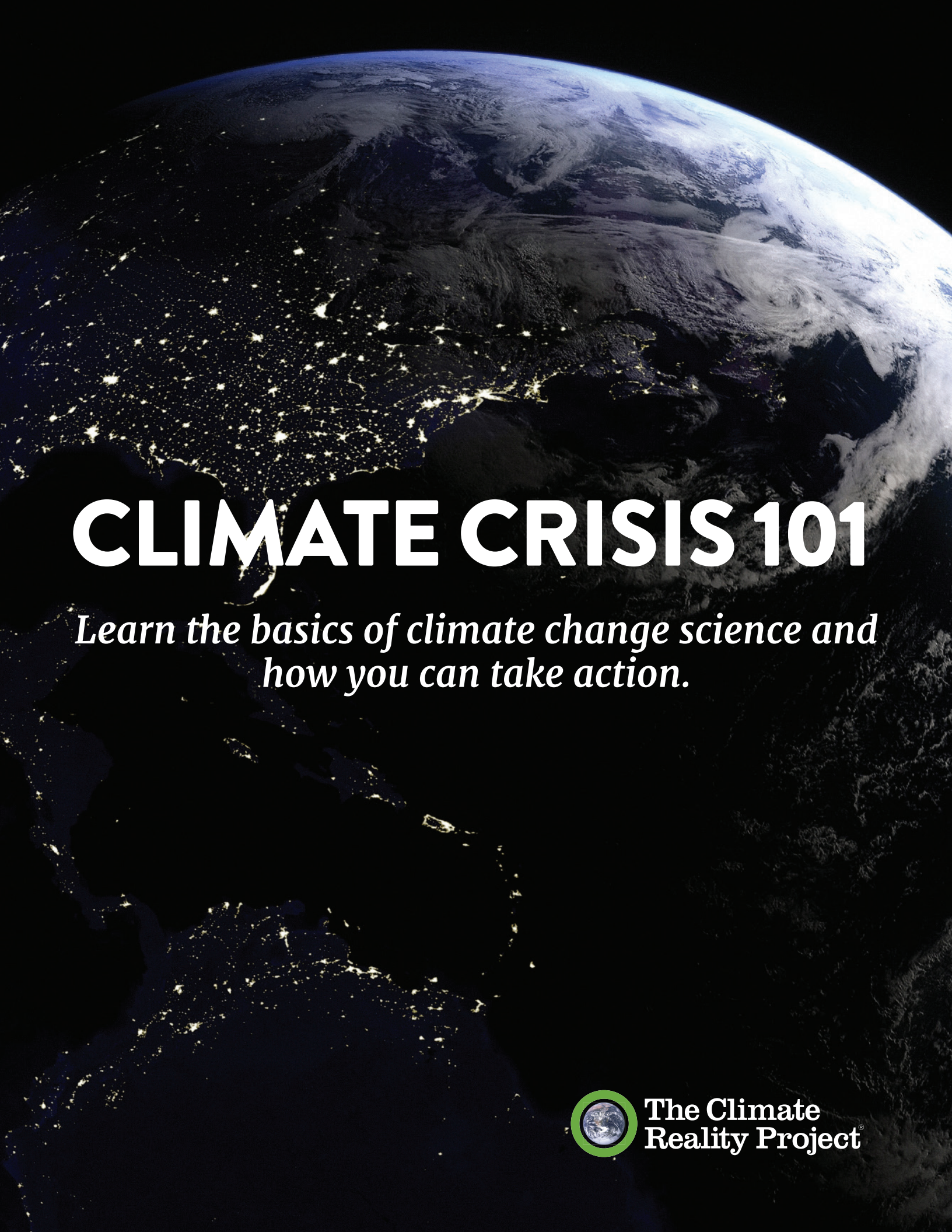

CLIMATE CRISIS 101

Learn the basics of climate change science and how you can take action.

The Climate Reality Project®

INTRODUCTION

The climate crisis is the defining challenge of our generation. Scientists are clear about the reality of climate change and we should be too. And with devastating storms, dangerous floods, melting glaciers, and rising seas becoming increasingly regular facts of life, it's more critical than ever that we face reality and get working on solutions together.

The simple fact is that climate change throws natural systems out of balance – to often devastating effect. What does that mean? Let us explain. Here's a helpful 101-style refresher on what's causing our climate to change and the crisis unfolding in front of our eyes.

