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Backgrounder

Global Climate Agreements: Successes and Failures

International efforts, such as the Paris Agreement, aim to reduce greenhouse gas emissions. But experts say countries aren't doing enough to limit dangerous global warming.

WRITTEN BY

Lindsay Maizland

UPDATED

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Summary

Countries have debated how to combat climate change since the early 1990s. These negotiations have produced several important accords, including the Kyoto Protocol and the Paris Agreement.

Governments generally agree on the science behind climate change but have diverged on who is most responsible, how to track emissions-reduction goals, and whether to compensate harder-hit countries.

The findings of the first global stocktake, discussed at the 2023 UN Climate Summit in Dubai, United Arab Emirates (UAE), concluded that governments need to do more to prevent the global average temperature from rising by 1.5°C.

Introduction

Over the last several decades, governments have collectively pledged to slow global warming. But despite intensified diplomacy, the world is already facing the consequences of climate change, and they are expected to get worse.

Through the Kyoto Protocol and the Paris Agreement, countries agreed to reduce greenhouse gas emissions, but the amount of carbon dioxide in the atmosphere keeps rising, heating the Earth at an alarming rate. Scientists warn that if this warming continues unabated, it could bring environmental catastrophe to much of the world, including staggering sea-level rise, record-breaking droughts and floods, and widespread species loss.

Since negotiating the Paris accord in 2015, many of the 195 countries that are party to the agreement have strengthened their climate commitments, including through pledges on curbing emissions and supporting countries in adapting to the effects of extreme weather, during the annual UN climate conferences known as the Conference of the Parties (COP). However, the absence of U.S. President Joe Biden and Chinese President Xi Jinping from this year's COP28 summit in Dubai, United Arab Emirates (UAE) have raised concerns about future climate commitments from the world's two largest greenhouse gas emitters.

What are the most important international agreements on climate change?

Montreal Protocol, 1987. Though not intended to tackle climate change, the Montreal Protocol [PDF] was a historic environmental accord that became a model for future diplomacy on the issue. Every country in the world eventually ratified the treaty, which required them to stop producing substances that damage the ozone layer, such as chlorofluorocarbons (CFCs). The protocol has succeeded in eliminating nearly 99 percent of these ozone-depleting substances. In 2016, parties agreed via the Kigali Amendment to also reduce their production of hydrofluorocarbons (HFCs), powerful greenhouse gases that contribute to climate change.

UN Framework Convention on Climate Change (UNFCCC), 1992. Ratified by 197 countries, including the United States, the landmark accord [PDF] was the first global treaty to explicitly address climate change. It established an annual forum, known as the Conference of the Parties or COP, for international discussions aimed at stabilizing the concentration of greenhouse gases in the atmosphere. These meetings produced the Kyoto Protocol and the Paris Agreement.

Kyoto Protocol, 2005. The Kyoto Protocol [PDF], adopted in 1997 and entered into force in 2005, was the first legally binding climate treaty. It required developed countries to reduce emissions by an average of 5 percent below 1990 levels, and established a system to monitor countries' progress. But the treaty did not compel developing countries, including major carbon emitters China and India, to take action. The United States signed the agreement in 1998 but never ratified it and later withdrew its signature.

Paris Agreement, 2015. The most significant global climate agreement to date, the Paris Agreement requires all countries to set emissions-reduction pledges. Governments set targets known as nationally determined contributions (NDCs), with the goals of preventing the global average temperature from rising 2°C (3.6°F) above preindustrial levels and pursuing efforts to keep it below 1.5°C (2.7°F). It also aims to reach global net-zero emissions, where the amount of greenhouse gases emitted equals the amount removed from the atmosphere, in the second half of the century. (This is also known as being climate neutral or carbon neutral.)

The United States, the world's second-largest emitter, was the only country to withdraw from the accord, a move by former President Donald Trump that took effect in November 2020. However, President Joe Biden reentered the United States into the agreement during his first months in office. Three countries have not formally approved the agreement: Iran, Libya, and Yemen.

Is there a consensus on the science of climate change?

