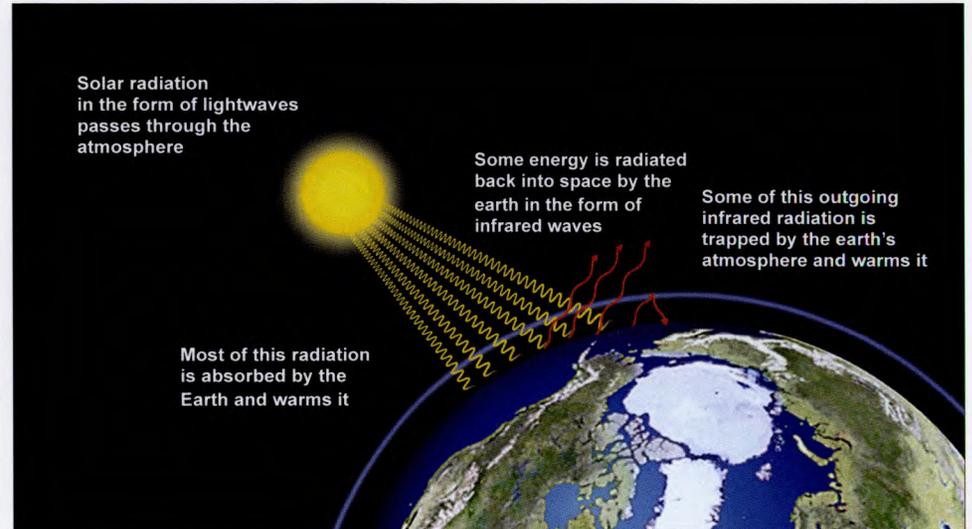
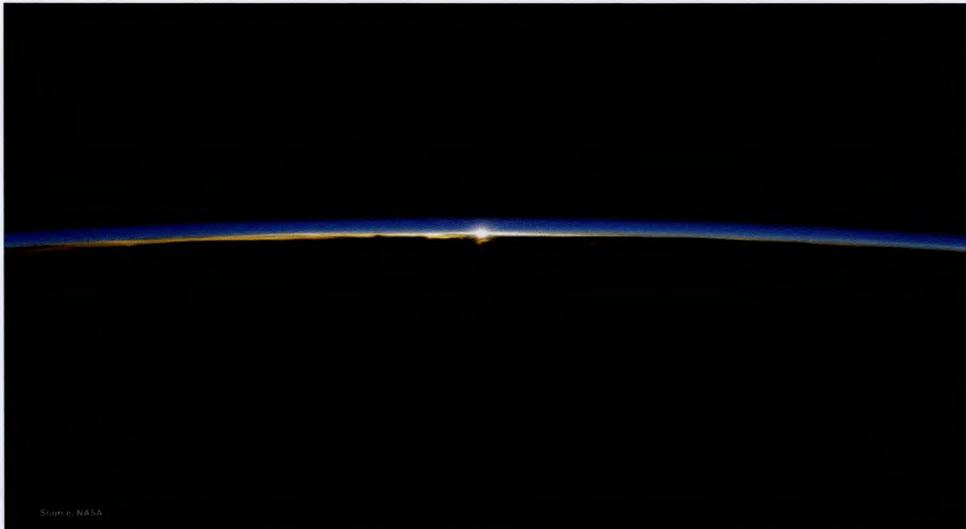
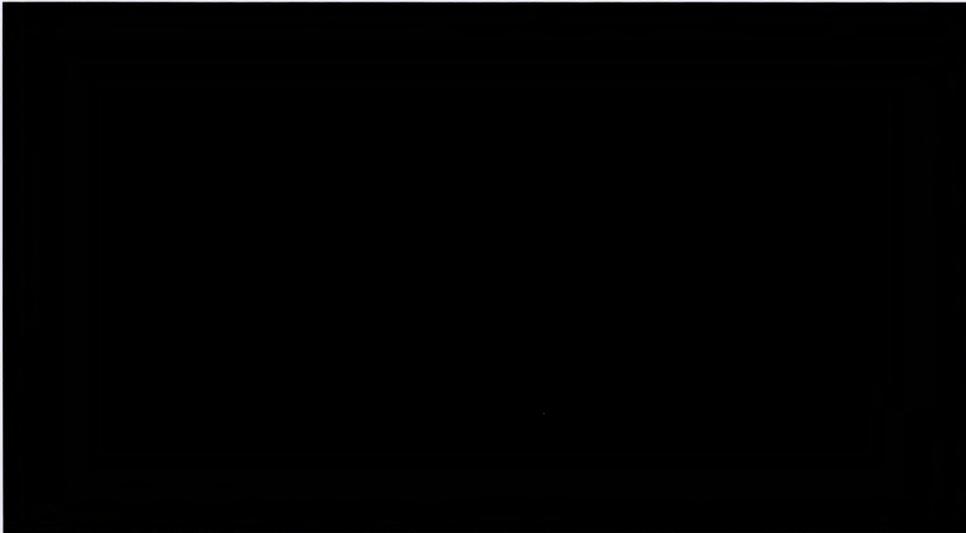
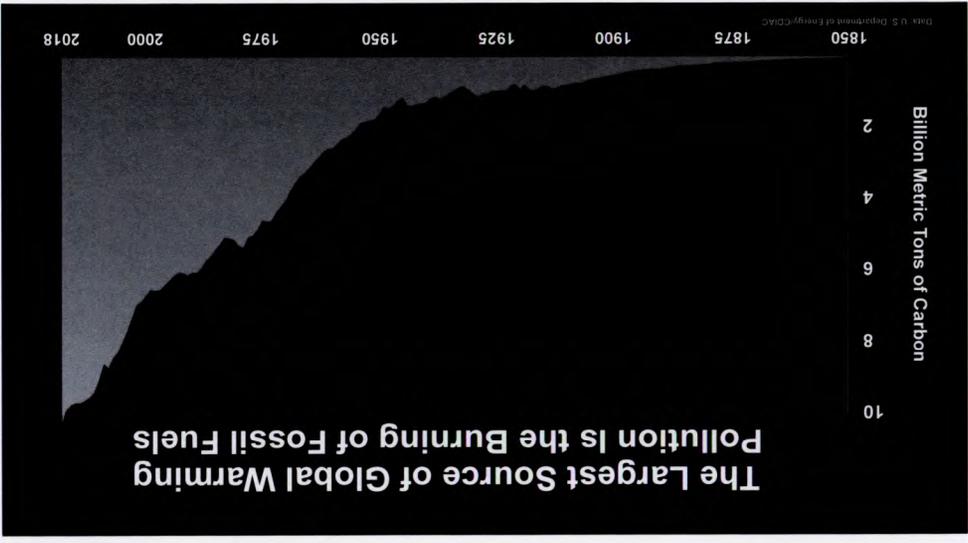
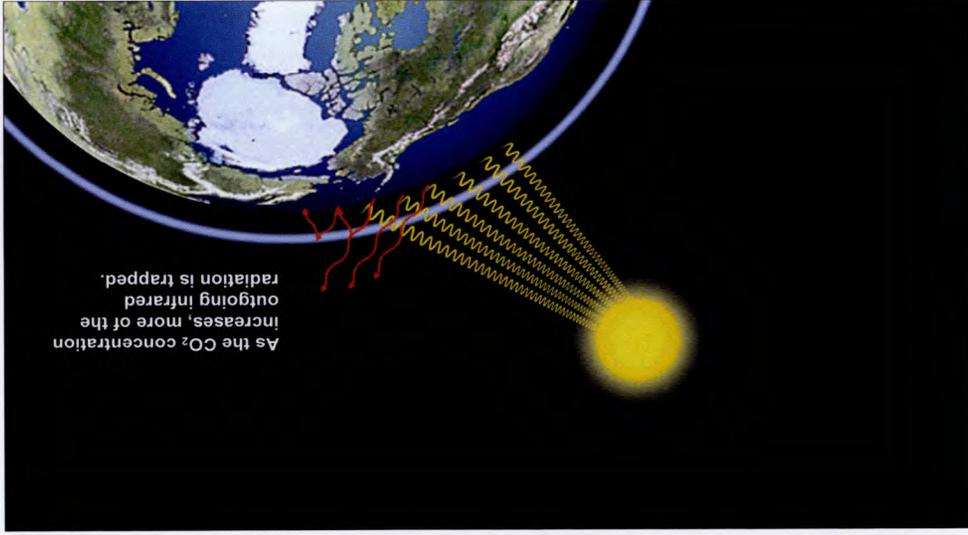
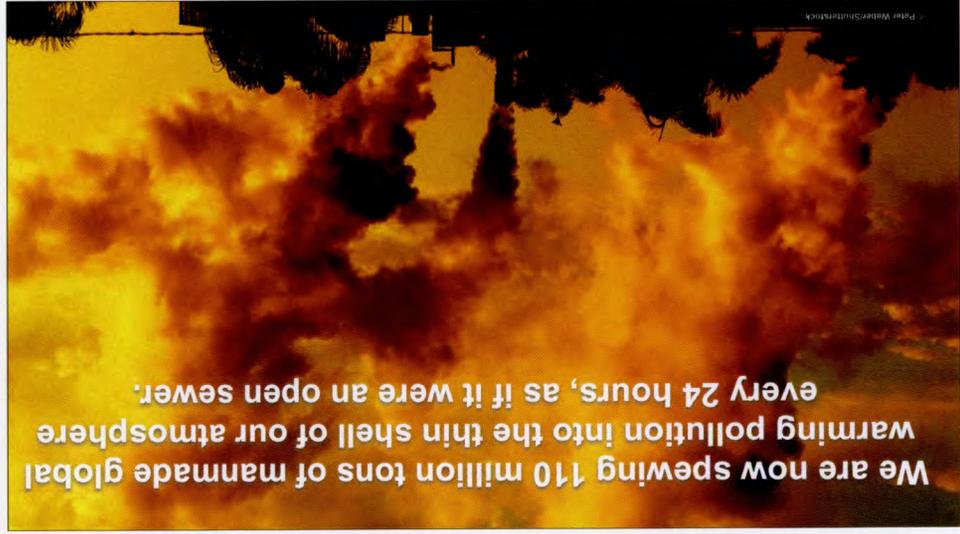


