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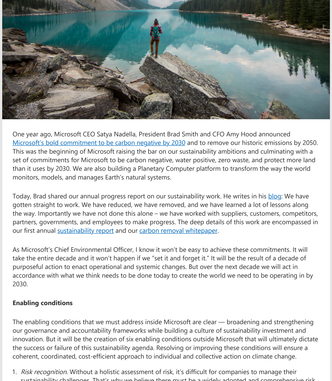
# Sustainability: A year of progress and a decade of action

Jan 28, 2021 | Lucas Joppa - Chief Environmental Officer



One year ago, Microsoft CEO Satya Nadella, President Brad Smith and CFO Amy Hood announced Microsoft's bold commitment to be carbon negative by 2030 and to remove our historic emissions by 2050. This was the beginning of Microsoft raising the bar on our sustainability ambitions and culminating with a set of commitments for Microsoft to be carbon negative, water positive, zero waste, and protect more land than it uses by 2030. We are also building a Planetary Computer platform to transform the way the world monitors, models, and manages Earth's natural systems.

Today, Brad shared our annual progress report on our sustainability work. He writes in his blog: We have gotten straight to work. We have reduced, we have removed, and we have learned a lot of lessons along the way. Importantly we have not done this alone – we have worked with suppliers, customers, competitors, partners, governments, and employees to make progress. The deep details of this work are encompassed in our first annual sustainability report and our carbon removal whitepaper.

As Microsoft's Chief Environmental Officer, I know it won't be easy to achieve these commitments. It will take the entire decade and it won't happen if we "set it and forget it." It will be the result of a decade of *purposeful* action to enact operational and systemic changes. But over the next decade we will act in accordance with what we think needs to be done today to create the world we need to be operating in by 2030.

**Enabling conditions**

The enabling conditions that we must address inside Microsoft are clear — broadening and strengthening our governance and accountability frameworks while building a culture of sustainability investment and innovation. But it will be the creation of six enabling conditions outside Microsoft that will ultimately dictate the success or failure of this sustainability agenda. Resolving or improving these conditions will ensure a coherent, coordinated, cost-efficient approach to individual and collective action on climate change.

1. *Risk recognition.* Without a holistic assessment of risk, it's difficult for companies to manage their sustainability challenges. That's why we believe there must be a widely adopted and comprehensive risk framework in place to ensure every business integrates environmental risk at the core of their corporate governance process.
2. *Standards setting.* Standards and globally accepted definitions drive efficiency, clarity, and interoperability. For corporate sustainability commitments to be meaningful, everyone needs to be using standardized math and accounting methodologies. That is why we believe companies must come together across sectors to agree on common sustainability units and methods of measurement across carbon, water, and waste.
3. *Data digitization.* The digital monitoring and recording systems of carbon emissions, water consumption, waste generation, and ecosystem health at an operational and planetary level are necessary for the private sector to ensure transparency, meaningfully inform policy advances, and unleash the creativity of markets to help build new solutions. Public and private organizations need to quickly move from analog to digital data to provide clarity and actionable insights to better monitor, model, and manage sustainability.
4. *Innovation investment.* Achieving our commitments will require technology that doesn't yet exist, is too expensive, or doesn't yet scale. Despite increased capital investments, emerging climate technologies don't yet scale to meet global needs. Given the accelerated rate of innovation required by 2030, climate investments will need to rely upon a blended capital framework to match investment vehicles to technologies and projects along an appropriate risk-tolerance spectrum, targeted on the most impactful areas.
5. *Market maturation.* Meeting the world's sustainability goals will require new solutions in areas like carbon reduction and removal and water replenishment at levels many orders of magnitude greater than they exist today. If these markets don't mature rapidly, they will be overwhelmed by the demand that will be placed on them in the coming years. Current sustainability markets, such as those for avoided emissions offsets or carbon-removal credits, are opaque and poorly understood by many current customers and most future ones. Carbon offset and removal, water replenishment, and ecosystem service markets can help address these issues by supplying more and increasing demand, transparently, and with standard insurance guarantees.
6. *Policy progression.* Policy action is the ultimate enabling condition to move the world beyond the voluntary action of a few corporations, and into a world where this work is required of all organizations. A globally coordinated *policy regime* should be in place that limits emissions in line with a 1.5 degree Celsius future, while respecting political sovereignty and the cross-boundary nature of the Earth's life support systems and does so with a focus on the need to equitably share these resources across cultures and communities.

As we detail in our report, we started working across all these dimensions over the past year. Our work on carbon removal highlights how to start creating these conditions.

**Carbon removal efforts**

Microsoft's approach to being carbon negative by 2030 is to reduce our carbon emissions by half and to remove more than the remaining amount of carbon from the environment. This will likely require Microsoft to procure millions of metric tons of carbon removal. This represents a tiny fraction of billions of metric tons of CO2 that the best available science says the world must be able to remove by 2050.

In July 2020 we took an early step in this direction by issuing a Request for Proposals to procure 1 million metric tons of nature- and technology-based carbon removal in the calendar year 2021. This RFP had two purposes. First, to procure carbon removal. Second, to understand this early and emerging market and make it more transparent. By both of those measures our RFP was a success: We received proposals from 189 projects in over 40 countries, from 79 applicants. We purchased 1.3 million metric tons of carbon removal this fiscal year from 26 projects around the world at an average price of $20 per metric ton. We developed a carbon removal portfolio that meets our needs today and takes some big bets on the long-term carbon removal technologies of tomorrow. We're making all carbon removal proposals publicly available, except for proprietary information and releasing a new white paper to share our learnings about what worked and what didn't so that others can accelerate their own carbon removal.