QUICK LINKS

What Do We Mean By Climate Change?

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What Can We Do?

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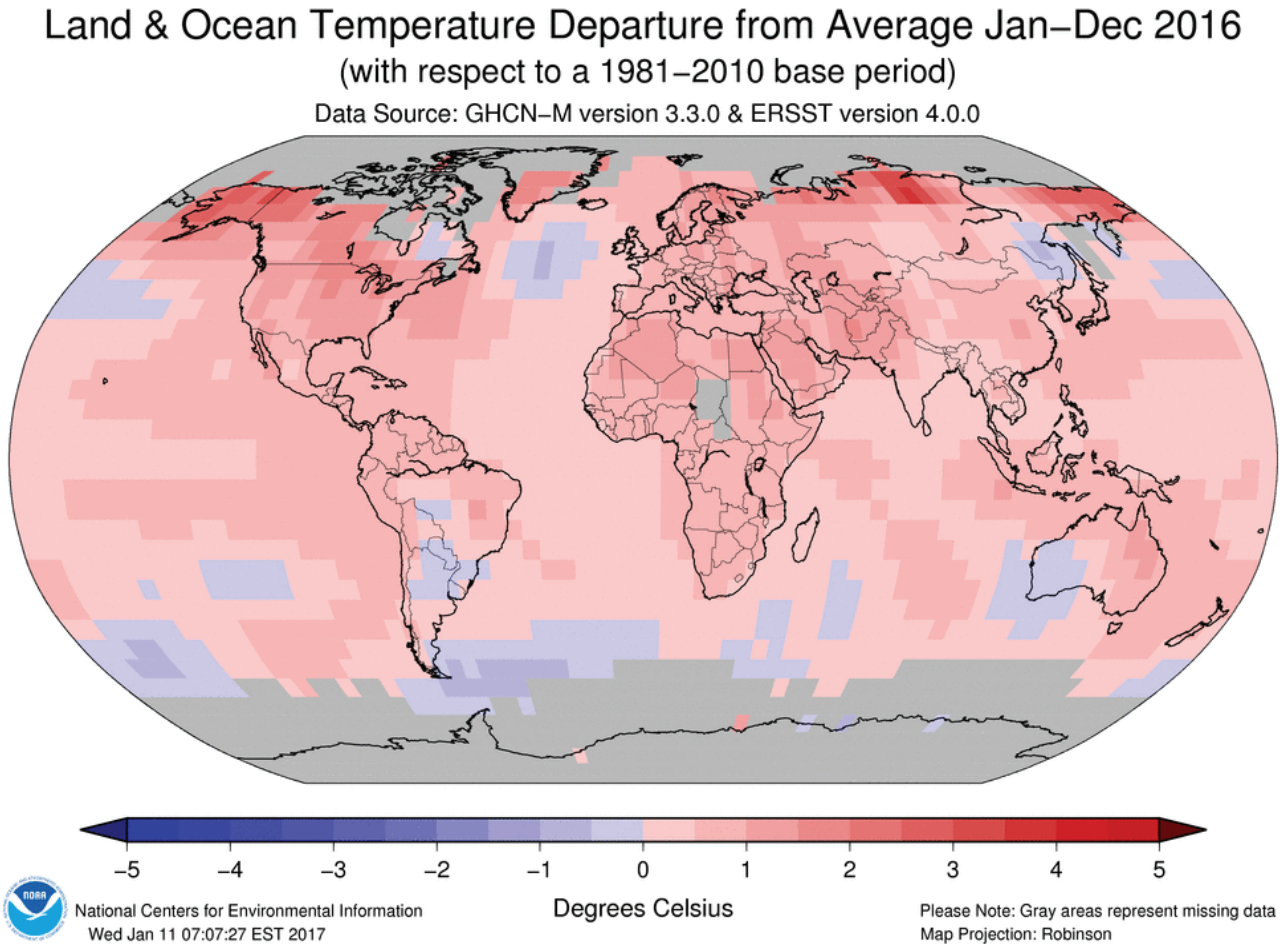
WHAT DO WE MEAN BY CLIMATE CHANGE?

When we talk about climate change, we're talking about the changes scientists have seen in long-term temperature, precipitation, and wind patterns, thanks to higher levels of greenhouse gases in the atmosphere.