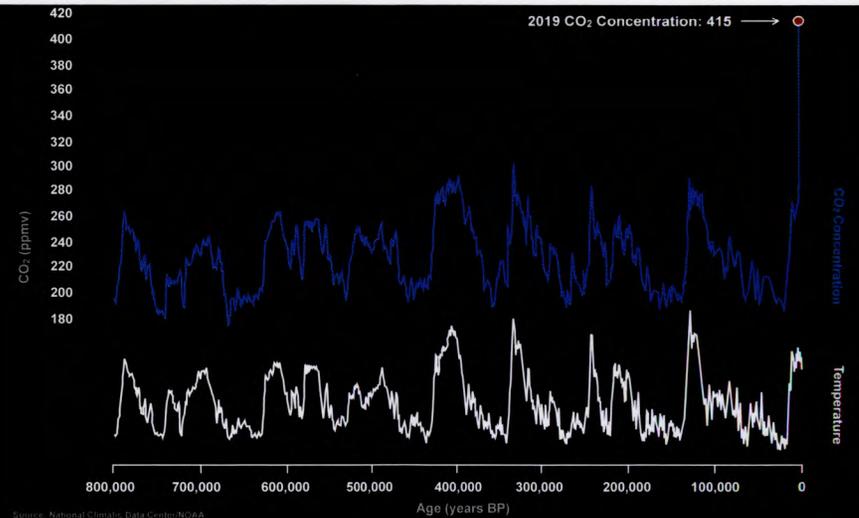
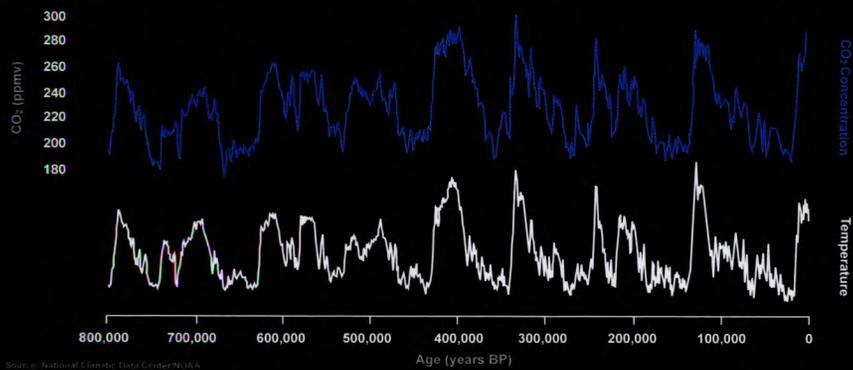
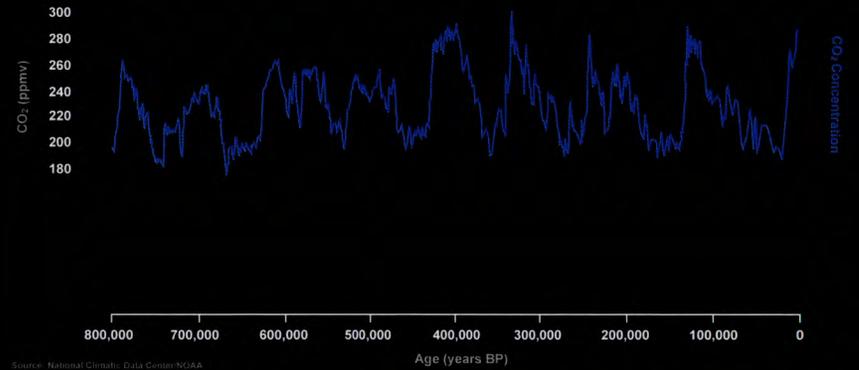
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RITA RYAN

