Robert B. Jackson, Katharine Mach, Benjamine Cashmore, Cynthia Elliott, Lauren Gifford, Colleen Honigsberg, Lena Klassen Damon Matthews

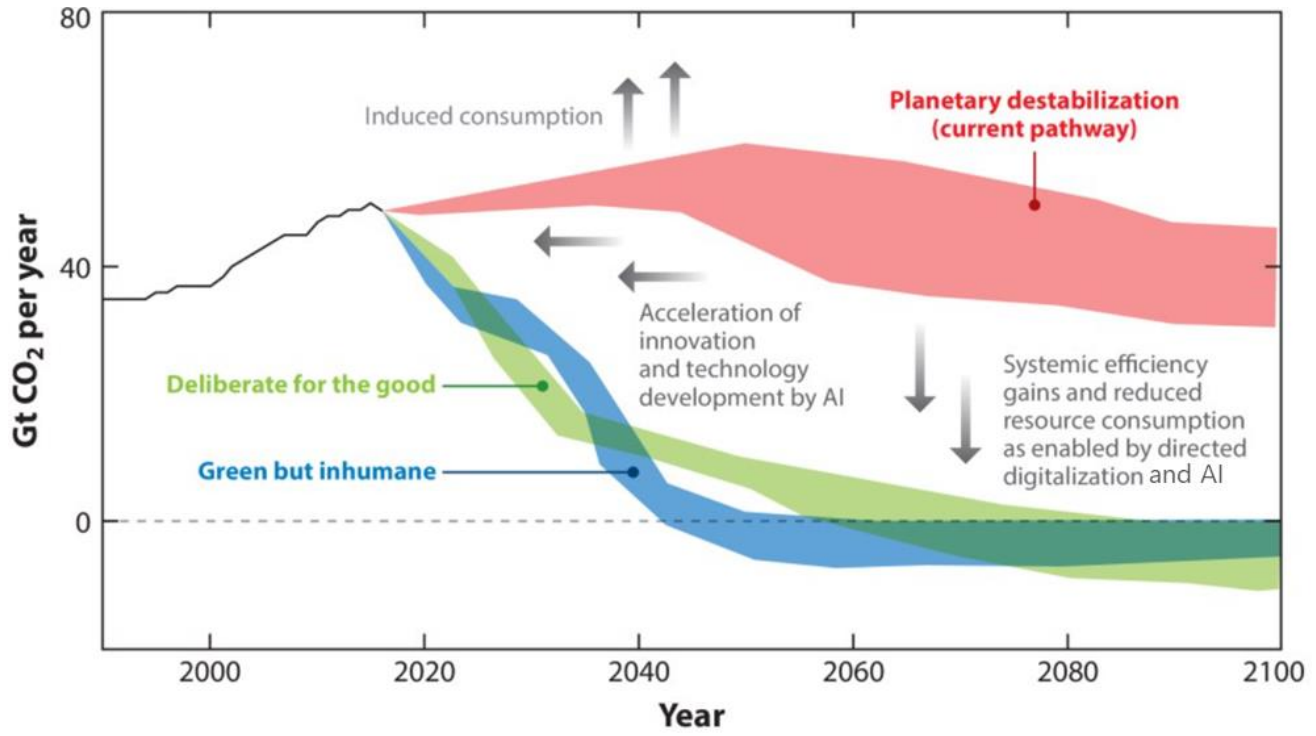
The Carbon Call

Lens #3:
Co-develop solutions



Codeveloping as a sustainability accelerator

AI is necessary for achieving sustainability goals, but it is not guaranteed to be a sustainability accelerator



Democracy and political agency	Equity	Planetary stability
−	−	−
−	−	+
+	+	+

Creutzig F, et al. 2022
Annu. Rev. Environ. Resour. 47:479–509

We need to build quantitative scenarios of how AI will impact climate and sustainability

We are currently flying blind on how AI will impact sustainability– and the sector is accelerating at lightening speed!