HERE ARE SOME CLEAR SIGNS OF CLIMATE CHANGE:

RISING AVERAGE TEMPERATURES AROUND THE WORLD



MORE FREQUENT AND DEVASTATING STORMS AND FLOODS IN SOME PARTS OF THE WORLD

Aftermath of flash floods in Jamestown, Colorado, 2013.

INCREASINGLY LONG DROUGHT

Echo Bay Marina, Lake Mead National Recreation Area, Nevada. © 2014 James Marvin Phelps/Flickr cc by nc 2.0

GLACIERS MELTING AT RECORD PACES

Muir glacier, Alaska, in 1891 versus 2005.

RISING SEA LEVELS

Aerial views of the damage caused by Hurricane Sandy to the New Jersey coast, taken by the US National Guard in 2012.

THE CAUSE IS CLEAR.

Rising levels of greenhouse gases in the atmosphere, primarily from humans burning fossil fuels. Carbon dioxide is the chief culprit, but other gases like methane also play a dangerous role. These gases upset the natural systems that regulate our climate and lead to more extreme weather.

If this sounds like a big deal, that's because it is.

In fact, we can expect to see our world transformed by climate change during our lifetimes and if we do nothing, that transformation will be profound. We call this transformation – the process of climate change and its many effects on our world – **the climate crisis.**

But there's good news: we can choose to limit rising temperatures to 2 degrees Celsius or less, averting the worst of the climate and protecting our planet.

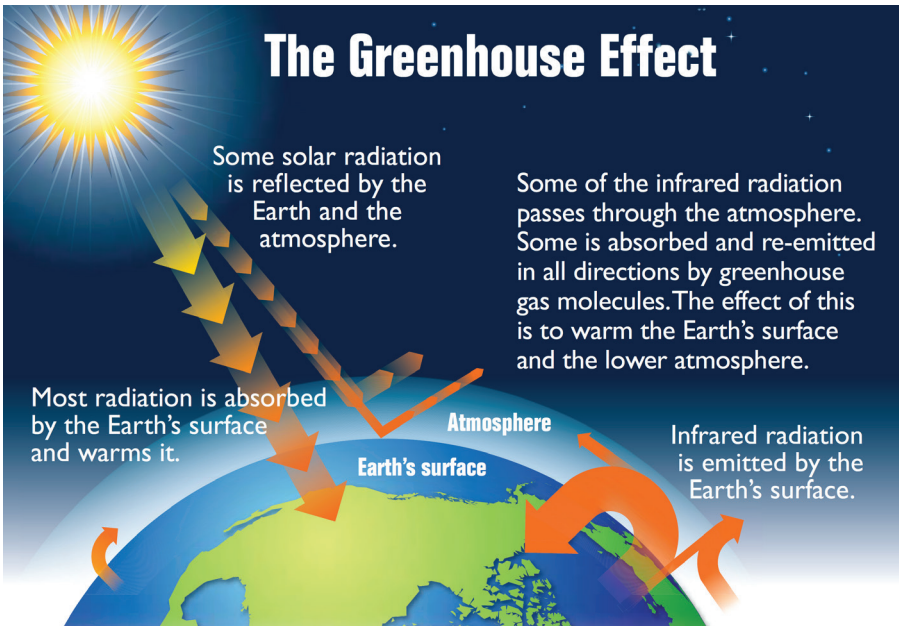
What's more, we know how to fight climate change and we already have the technology to do it. We have to start by burning less fossil fuels and ultimately stop altogether, which means a global shift to clean energy technologies like solar and wind. These technologies are getting more affordable and accessible every day, so we can make this shift while driving healthy economic growth around the world.

We can't win this fight alone. But with help from people like you, nothing is impossible.

Want to learn more? Read on.

WHAT CHANGES THE CLIMATE?

GREENHOUSE GASES ARE THE PRIMARY CAUSE OF OUR PLANET'S WARMING.



EPA, 2012

Carbon dioxide and other gases are released as a result of human activities such as burning fossil fuels for electricity, industry, and transportation. More gases in the atmosphere means more of the sun's energy gets trapped in heat. Things keep getting hotter and hotter. Extreme weather events occur as a result of the shifting climate.

Even small changes in the global average temperature can cause major and dangerous shifts in climate and weather. *Just consider the difference between 0 and 1 degrees Celsius (or 32 and 33 degrees Fahrenheit) – that one degree means the difference between ice and water.*

Burning fossil fuels isn't the only thing contributing to rising levels of carbon dioxide. Deforestation – cutting down trees on a large scale for fuel, land, or other purposes –leads to more greenhouse gases in the atmosphere as more trees are burned and fewer are in the ground to absorb excess carbon.

