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# Our third decade of climate action: Realizing a carbon-free future

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A few years ago flooding devastated Chennai, where I grew up. Seeing the images of the city—which had experienced extreme drought for so many years of my life—covered in flood waters, really made the impacts of climate change feel much closer to home. Last week, many of us woke up to orange skies in Northern California as wildfires continue to rage up and down the West Coast. I know others in Australia and Brazil have recently experienced similar events, and sadly they won't be the last.

The science is clear: The world must act now if we're going to avert the worst consequences of climate change.

We are committed to doing our part. Sustainability has been a core value for us since Larry and Sergey founded Google two decades ago. We were the first major company to become carbon neutral in 2007. We were the first major company to match our energy use with 100 percent renewable energy in 2017. We operate the cleanest global cloud in the industry, and we're the world's largest corporate purchaser of renewable energy.

In our third decade of climate action, we are going even further to help build a carbon-free future for everyone. Here's how:

- We're eliminating our entire carbon legacy, effective today.
- We are the first major company to make a commitment to operate

on 24/7 carbon-free energy in all our data centers and campuses worldwide. This is far more challenging than the traditional approach of matching energy usage with renewable energy, but we're working to get this done by 2030.

- We're investing in technologies to help our partners and people all over the world make sustainable choices. For example, we are investing in manufacturing regions to enable 5 GW of new carbon-free energy, helping 500 cities reduce their carbon emissions and finding new ways to empower 1 billion people through our products.
- We estimate that the commitments we're making today will directly generate more than 20,000 new jobs in clean energy and associated industries, in America and around the world, by 2025.

Here's more about what we're announcing today.

## **Eliminating our carbon legacy**

As of today, we have eliminated Google's entire carbon legacy (covering all our operational emissions before we became carbon neutral in 2007) through the purchase of high-quality carbon offsets. This means that Google's lifetime net carbon footprint is now zero. We're pleased to be the first major company to get this done, today.

## **Operating on carbon-free energy 24/7 by 2030**

Since 2017 we've been matching all of our annual electricity consumption with 100 percent renewable energy. Now we're going even further: By 2030 Google is aiming to run our business on carbon-free energy everywhere, at all times.

This is our biggest sustainability moonshot yet, with enormous practical and technical complexity. We are the first major company that's set out to do this, and we aim to be the first to achieve it.

We'll start by working towards 24/7 carbon-free energy at all of our data centers and campuses around the world. Our data centers power the products and services you've come to rely on every day. This will mean every email you send through Gmail, every question you ask Google Search, every YouTube video you watch, and every route you take using Google Maps, is supplied by clean energy every hour of every day.

Not long ago, it was hard to imagine a 24/7 carbon-free electricity supply—at a simple level, the wind doesn't always blow, and the sun doesn't shine at night. But thanks to trends in technology, and with the right government policies, the promise of 24/7 clean energy will soon be within reach. To get there, Google will invest in approaches that make it possible for us to source reliable carbon-free energy in all locations, at all times of day. We'll do things like pairing wind and solar power sources together, and increasing our use of battery storage. And we're working on ways to apply AI to optimize our electricity demand and forecasting. These efforts will help create 12,000 jobs by 2025. Importantly, we think our work can accelerate the availability of clean energy in communities worldwide, and help to solve challenges that have held back its ability to become an around-the-clock source of energy.

Read more in our [white paper](#).

## **Helping enable 5 GW in carbon-free energy investments**

We'll enable 5 GW of new carbon-free energy across our key

manufacturing regions by 2030 through investment. We expect this to spur more than \$5 billion in clean energy investments, avoid the amount of emissions equal to taking more than 1 million cars off the road each year, and create more than 8,000 clean energy jobs.

## **Helping 500+ cities reduce 1 gigaton of carbon emissions annually by 2030**

Cities create 70 percent of the world's emissions. Our Google [Environmental Insights Explorer](#) helps more than 100 cities to track and reduce their building and transportation carbon emissions and maximize their renewable energy use, by informing them of their solar potential. Today, we're expanding this tool to 3,000 cities worldwide.

We're also committing to help more than 500 cities and local governments globally reduce a total of 1 gigaton of carbon emissions annually by 2030—that's the equivalent of the annual carbon emissions of a country the size of Japan. [Read more](#) about our efforts to help cities like Hamburg and Houston accelerate their climate action.

## **Helping our partners reduce carbon emissions**

We are introducing a number of initiatives to help partners and organizations reduce their carbon usage and remove carbon from the atmosphere.

More than 10 percent of energy use in the U.S. comes from the heating and cooling of commercial buildings. Machine learning has reduced the energy used for cooling Google data centers by 30 percent, and now DeepMind and Google Cloud are making this

Cloud technology solution available globally for use by airports, shopping malls, hospitals, data centers and other commercial buildings and industrial facilities. You can read more details on our [Cloud blog](#).

Nonprofits, civil society organizations, and universities also play a critical role. We're working with a network of environmental organizations, such as Crowther Lab, on a science-based approach to reforestation and restoration. We're also launching a €10 million Google.org Impact Challenge in Europe to support promising ideas and projects to support sustainability, selected by independent experts.

## **Helping 1 billion people through our products**

Finally, Google's products are already helping people make more sustainable choices in their daily lives, whether it's using Google Maps to find bike-shares and electric vehicle charging stations, or in many European countries, using Google Flights to sort the least carbon-intensive option flights.

There's more tools and information we can provide, and our goal is to find new ways that our products can help 1 billion people make more sustainable choices by 2022.

## **Our next decade of climate action**

We're optimistic that by harnessing new technologies, investing in the right infrastructure and tools, and empowering partners, nonprofits and people, this can be the most decisive decade for climate action yet. We're proud to do our part, and to help move the world closer to a carbon-free future for all.