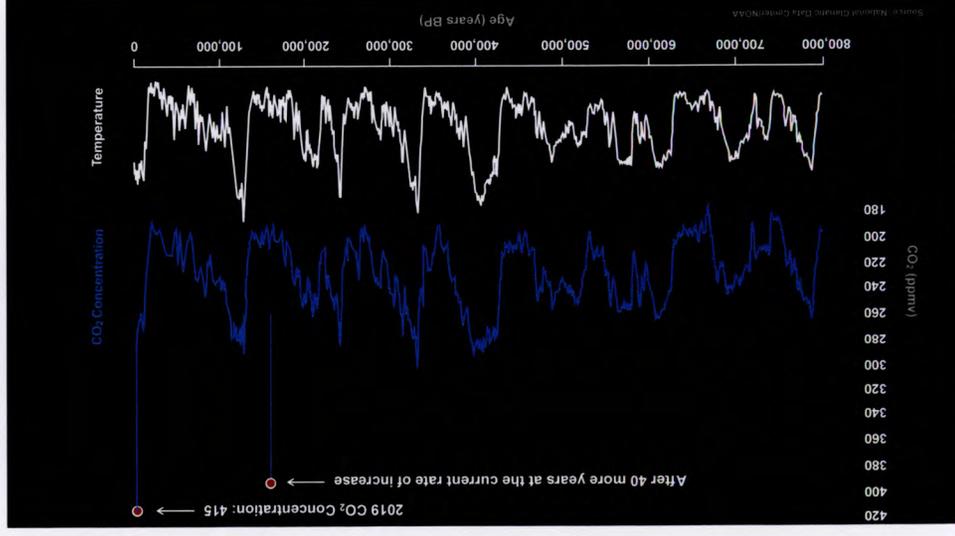
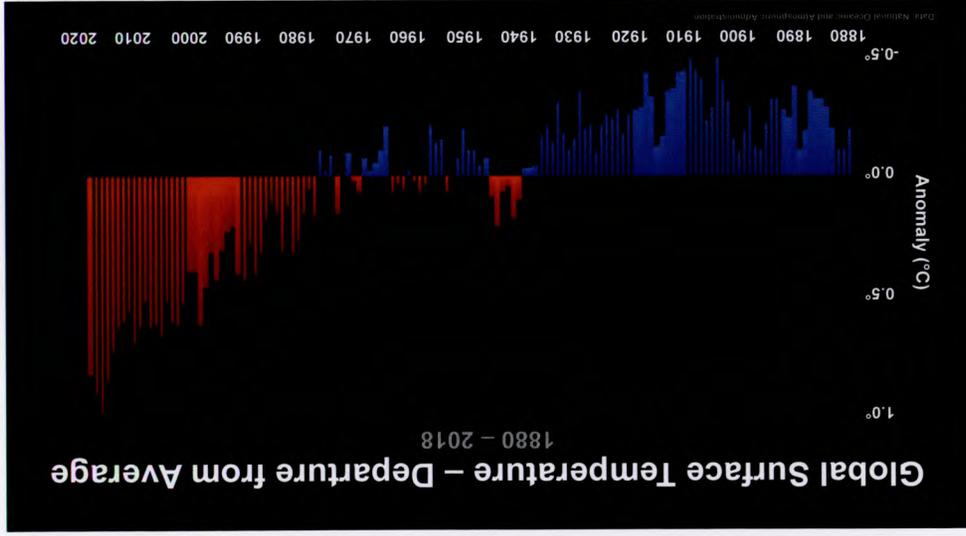


