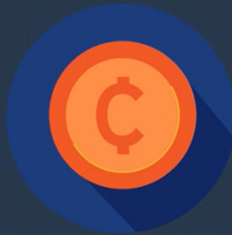


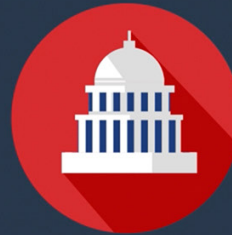
# The challenges



Time



Money



Policy



Culture

## This Will Be Hard

Combating climate change will be extremely complicated. To successfully mitigate its disastrous effects, it will take politicians, researchers, educators, engineers, and so many more to work together to find solutions. Everyone has a role to play, and it's going to take all of us.



**0:09**

*Narrator speaking; photos of scientists and engineers at work*

*Photos of people working together*

*Text: Communicators, advocates, etc; text: The Challenges; transition music*

**1:08**

*Text box: Paul Romer; photo of Romer; text: quote by Romer*

*Time, money, policy and culture graphic*

*Zooms in on Time graphic; text box: greenhouse gas statistic*

**2:01**

*Photos of natural disasters; photo of mother and daughter standing in field; time lapse of sky*

*Infographics of climate change polls*

In the midst of all the bad news about climate change, here's a really positive story: a whole community of scientists, engineers, and innovators have been hard at work. They're striving to get us to a world of net zero greenhouse gas emissions, potentially solving the problem of climate change. They haven't overcome all the scientific and engineering challenges yet, but they're working on it.

However, these innovators don't have the expertise to solve the other challenges of getting us to net zero: communicating, advocating, policy making, and implementing the changes we need.

This is a video about how you can help these scientists and engineers.

One way is to join them as researchers working on solutions to technological questions. But in this video, we'll mainly discuss how you can join the community of communicators, advocates, policymakers, and implementers who can turn these technological innovations into a global reality.

The goal of getting to net zero is a realistic one. Paul Romer, who won the Nobel Prize in economics in 2018, said that, "It is entirely possible for humans to produce less carbon... Once we start to try to reduce carbon emissions, we'll be surprised that it wasn't as hard as we anticipated."

But while it may be possible to get to net zero, it isn't going to be easy. We face challenges of time, money, policy, and culture.

Let's try to understand those challenges so we can get to work.

First, let's talk about time. The truth is, we only have a short period in which to turn the climate change picture around. The 2022 Intergovernmental Panel on Climate Change warned that greenhouse gas emissions must decline dramatically in the next three years. If they don't, it will become almost impossible for us to reduce the effects of climate change.

Of course, that doesn't mean we'll feel all of these effects immediately.

Natural disasters like heat waves, wildfires, and storms are already multiplying, but most of the impact of climate change will be felt by our children. This reality points to one of the primary challenges we face: humans find it hard to think on a long-term horizon.

In a similar way, we find it hard to evaluate the risk of climate change to us, as individuals.

Here's how we know about this problem: in 2021, a poll in the United States found that 72 percent of people expressed acceptance that global climate change is happening. And, 64 percent also believe it will harm people in this country. But well under half—only 47 percent—predicted that climate change would affect them. Interestingly, that number is almost exactly the same as the percentage who feel they have already experienced those effects.

In other words, most people believe climate change will affect them only when it's already happening. So people don't assess risk all that well over time.

**2:56***Money graphic**Rotating globe**Photos of milk jugs and orange juice**Photos of technologies that lower emissions*

But that's not the only challenge we face. Even if we all accepted that climate change is an immediate threat, the reality is that fixing the situation will be expensive.

To understand how the economics of reacting to climate change works, let's start with the fundamentals. Most of our economic activity, from producing food to building buildings to moving ourselves and our goods around, produce greenhouse gases.

We've been able to ignore this reality for a long time. For example, even at its historic highest price, a gallon of gasoline is still comparable to a gallon of milk or orange juice. The greenhouse gasses that gasoline adds to the atmosphere in the form of carbon and methane, just don't get factored into the price we pay for it.

Unfortunately, the cost of lowering greenhouse gases is factored into the technologies we're developing to do so. As a result, it costs a lot more to build, grow, or make the things we need in ways that don't add greenhouse gases to the atmosphere.