Yes, there is a broad consensus among the scientific community, though some deny that climate change is a problem, including politicians in the United States. When negotiating teams meet for international climate talks, there is “less skepticism about the science and more disagreement about how to set priorities,” says David Victor, an international relations professor at the University of California, San Diego. The basic science is that:

the Earth's average temperature is rising at an unprecedented rate;

human activities, namely the use of fossil fuels—coal, oil, and natural gas—are the primary drivers of this rapid warming and climate change; and,

continued warming is expected to have harmful effects worldwide.

Data taken from ice cores shows that the Earth's average temperature is rising more now than has in eight hundred thousand years. Scientists say this is largely a result of human activities over the last 150 years, such as burning fossil fuels and deforestation. These activities have dramatically increased the amount of heat-trapping greenhouse gases, primarily carbon dioxide in the atmosphere, causing the planet to warm.

The Intergovernmental Panel on Climate Change (IPCC), a UN body established in 1988, regularly assesses the latest climate science and produces consensus-based reports for countries.

Why are countries aiming to keep global temperature rise below 1.5°C?

Scientists have warned for years of catastrophic environmental consequences if global temperature continues to rise at the current pace. The Earth's average temperature has already increased approximately 1.1°C above preindustrial levels, according to a 2021 assessment [IPCC] by the IPCC. The report, drafted by more than two hundred scientists from over sixty countries, predicts that the world will reach or exceed 1.5°C of warming within the next two decades even if nations drastically cut emissions immediately.

An earlier, more comprehensive IPCC report summarized the severe effects expected to occur when the global temperature warms by 1.5°C:

Heat waves. Many regions will suffer more hot days, with about 14 percent of people worldwide being exposed to periods of severe heat at least once every five years.

Droughts and floods. Regions will be more susceptible to droughts and floods, making farming more difficult, lowering crop yields, and causing food shortages.

Rising seas. Tens of millions of people live in coastal regions that will be submerged in the coming decades. Small island nations are particularly vulnerable.

Ocean changes. Up to 90 percent of coral reefs will be wiped out, and oceans will become more acidic. The world's fisheries will become far less productive.

Arctic ice thaws. At least once a century, the Arctic will experience a summer with no sea ice, which has not happened in at least two thousand years. Forty percent of the Arctic's permafrost will thaw by the end of the century.

Species loss. More insects, plants, and vertebrates will be at risk of extinction.

The consequences will be far worse if the 2°C threshold is reached, scientists say. “We’re heading toward disaster if we can’t get our warming in check and we need to do this very quickly,” says Alice C. Hill, CFR senior fellow for energy and the environment.

Which countries are responsible for climate change?

The answer depends on who you ask and how you measure emissions. Ever since the first climate talks in the 1990s, officials have debated which countries—developed or developing—are more to blame for climate change and should therefore curb their emissions.

Developing countries argue that developed countries have emitted more greenhouse gases over time. They say these developed countries should now carry more of the burden because they were able to grow their economies without restraint. Indeed, the United States has emitted the most of all time, followed by the European Union (EU).

Top Greenhouse Gas Emitters Since 1850

Emissions in metric tons of carbon dioxide equivalent, as of 2021

United States	621B
European Union	403B
China	401B
Russia	221B
India	166B
Brazil	150B
Germany	111B
Indonesia	110B
United Kingdom	99B
Japan	77B

Note: EU data does not include the United Kingdom.

Source: Jones et al. via Our World in Data.

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However, China and India are now among the world’s top annual emitters, along with the United States. Developed countries have argued that those countries must do more now to address climate change.

Top Greenhouse Gas Emitters in 2021

Emissions in metric tons of carbon dioxide equivalent

China		13.7B
United States	5.9B	
India	3.9B	
European Union	3.4B	
Russia	2.4B	
Brazil	2.1B	
Indonesia	2.1B	
Japan	1.1B	
Iran	1B	
Saudi Arabia	821.5M	

Note: EU data does not include the United Kingdom.

Source: Jones et al. via Our World in Data.

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In the context of this debate, major climate agreements have evolved in how they pursue emissions reductions. The Kyoto Protocol required only developed countries to reduce emissions, while the Paris Agreement recognized that climate change is a shared problem and called on all countries to set emissions targets.

What progress have countries made since the Paris Agreement?

Every five years, countries are supposed to assess their progress toward implementing the agreement through a process known as the global stocktake. The first of these reports, released in September 2023, warned governments that “the world is not on track to meet the long-term goals of the Paris Agreement.”