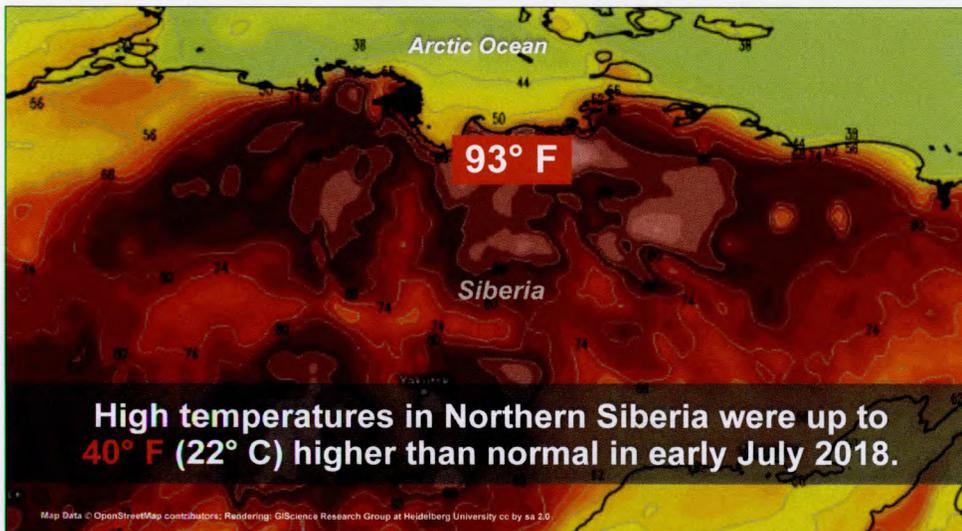
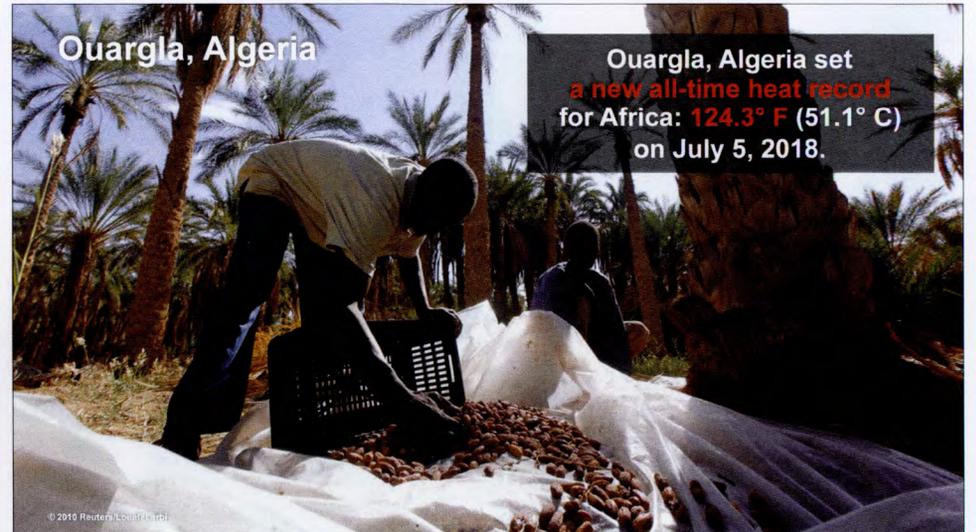
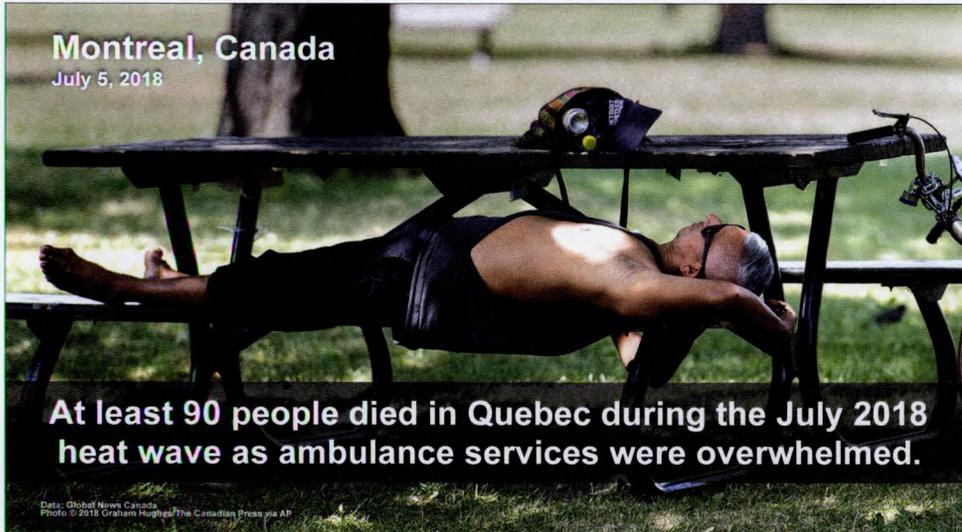


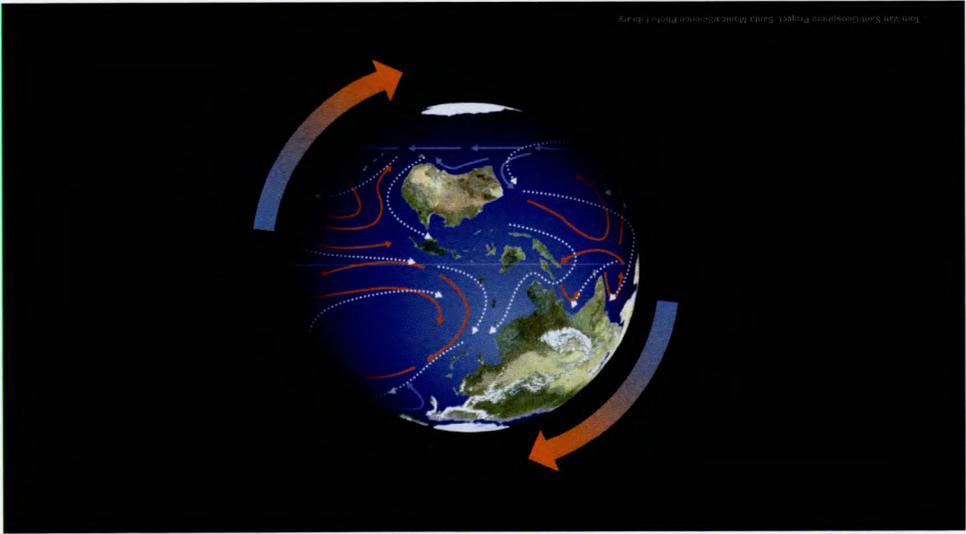
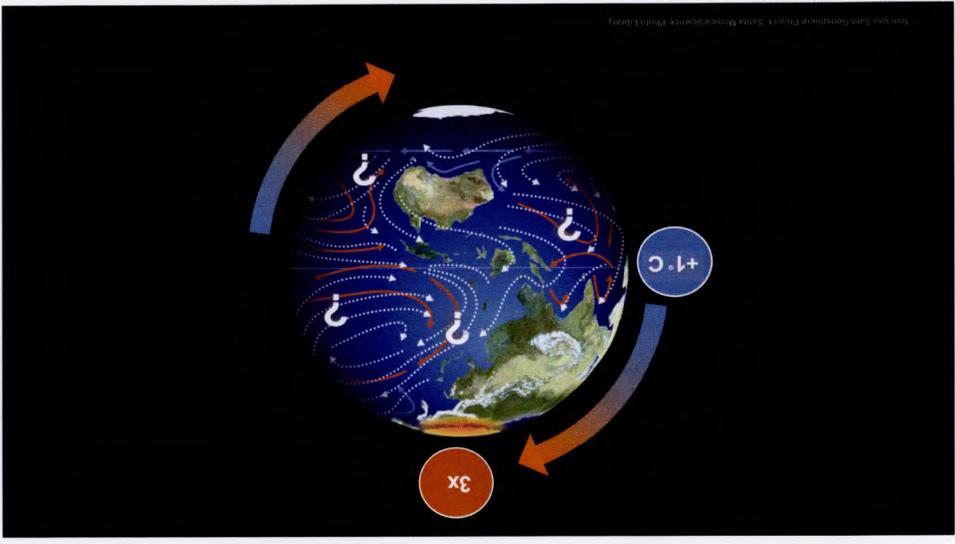
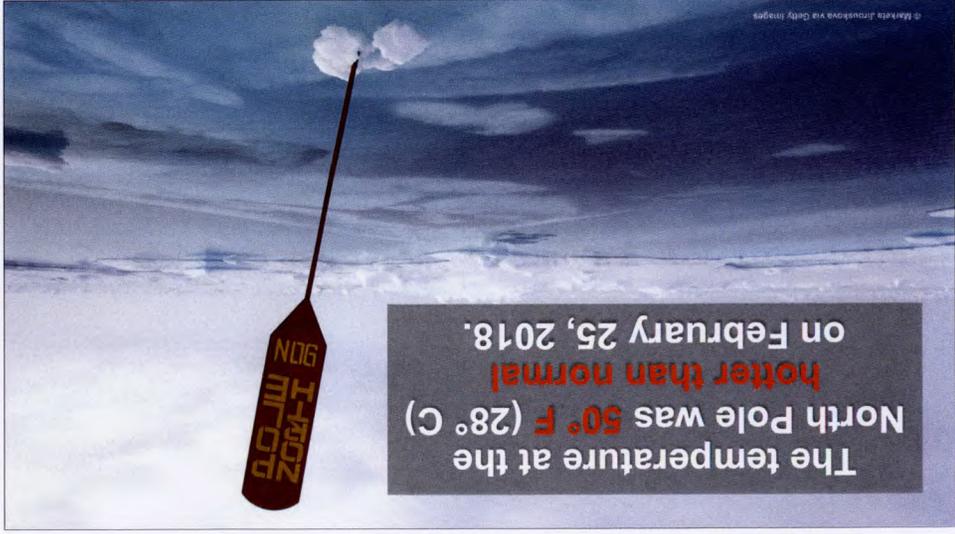
**CO<sub>2</sub> is being released  
into the atmosphere  
faster than at any time in  
at least the last  
66 million years.**