nature

Comment

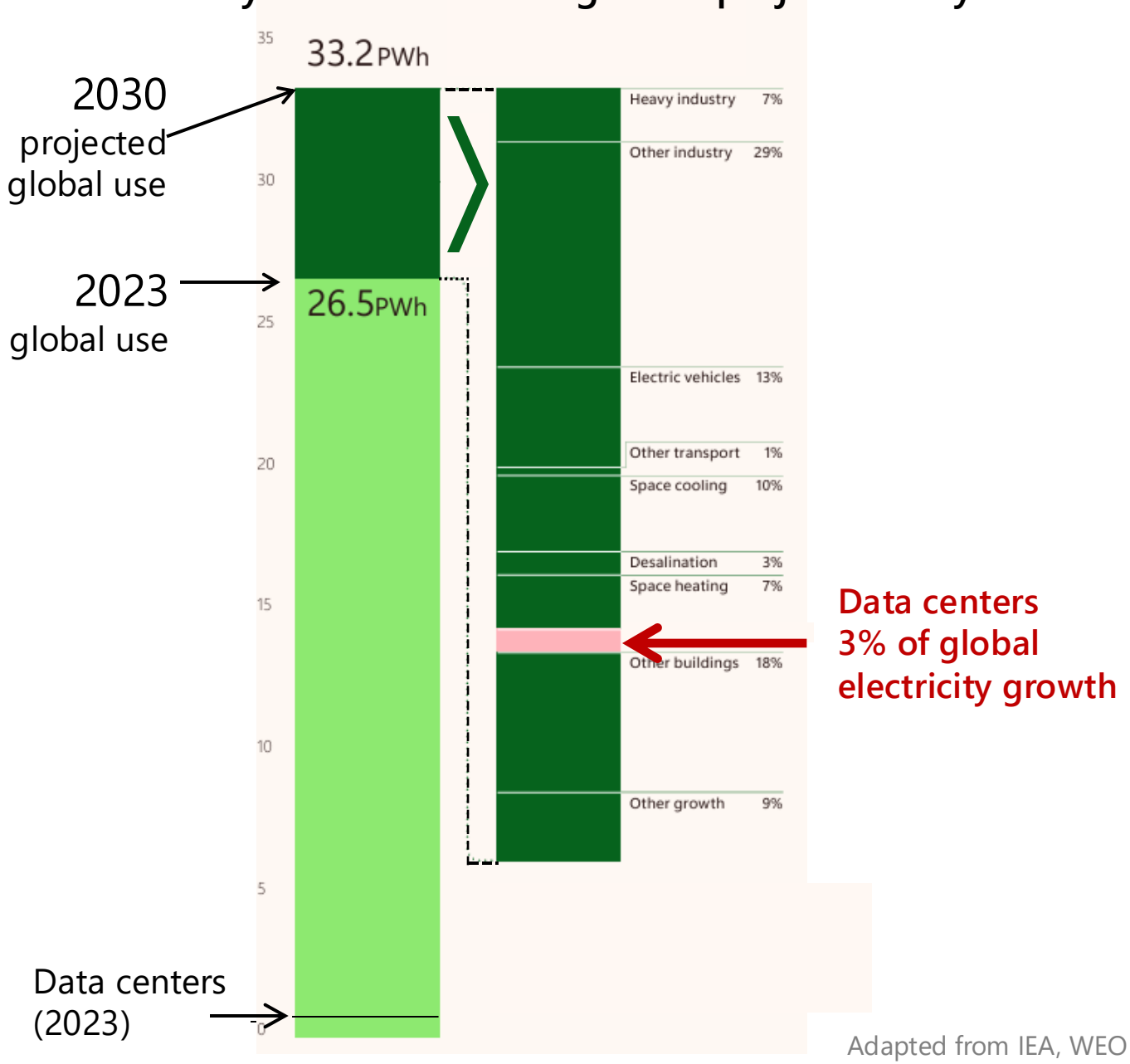
Will AI accelerate or delay the race to net-zero emissions?