However, as Brad outlines in his blog, there is still much work to be done. Because of volume and price constraints, nature-based solutions with shorter carbon sequestration durability dominate our portfolio even though we know engineered solutions will have to be a more prominent component of carbon removal procurement by 2030. For the world to achieve a net-zero carbon economy, Microsoft's removal demands must make up a tiny fraction global demand and supply – not the entirety of it.

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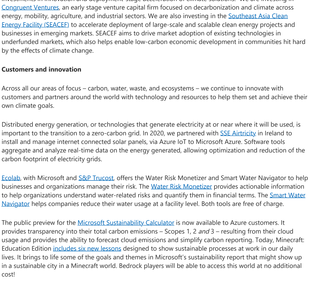
**Lessons learned**

As we think through our lessons learned from this RFP process, we see several opportunities where Microsoft can help mature carbon removal markets.

*The Fee and the Fund.* At Microsoft we can jointly deploy our carbon fee and our Climate Innovation Fund to send immediate procurement demand signals to the market while jointly investing in carbon removal technologies and facilities. An example of how this can work is our decision to use the carbon fee and the climate fund to become both a customer of, and an investor in, a project run by a Swiss company called Climeworks. Using only renewable energy, Climeworks' technology captures carbon dioxide from the air, at which point it either can be used for products such as synthetic fuels, greenhouse agriculture, and carbonated beverages, or it can be permanently stored underground in volcanic rock using a mineralization process.

Climeworks has built multiple direct air capture plants in Europe and plans to rapidly increase capacity to a scale of removing billions of tons of carbon dioxide. Through Microsoft's purchase of negative emissions from Climeworks, we will permanently remove 1,400 metric tons of carbon. Through our Climate Innovation Fund, we will provide funding for Climeworks' first-of-a-kind commercial-scale, fully renewable carbon capture and mineralization plant in Iceland.



Under construction: Climeworks' new large-scale direct air capture and storage plant, "Orca." (Credit: Climeworks)

*Demand Aggregation.* While Microsoft is currently a large corporate purchaser of carbon removal, our total demand is still too small to drastically move the market. To send a larger demand signal we will need to work together with other voluntary purchasers of carbon removal to ensure that the market receives a large coordinated market demand.

*Clarity and Confidence.* Providing clarity and confidence in the actual carbon removal and sequestration of removed approaches, like direct air capture, is straightforward. It is less simple for nature-based solutions, which rely on knowledge of how much carbon a forest or soil sequesters and confidence in the durability of that sequestration over a contracted time period. Technology has the potential to help provide this comfort. That is why, in partnership with Microsoft's AI for Earth, CarbonPlan is developing an open access dataset and interactive, web-based tool for analyzing U.S. forest carbon removal potential and permanence risks from fire, drought, and insects. Using this tool, we and other corporate buyers will be able to assess prospective projects and design more environmentally sound procurement practices.

**Climate Innovation Fund**

In addition to our Climeworks project investment, we are announcing two additional climate fund investments in innovation and deployment-stage acceleration of climate solutions. We are investing in Congruent Ventures, an early stage venture capital firm focused on decarbonization and climate across energy, mobility, agriculture, and industrial sectors. We are also investing in the Southeast Asia Clean Energy Facility (SEACEF) to accelerate deployment of large-scale and scalable clean energy projects and businesses in emerging markets. SEACEF aims to drive market adoption of existing technologies in underfunded markets, which also helps enable low-carbon economic development in communities hit hard by the effects of climate change.

**Customers and innovation**

Across all our areas of focus – carbon, water, waste, and ecosystems – we continue to innovate with customers and partners around the world with technology and resources to help them set and achieve their own climate goals.

Distributed energy generation, or technologies that generate electricity at or near where it will be used, is important to the transition to a zero-carbon grid. In 2020, we partnered with SSE Airtricity in Ireland to install and manage internet connected solar panels, via Azure IoT to Microsoft Azure. Software tools aggregate and analyze real-time data on the energy generated, allowing optimization and reduction of the carbon footprint of electricity grids.

Ecolab, with Microsoft and S&P Trucost, offers the Water Risk Monetizer and Smart Water Navigator to help businesses and organizations manage their risk. The Water Risk Monetizer provides actionable information to help organizations understand water-related risks and quantify them in financial terms. The Smart Water Navigator helps companies reduce their water usage at a facility level. Both tools are free of charge.

The public preview for the Microsoft Sustainability Calculator is now available to Azure customers. It provides transparency into their total carbon emissions – Scopes 1, 2 and 3 – resulting from their cloud usage and provides the ability to forecast cloud emissions and simplify carbon reporting. Today, Minecraft: Education Edition includes six new lessons designed to show sustainable processes at work in our daily lives. It brings to life some of the goals and themes in Microsoft's sustainability report that might show up in a sustainable city in a Minecraft world. Bedrock players will be able to access this world at no additional cost!

**Conclusion**

We have a limited amount of time to accomplish what will be the most significant behavioral and technological societal transformation in modern human history. By 2030, society must be well on its way to mitigating and adapting to rapidly changing climates, ensuring resilient water supplies, reducing the amount of waste we generate, and reversing the ongoing and catastrophic degradation of ecosystems while halting the extinction of species. That is why this must be a decade of ambition and action. As we move our work forward, we know we won't get everything right, and by being transparent we will face increased scrutiny. We welcome these conversations. They will be critical to accelerating our work and moving the world toward a net zero carbon economy.

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