IS CLIMATE CHANGE REAL?

In a word: **yes.** Scientists are crystal clear about the relationship between carbon pollution and climate change.

Many of the attacks on climate science have come from oil and coal companies and their allies who see climate solutions like clean energy as a threat to their business. But instead of facing reality, they attack the science behind our understanding of climate change.

Then there's the smaller set of climate deniers who believe scientists and governments are engaged in a nefarious worldwide hoax, regardless of the evidence.

Just as the tobacco industry once attempted to confuse the public about the link between smoking and cancer, Big Polluters like oil and coal companies have spent decades running well-funded campaigns to mislead and deceive the public about what's really happening to the planet.

Climate deniers willing to concede that the world is getting warmer will often argue that there is not "scientific consensus" that it's due to human activity.

This is also wrong.

HOW CERTAIN ARE SCIENTISTS?

In short, very certain. Over 97 percent of climate scientists agree that man-made climate change is a reality. Virtually every national academy of science on Earth agrees.

In an urgent letter to the members of the US Congress, the leaders of 18 different major scientific associations wrote, "Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver."

The Earth has experienced cycles of warming and cooling in the past, but experts believe the current warming trend is "proceeding at a rate that is unprecedented in the past 1,300 years."

For comparison's sake, climate scientists have estimated the planet has previously taken around 5,000 years to recover – by warming between 4-7 degrees Celsius – after an ice age has ended. In the twentieth century alone, the average surface temperature increased by 0.8 degrees Celsius – a rate eight times faster than a typical post-ice-age-recovery.

And this cycle is rapidly accelerating.

HOW DO WE KNOW?

We know the Earth is getting hotter.

The following data comes from satellites and a host of other measurements:

- The world has already warmed about 0.8 degrees Celsius (1.5 degrees Fahrenheit) since 1880.
- Fifteen of the 16 hottest years on record have occurred in the twenty-first century.
- We're not getting more heat energy from the sun to drive this warming, according to NASA.

Furthermore, average ocean temperatures have risen 0.3 degrees since 1969.

- Warmer oceans mean less sea ice, particularly in the Arctic, where the extent and thickness of sea ice has declined rapidly over the last several decades.
- The Greenland and Antarctic ice sheets have shrunk: in just the last decade, 2 trillion tons of ice from the Greenland ice sheet has made its way into the Atlantic Ocean as fresh water.
- This melting ice – including glaciers across the world, which are retreating at an alarming rate – has accelerated sea-level rise, which is not great news for the half of the world's population living within 60 km of the sea.
- Higher levels of carbon dioxide in the atmosphere leads oceans to become 30 percent more acidic since the nineteenth century since oceans absorb greater levels of carbon dioxide and turn it into carbonic acid.
- The greater acidity prevents shellfish from building healthy skeletons and causes coral reefs to bleach and die off, with ripple effects up and down the food chain.

And that's just the oceans. Scientists have also traced strong connections between rising temperatures and greenhouse gases on one hand and increasingly frequent and dangerous storms, longer droughts, increasing danger from wildfires, and changes to the global water cycle on the other.

WHY SHOULD WE CARE?

The simple fact is that global temperature rise throws natural systems out of balance.

We are already beginning to see what a warmer future has in store for us:

- Rainstorms, severe droughts, powerful tropical cyclones, extreme heat waves.
- Rising sea levels (projected to rise an other 1 to 4 feet by 2100).
- Displacement of nearly half of the world's population.
- Flooding coastal areas literally swallowing entire islands.
- Populations of animals dying out.

These are not wildly alarmist projections either – they're based in solid science. The climate crisis has real and dangerous impacts on public health as well. This is especially true for the most vulnerable among us – children, the elderly, and the poor – who are at the most risk from heat stress, air pollution, and extreme weather events.

And unless we act, we could see these impacts become even more pronounced in the very near future.

Do we want to condemn our children, our grandchildren, and everyone who comes after to living in a world devastated by the climate crisis? Or do we want to be the generation that discovered the courage to act and rose to solve the greatest challenge humanity has ever faced?

It's our choice.

WHAT CAN WE DO?

Climate change is already happening. How much the climate warms in the future is up to us.