That said, countries have made some breakthroughs during the annual UN climate summits, such as the landmark commitment to establish the Loss and Damage Fund at COP27 in Shar el-Sheikh, Egypt. The fund aims to address the inequality of climate change by providing financial assistance to poorer countries, which are often least responsible for global emission yet most vulnerable to climate disasters. At COP28, countries decided that the fund will be

initially housed at the World Bank, with several wealthy countries, such as the United States, Japan, the United Kingdom, and EU members, initially pledging around \$430 million combined. The UAE also pledged \$100 million, a move some analysts say may put additional pressure on other high-emitting countries, such as China and Saudi Arabia, to increase their contribution to climate action funding.

Recently, there have been global efforts to cut methane emissions, which account for more than half of human-made warming today because of their higher potency and heat trapping ability within the first few decades of release. The United States and the EU introduced a Global Methane Pledge at COP26, which aims to slash 30 percent of methane emissions levels from 2020 to 2030. At COP28, oil companies announced they would cut their methane emissions from wells and drilling by more than 80 percent by the end of the decade, and the pledge included international monitoring efforts to hold companies accountable. Meanwhile, the United States announced a commitment to reduce methane emissions from the oil and gas industry by nearly 80 percent over the next fifteen years.

Are the commitments made under the Paris Agreement enough?

Most experts say that countries' pledges are not ambitious enough and will not be enacted quickly enough to limit global temperature rise to 1.5°C. The policies of Paris signatories as of late 2022 could result in a 2.7°C (4.9°F) rise by 2100, according to the Climate Action Tracker compiled by Germany-based nonprofits Climate Analytics and the NewClimate Institute.

“The Paris Agreement is not enough. Even at the time of negotiation, it was recognized as not being enough,” says CFR’s Hill. “It was only a first step, and the expectation was that as time went on, countries would return with greater ambition to cut their emissions.”

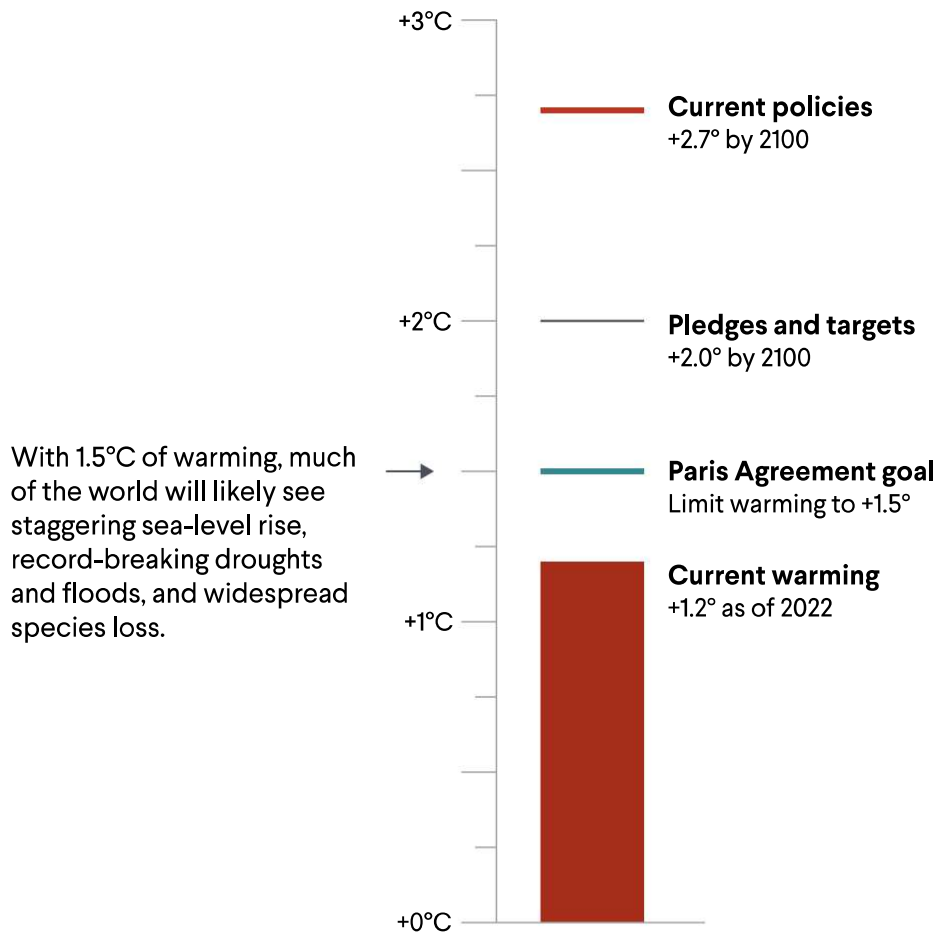
Since 2015, dozens of countries—including the top emitters—have submitted stronger pledges. For example, President Biden announced in 2021 that the United States will aim to cut emissions by 50 to 52 percent compared to 2005 levels by 2030, doubling former President Barack Obama’s commitment. The following year, the U.S. Congress approved legislation that