Source: M. Zetter, et al. Nature Geoscience, March 2016



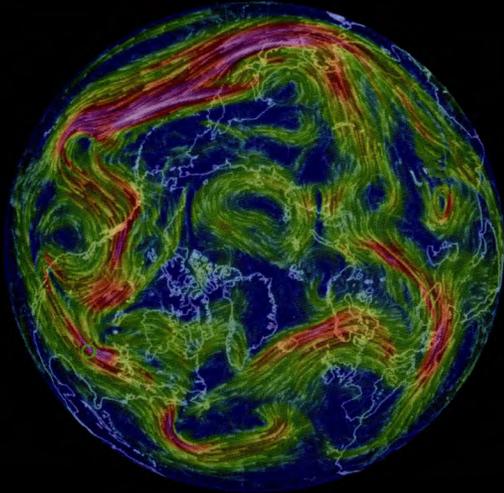






# "Normal" Jet Stream

December 5, 2017

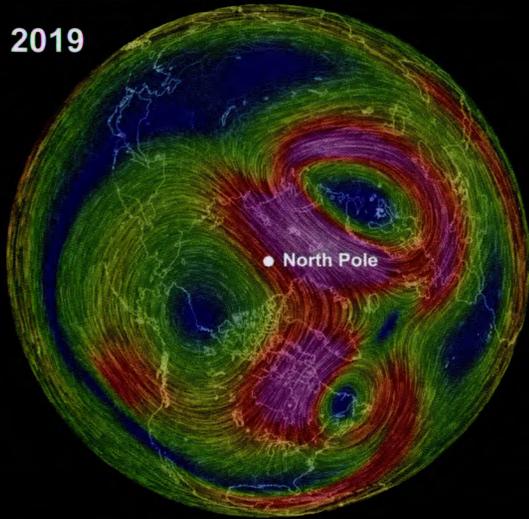


# Rome, Italy

February 26, 2018



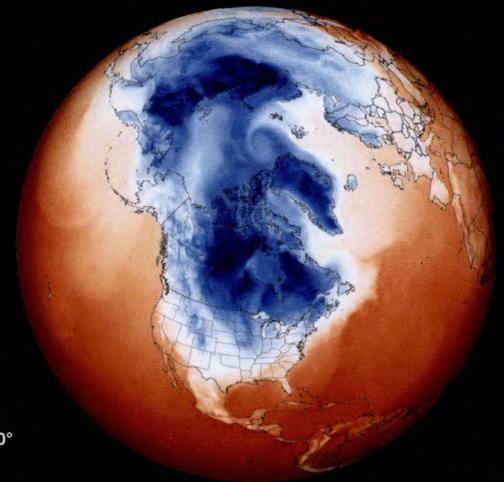
# January 3, 2019



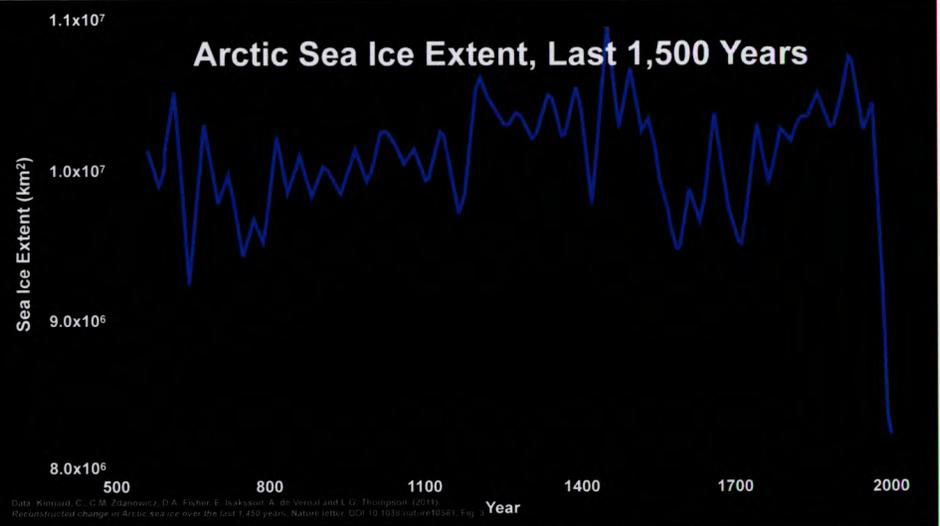
# January 29, 2019

Air Temperature at 2 Meters (°F)