It's true that even if we completely stopped emitting carbon pollution today, average global temperatures would continue on their upward trajectory for some time. The carbon pollution driving climate change stays in the atmosphere for hundreds of years, so it is difficult to stop the crisis in its tracks.

What we can do is stop adding to all the carbon dioxide in the atmosphere so the warming slows and the planet has a chance to recover. We can do it by working to reach net zero carbon emissions by the second half of the century.

If we act now to transition to clean energy technologies like solar and wind, we can limit global warming to no more than 2 degrees Celsius (3.6 degrees Fahrenheit), while also creating many, many new jobs in fields as diverse as construction, transportation, manufacturing, research and development, operations, engineering, and much more.

Here's how you can take action:

1. Contact your leaders about the climate crisis:

    - Every elected official from a city council member to a senator has an obligation to listen to their constituents. Make your voice heard.
    - Find your senators' contact info here and your representatives' information here.
    - When you call, make sure you know the facts and have prepared a short pitch on why the official should or should not support a bill or proposition.
    - Be clear that you are a constituent asking your representative to do their job – to represent you. Then, thank the aide who answered the phone for their time.
    - Read our blog post for more tips on contacting your representatives.
    - Show the world that Americans support the Paris Agreement to cut greenhouse gas emissions and halt rising temperatures by taking the I Am Still In pledge. Then, ask your friends to join you.

2. Request or attend a presentation from a trained Climate Reality Leader. Wherever you live, a Climate Reality Leader trained by former US Vice President Al Gore is available to give a presentation that makes the crisis and how we solve it easy to understand. Climate Reality Leaders are available to present to any audience of any size, whether it's a crowd of two or a group of 2,000.

3. Write a blog post or letter to the editor discussing why you're concerned about climate change and how it could affect the things you love. More tips here.

4. Learn about the climate crisis and how you can be an agent for change straight from Vice President Gore. Attend our next Climate Reality Leadership Corps training.

In addition to taking a few small steps to reduce your own carbon footprint and supporting businesses that are embracing clean energy, we can work together to support leaders at every level who insist on truth, accept reality, and listen to science. By working together, we can ensure our leaders enact the strong city, state, and national policies needed to tackle a crisis of this magnitude.

THE SUSTAINABLE AND PROSPEROUS FUTURE WE ALL WANT IS STILL WELL WITHIN OUR GRASP. BUT TO MAKE IT A REALITY, WE HAVE TO ACT NOW.

ADDITIONAL RESOURCES

Now that you understand the basics of climate crisis, take a deeper dive with these recommended resources and additional reading.

DOWNLOAD THESE RECOMMENDED E-BOOKS FROM THE CLIMATE REALITY PROJECT:

- The 12 Questions Every Activist Hears and What to Say
- Climate Change and the Water Cycle: Four Big Questions Answered
- Top Solar Myths E-book
- Discover Your Purpose: Lessons from Six Climate Reality Leaders
- "I Am Still In" Paris Agreement Toolkit

George Mason Center for Climate Change Communication maintains a site providing resources for effective communication of climate change.

Yale Project on Climate Change Communication offers communication resources on a variety of user-selectable topics.

Skeptical Science provides readers with the basics of climate change science as well as rebuttals to some of the most common myths perpetuated by climate change deniers.

The Union of Concerned Scientists has a "Clean Energy 101" section on its website that's very useful for people just beginning to learn about clean energy.

The US Global Change Research Program conducts comprehensive assessments about the impacts of climate change in the US, including regional impacts, both observed and projected.

The US National Oceanic and Atmospheric Administration's climate website consolidates US climate trends, data, and climate change news, as well as teaching aids and tools to help explain the issues better.

The Climate Reality Project®

Founded and chaired by former US Vice President and Nobel Laureate Al Gore, The Climate Reality Project is dedicated to catalyzing a global solution to the climate crisis by making urgent action a necessity across every level of society.

Today, climate change is standing in the way of a healthy tomorrow for all of us. But we know that practical solutions are right in front of us. We can create a healthy, sustainable, and prosperous future by making a planet-wide shift from dirty fossil fuels to clean, reliable, and affordable renewable energy. At Climate Reality, we combine digital media initiatives, global organizing events, and peer-to-peer outreach programs to share this good news with citizens everywhere and build overwhelming popular support for policies that accelerate the global transition to a clean energy economy.

To learn more, visit www.climaterealityproject.org