Amy Luers, Jonathan Koomey, Eric Masanet, Owen Gaffney,

Felix Creutzig, Juan Lavista Ferres & Eric Horvitz

Datacenters are projected to account for ~3% of growth in global electricity consumption between 2023 and 2030

Global electricity use 2023 – 2030 growth projections by sectors



Adapted from IEA, WEO 2024

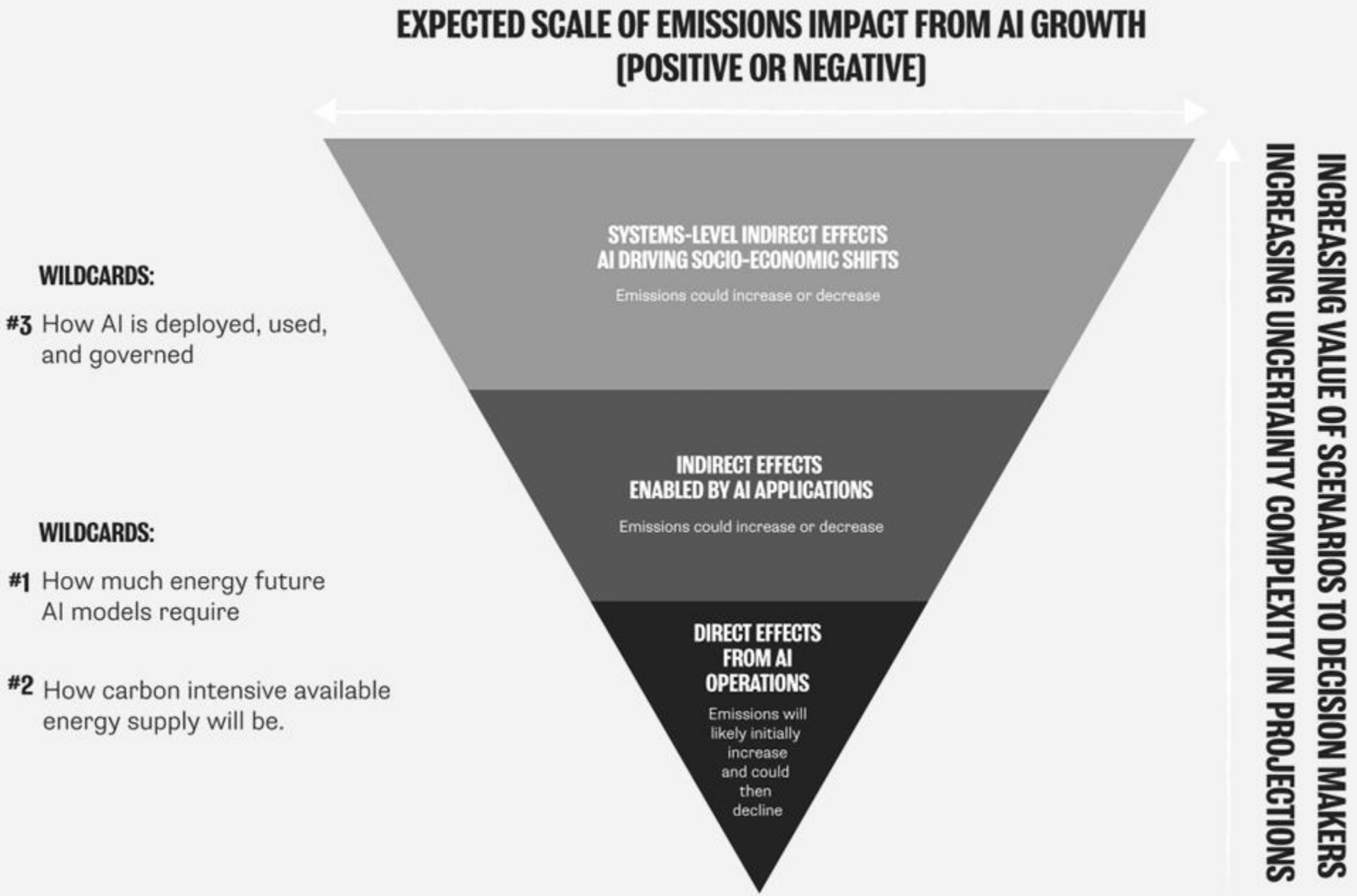
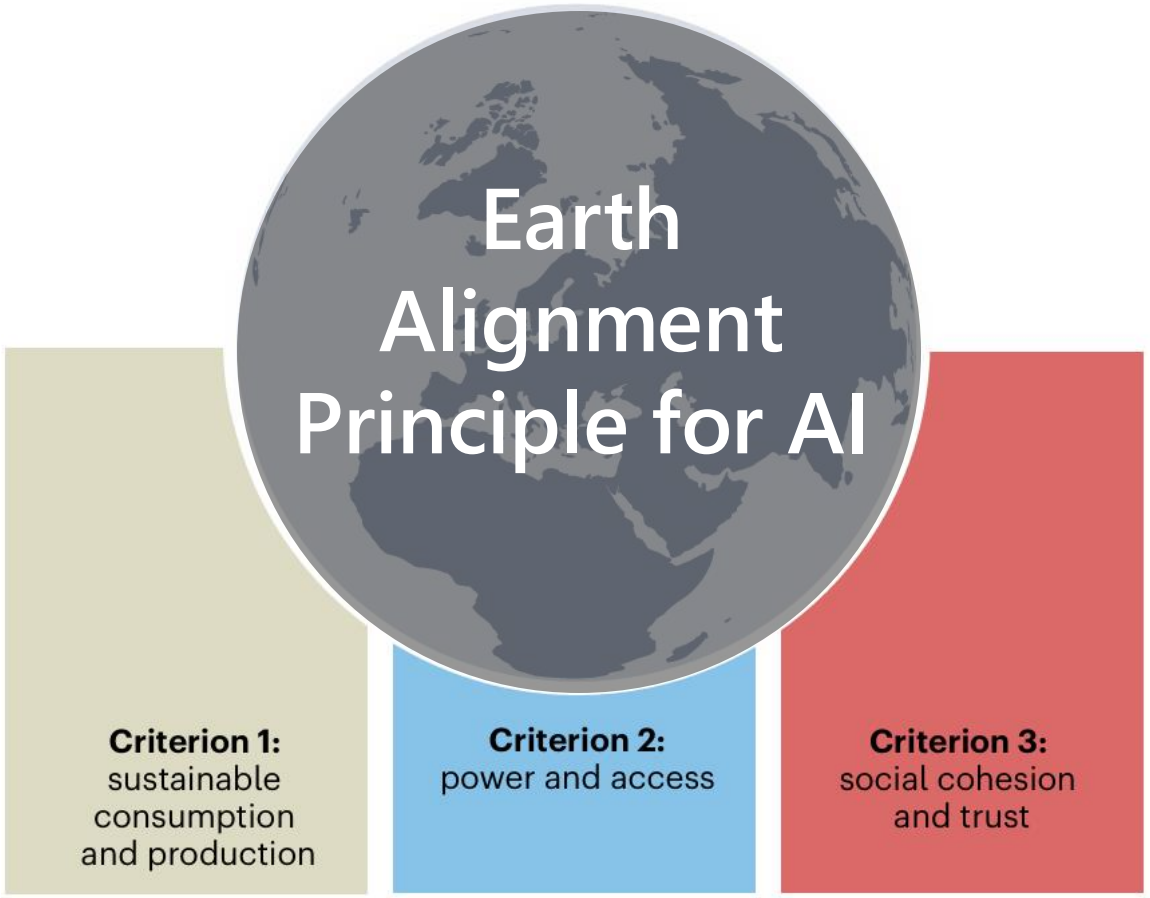