≤ -40°   -4°   32°   68°   ≥ 100°



Chicago, Illinois  
January 29, 2019

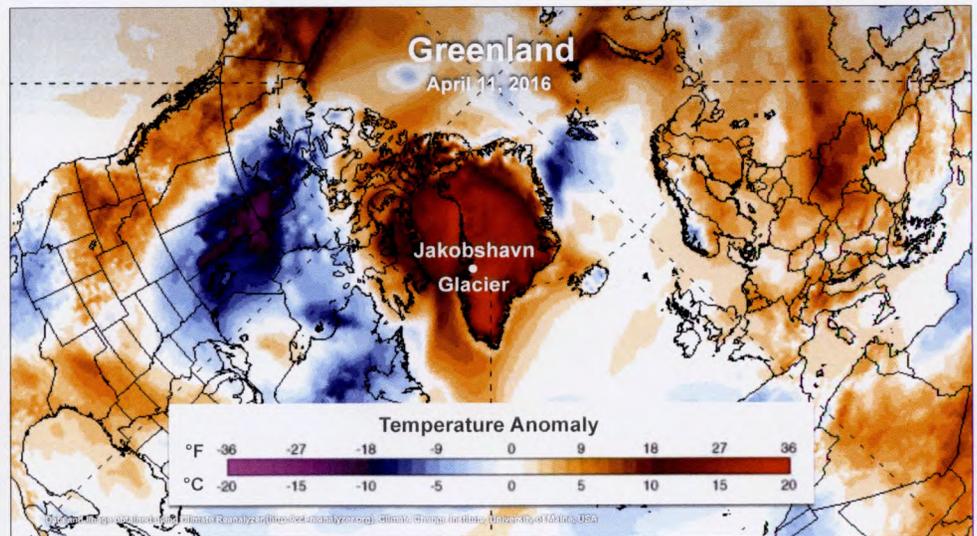


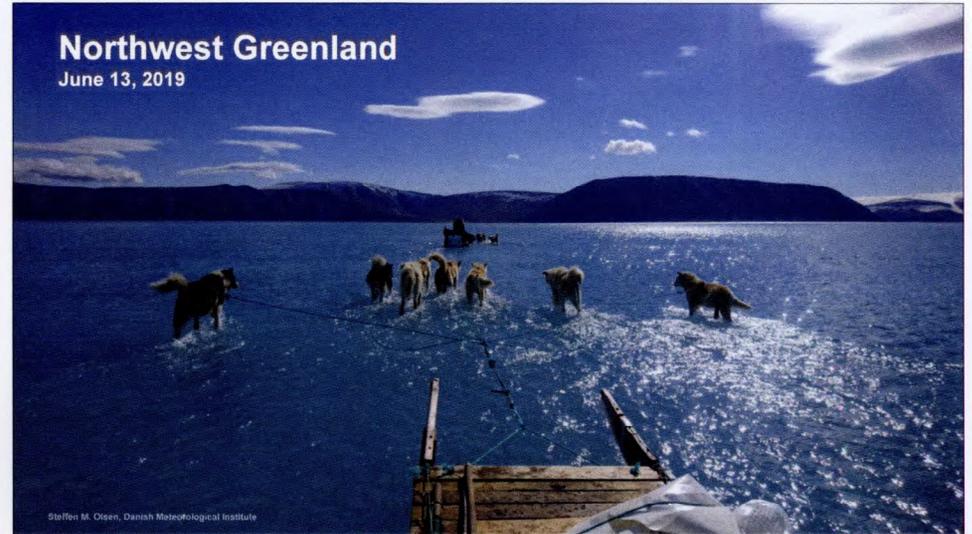
The North Pole has now experienced  
mid-winter heatwaves three years in a row:

2016

2017

2018





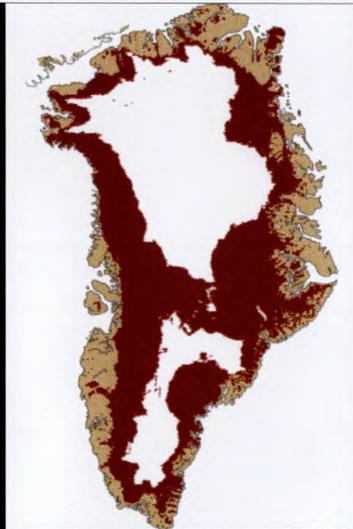
Steffen M. Olesen, Danish Meteorological Institute

### Greenland Melt Extent

July 31, 2019

On July 31st,  
60% of the surface of  
Greenland's ice sheet  
experienced melting,  
**losing more than  
10 billion tons of ice  
in a single day.**

Data: Polar Portal (DMI, GEOS, DTU)