**3:50***Text box: Green Premium**Text box: Researching new technologies...**Text box: Governments often fund...; clips of the U.S. government during WWII and the Space Program*

We call this additional cost, the Green Premium, for building, growing, or making things, and nobody wants to pay that cost. It's not only that existing green technologies cost more to use, a lot of the innovations we need also still require research to create them, or bring them to market. Some of these costs may be paid by companies hoping to profit from the innovations.

But investors are wary of putting their money behind a lot of the more speculative technologies. This creates a well-known research funding gap.

Historically, governments have stepped in to cover the gap, as the United States government did during World War II or the Space Program. But this can happen only if there's enough public pressure to push the world's governments to do it.

Right now, there isn't enough pressure to convince every government to urgently support green research.

**4:36***White House graphic**World map graphic*

You can already see that the funding challenge is related to a political challenge: we need to get governments to provide research funding; we also need them to create policies that could raise the cost of putting carbon in the atmosphere, and others that could lower the cost of green technologies that help us get to zero.

But reaching political agreement at any level is hard. It's hard at the geopolitical level, where governments with different interests and a need to respond to public pressures at home, find it hard to agree on a common set of principles and actions.

And there are additional problems at the global level: the people who are suffering the most, the inhabitants of developing countries, have the least power to create change.

*Zooms in on the U.S. and China*

Meanwhile, the two biggest polluters, the United States and China, each want the other to make the first big move.

*Photos of workers who will be affected by climate change*

**5:33**

*Clip of oil industry cranes*

*Infographic depicting checks and balances*

*Photo of Osaka; Text box: Shannon Osaka and a quote by her*

*Culture graphic; photos of people looking skeptical*

**6:25**

*Photo of a crowd yelling at men; photo of man with a cowboy hat; photo of two men looking at a paper*

*Text: What can you do?; transition music*

*Photo of kids being educated outdoors; text box: educate*

**7:06**

*Photo of people protesting for climate legislation; text: Advocate*

Meanwhile, on the national level, climate change action quickly becomes politicized. The policies we need will affect people like ranchers, coal miners, and builders a lot, and other people are reluctant to pay what is needed to help them adjust.

Then there's lobbying from companies, like those in the oil industry with a vested interest in keeping us burning fossil fuels.

That's a lot of obstacles to green policies. But that's not all.

Even if most people agreed on the outcome they wanted, passing legislation is hard in a democracy.

Our government has checks and balances, like congressional committee chairs, individual senators, and judges that are necessary, but that can slow down the process of change.

This is one of the many reasons why, as environmental journalist Shannon Osaka has said, "the last three decades of U.S climate policy looks like a graveyard of bills."

Behind the politics and economics, real action on climate change also faces a wide range of cultural and identity issues. Most significantly, we know people distrust facts and information that contradict the way they see the world and that come from outside their community.

Unfortunately, this describes both the realities of climate change and many of the new innovations we need. People also distrust facts and information that call for them to change the way they live. They may be open to fighting climate change generally, but worry about how the needed costs and strategies will change their way of life specifically.

These cultural and identity issues are part of the reason your efforts will be so important. Within your communities, you can educate, advocate, and prepare to innovate to help the world get to net zero.

So, what can you do? First, you can educate the people around you.

Because people naturally distrust information coming from outside their community, you can play a key role in getting your neighbors and family and town to see that climate change will affect them. And, you can also help educate them about the long-term economic opportunities and cost savings that make clean industries a good idea.

Similarly, in a democracy like ours, policymakers are most likely to listen to their own constituents. You can organize your community to democratically lobby for change.

This organizing can help build the political will to introduce cost subsidies that support clean technologies, create public investment in innovative technologies, and decrease greenhouse gas pollution by increasing its financial cost.

*Text: Prepare to innovate*

In the longer term, it may be that the most important thing you and your friends can do is prepare for careers that can help us overcome the obstacles to real change.

**7:57**

*Photos of people doing jobs that can combat climate change*

You may become a material scientist, helping to create carbon-free concrete or fertilizer. Or maybe an engineer, developing new sources of renewable energy. You could also go into business, and help develop ways of funding new technologies. Or become a policy advocate, supporting laws that get these innovations implemented. Or an educator, who can figure out ways to effectively communicate their value to voters and community members.

*Outro music*

There's a community of people out there trying to solve the issue of climate change. The job they've taken on is hard. You can support them. So let's do it.



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