could get the country close to reaching that goal. Meanwhile, the EU pledged to reduce emissions by at least 55 percent compared to 1990 levels by 2030, and China said it aims to reach peak emissions before 2030.

But the world’s average temperature will still rise 2.0°C (3.6°F) by 2100 even if countries fully implement their pledges for 2030 and beyond. If the more than one hundred countries that have set or are considering net-zero targets follow through, warming could be limited to 1.8°C (3.2°F), according to the Climate Action Tracker.

Even With Pledges, World Is Not on Track to Meet Paris Agreement’s Goal

Global temperature rise over preindustrial average



Note: Current policies and pledges and targets are projections. In each scenario, the temperature shown is the most likely of a range of possible outcomes. Pledges and targets include submitted and binding commitments for 2030 and beyond.

Source: Climate Action Tracker.

What are the alternatives to the Paris Agreement?

Some experts foresee the most meaningful climate action happening in other forums. Yale University economist William Nordhaus says that purely voluntary international accords like the Paris Agreement promote free-riding, and are destined to fail. The best way to cut global emissions, he says, would be to have governments negotiate a universal carbon price rather than focus on country emissions limits. Others propose new agreements [PDF] that apply to specific emissions or sectors to complement the Paris Accord.

“Progress is going to happen not globally with all countries joined together, but in smaller groups and by sector,” says Victor, the international relations professor. In recent years, there have been examples of this. The Group of Twenty (G20), representing countries that are responsible for 80 percent of the world’s greenhouse gas pollution, has pledged to stop financing new coal-fired power plants abroad and agreed to triple renewable energy capacity by the end of this decade. However, G20 governments have thus far failed to set a deadline to phase out fossil fuels. In 2022, countries in the International Civil Aviation Organization set a goal of achieving net-zero emissions for commercial aviation by 2050. Meanwhile, cities around the world have made their own pledges. In the United States, more than six hundred local governments [PDF] have detailed climate action plans that include emissions-reduction targets. Industry is also a large source of carbon pollution, and many firms have said they will try to reduce their emissions or become carbon neutral or carbon negative, meaning they would remove more carbon from the atmosphere than they release. And while there remains little to no oversight of corporate emissions, some governments, including that of the United States, are considering requiring large businesses to report their carbon footprint. The Science Based Targets initiative, a UK-based company considered the “gold standard” in validating corporate net-zero plans, says it has certified the plans of over three thousand firms, and aims to more than triple this total by 2025. Still, analysts say that many challenges remain, including questions over the accounting methods and a lack of transparency in supply chains.

Despite these trends, many observers say that policymakers still have the biggest role to play setting and enforcing emissions targets. “It’s all pretty small relative to governments around the world setting a forceful climate policy,” Michael Greenstone, an economics professor at the University of Chicago, tells CFR’s Why It Matters podcast.

Recommended Resources


This timeline tracks UN climate talks since 1992.

CFR’s World101 library explains everything to know about climate change.

Climate Action Tracker assesses countries’ updated NDCs under the Paris Agreement.

CFR’s Alice C. Hill and Madeline Babin unpack the successes and failures of the 2022 U.S. climate bill.

In this series on climate change and instability by the Center for Preventive Action, CFR’s Michelle Gavin looks at the consequences for the Horn of Africa and the National Defense University’s Paul J. Angelo for Central America.

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Clara Fong contributed to this Backgrounder. Will Merrow created the graphics.

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