### Kangerlussuaq, Greenland

August 1, 2019

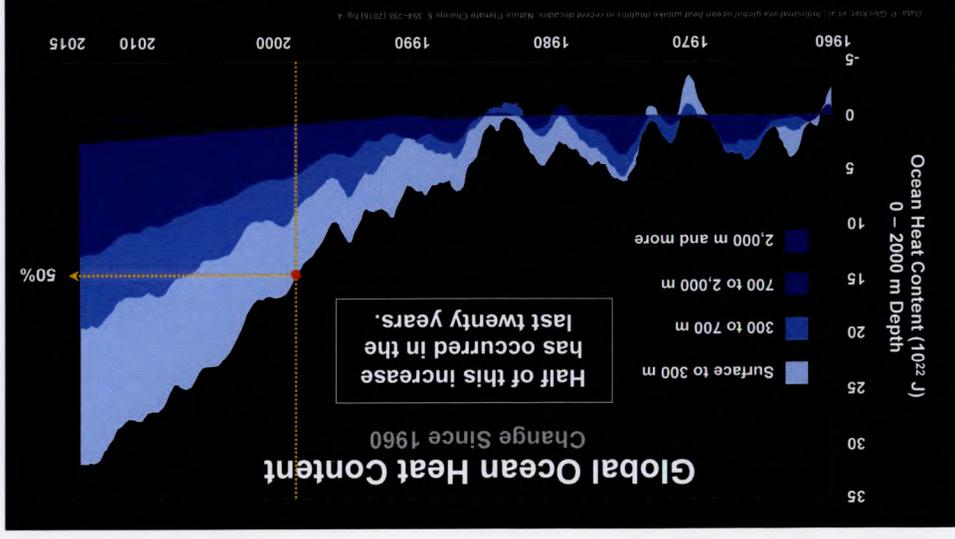


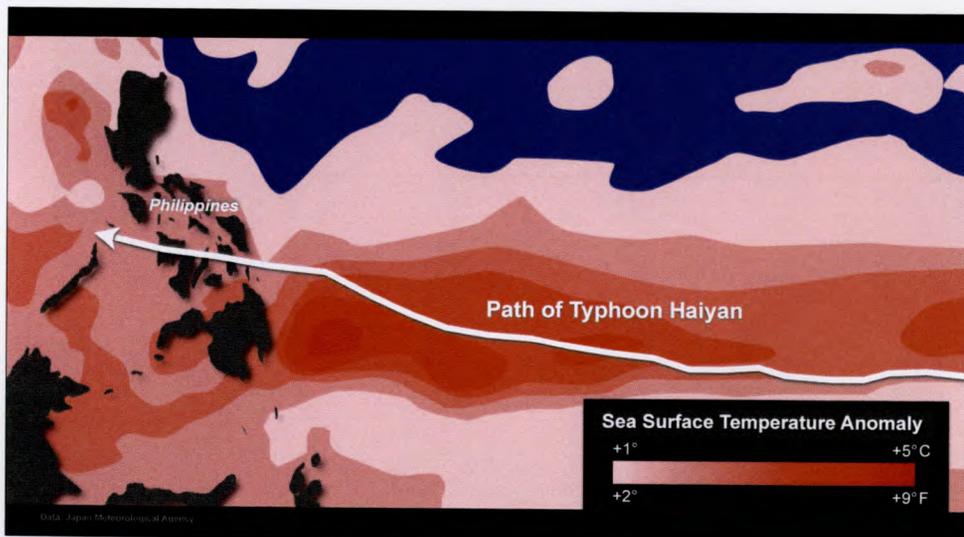
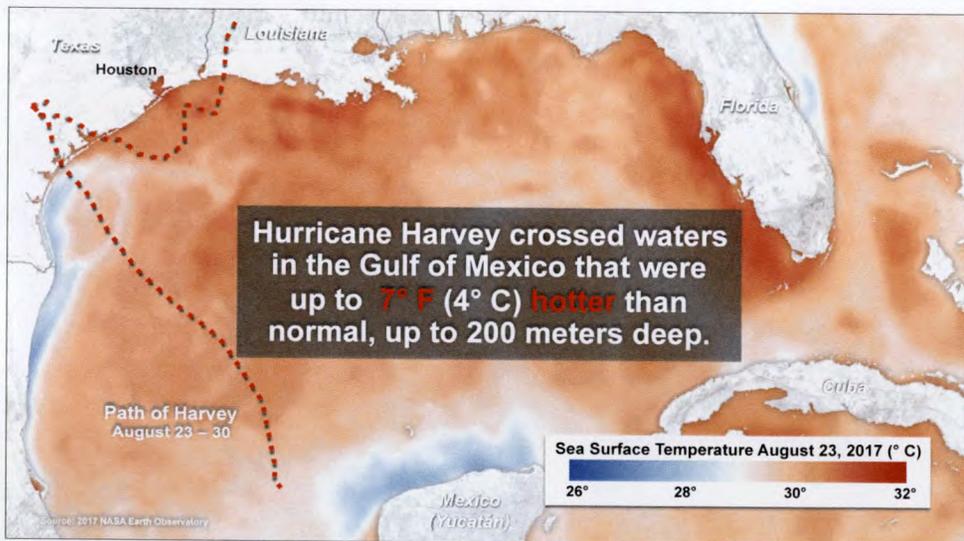
Video: 2019 Laurie Garrett