Figure 1. Dimensions for assessing the impact of AI on global race to net zero

nature sustainability

March 28, 2025

The Earth alignment principle for artificial intelligence



Owen Gaffney, Amy Luers, Franklin Carrero-Martinez, Berna Oztekin-Gunaydin, Felix Creutzig, Virginia Dignum, Victor Galaz, Naoko Ishii, Francesca Larosa, Maria Leptin & Ken Takahashi Guevara

Microsoft's AI & sustainability playbook outlines how AI can unlock a flywheel to accelerate sustainability

Five-point playbook

1. Invest in AI to accelerate sustainability solutions
2. Develop digital and data infrastructure for the inclusive use of AI for sustainability
3. Minimize resource use, expand access to carbon-free energy, and support local communities
4. Advance AI policy principles and governance for sustainability
5. Build workforce capacity to use AI for sustainability

Game-changing abilities

1. Measure, predict, optimize complex systems
2. Accelerate development of sustainability solutions
3. Empower the sustainability workforce

Flywheel for sustainability

Microsoft AI & Sustainability Playbook 2025 (aka.ms/AcceleratingSustainabilityWithAI2025)

Final reflection:

Ask not what information decision makers need,
But rather
what is our strategy (our "playbook") for co-developing knowledge needed to drive sustainability transformations at scale.