

CLIMATE NOW.

Explaining the key scientific ideas, technologies, and policies relevant to the global climate crisis.

Series 1: Climate Primers



How do we know the climate is changing? And how do we know that change is being caused by human activities?

Climate Now hosts Ozak Esu and James Lawler speak with Dr. Kerry Emmanuel, Professor of Atmospheric Science at MIT, to understand the science that proves the climate is changing and that this change, unlike previous changes in the climate, is caused by the human race due to increased CO2 concentration in the atmosphere.



Emissions of greenhouse gases are rising dramatically worldwide, but it can be challenging to grasp just how much we are emitting, and where those emissions come from.

Here we break down how much we are emitting in total, by country and region, and by economic sector. We also discuss the relationship between key economic and demographic variables and greenhouse gas emissions.



How expensive is climate change? It's hard to put a dollar number on the destruction of the great barrier reef. And we don't know exactly how much it's going to warm where. But we can take physical estimates and quantify the range of monetary impacts that climate change might cost.

In this video, we examine the projected costs of climate change in human health, agriculture, sea level rise and extreme weather, labor and energy, and migration with the help of Dr. Ian Bolliger, Climate Data Scientist at the Rhodium Group.



The Social Cost of Carbon was created to better understand the cost/benefit relationship of new climate policies and regulations.

This value, however, is difficult to quantify, with factors such as future societal wealth and global climate damages (such as species extinction) that are impossible to know.

Find out how the social cost of carbon is calculated and why the effort to quantify this value is necessary despite its imperfections with the help of Dr. Tamma Carleton of UC Santa Barbara and Dr. Bob Kopp of Rutgers University.



Which climate policies will help countries transition to net-zero emissions? What are the pros and cons of these policies, and how does the United States compare to the rest of the world in implementing a carbon price?

Climate Now spoke with Dr. Danny Richter, Vice President of Government Affairs at Citizens' Climate Lobby, to help answer these questions.



Biomass - such as corn or switchgrass - can be converted into liquid transportation fuels, or biofuels. Biofuels are attractive because they result in significantly fewer emissions than fossil fuels, but they come with their own set of challenges, including how to minimize the cost of production to compete against fossil fuels.

In this episode, we delve into the process of converting biomass to biofuels and the advancements being made with second, third, and fourth-generation biofuels, including waste-to-energy biofuels that are beginning to take shape.

Series 2: Technologies



Hydrogen is uniquely qualified as a storage of clean energy because it is abundant - the most abundant element in the universe - and it can be produced using renewable energy.

When consumed in a fuel cell, its only byproduct is water, making it ideal for our net-zero emissions future. Hydrogen, however, also comes with unique challenges, such as high inefficiency during production and transportation difficulties.

Climate Now host Dr. Ozak Esu details the benefits and trade-offs of hydrogen with the help of Duke University Professor of Chemistry Dr. Ben Wiley.



Aviation is responsible for 2.5% of global greenhouse gas emissions, though this figure is projected to grow as developing parts of the world become wealthier and increase demand for air travel.

Experts have looked to sustainable aviation fuel (SAF) to decrease emissions as it can be used with existing jet engines and decrease CO2 emissions by 60-80% - moving toward 100% - and potentially become a negative emissions technology.

Series 3: Research

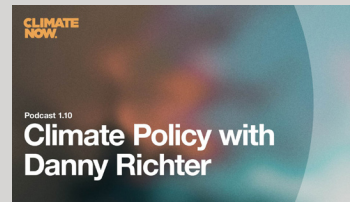


Pledges to achieve "net-zero" emissions are proliferating from companies and countries alike. However sincere these pledges may be, they rarely include specific plans to achieve that ambition.

Princeton University's Net-Zero America Report provides a roadmap for how we might achieve net-zero emissions in the US, including five paths and the conditions these scenarios must meet.

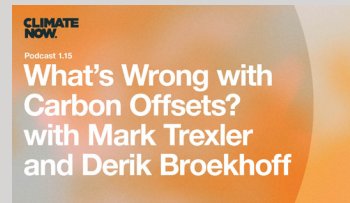
We spoke with Dr. Eric Larson, lead author of the Net-Zero America Report to better understand these pathways. Watch now to learn how the US might achieve net zero emissions by 2050.

Featured Podcast Episodes:



National governments are best-suited to provide the bold, swift action required by the climate crisis through policy. But which policies, exactly, should be passed? What are the pros and cons of each, and which are already proven to be effective in other countries?

In this episode, we talk with Danny Richter, Vice President of Government Affairs at Citizens' Climate Lobby, to discuss some of these questions, including what a price on carbon might look like in the United States.



The carbon offset market is in high demand due to a surge of corporate net-zero pledges, but does the market actually work? How can companies be sure their dollars are removing carbon that otherwise wouldn't be removed from the atmosphere? And what are the risks of a market that doesn't uphold its promise of truly offsetting emissions?

Dr. Mark Trexler of the Climatographers and Derik Broekhoff of the Stockholm Environment Institute (SEI) joined Climate Now to discuss the carbon offset market, what's wrong with it, and what its future could be.



How do we reach global net-zero emissions by 2050, when there is almost no chance of completely ending our dependence on fossil fuels by that time? The solution will require Carbon Dioxide Removal (CDR) - a host of natural and technological techniques for drawing CO2 out of the atmosphere, effectively producing 'negative emission'.

We spoke with Dr. Roger Aines, the Energy Program Chief Scientist and lead of the Carbon Initiative at the Lawrence Livermore National Laboratory, to learn about the various carbon dioxide removal methods, their advantages, costs and challenges, and who is helping advance them.