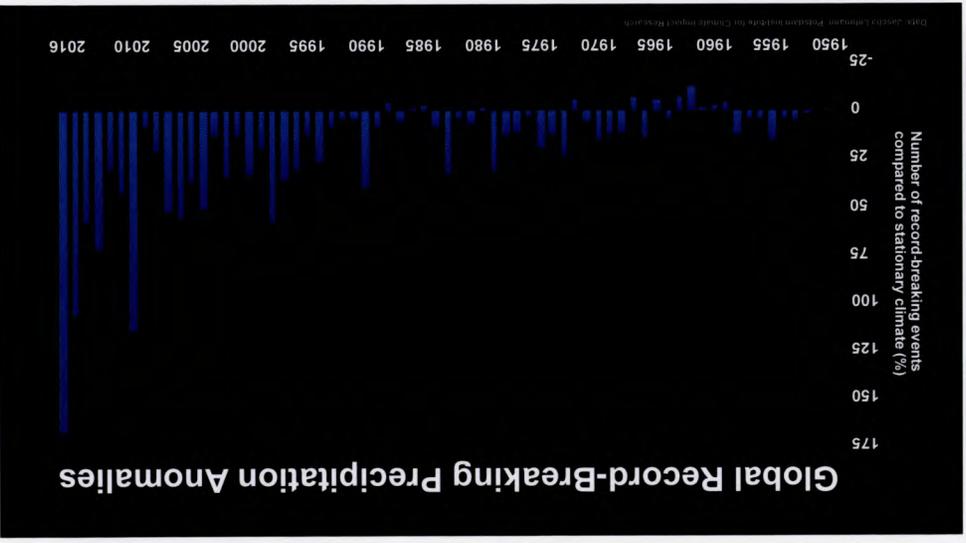
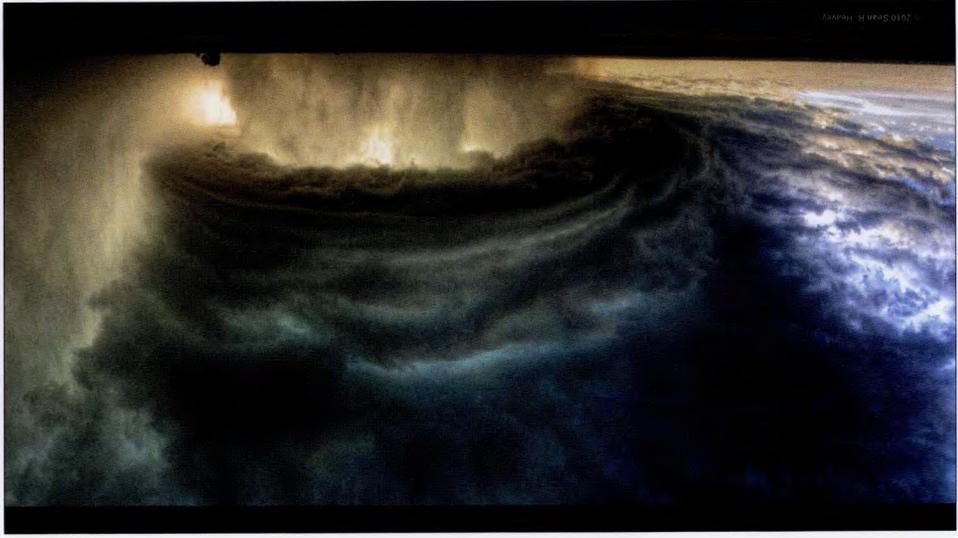
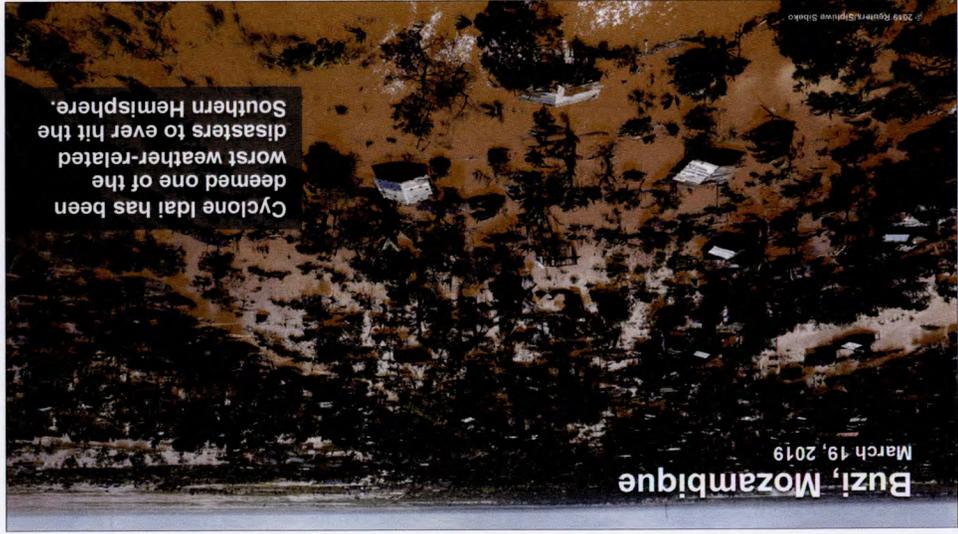


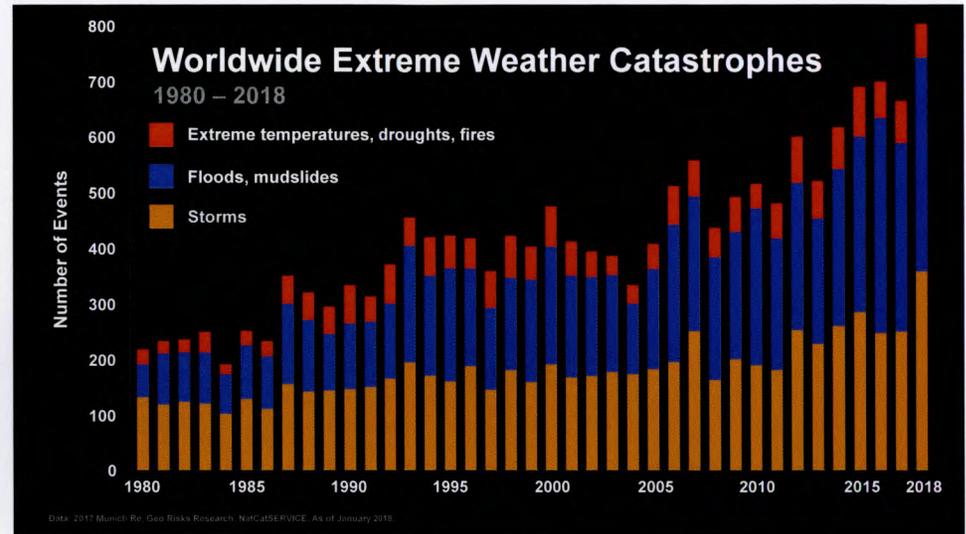
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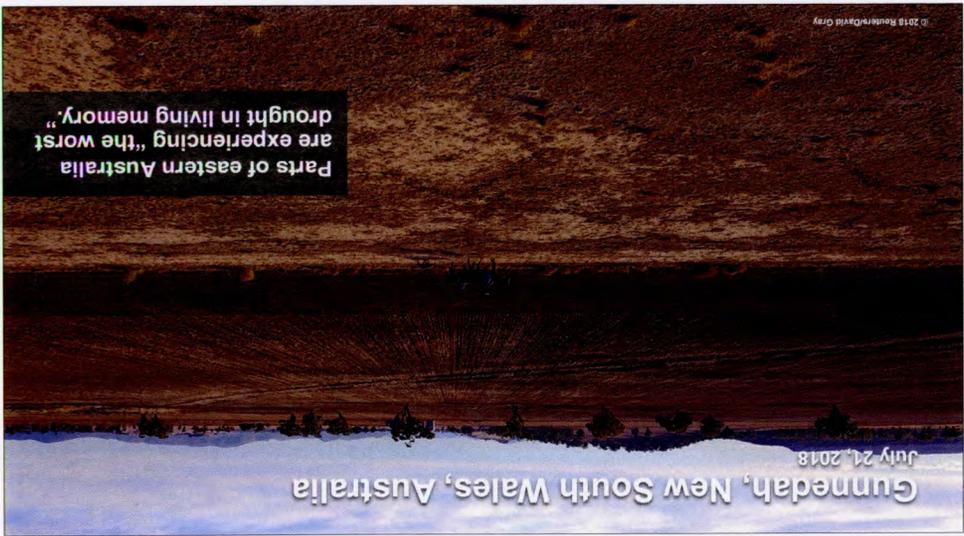


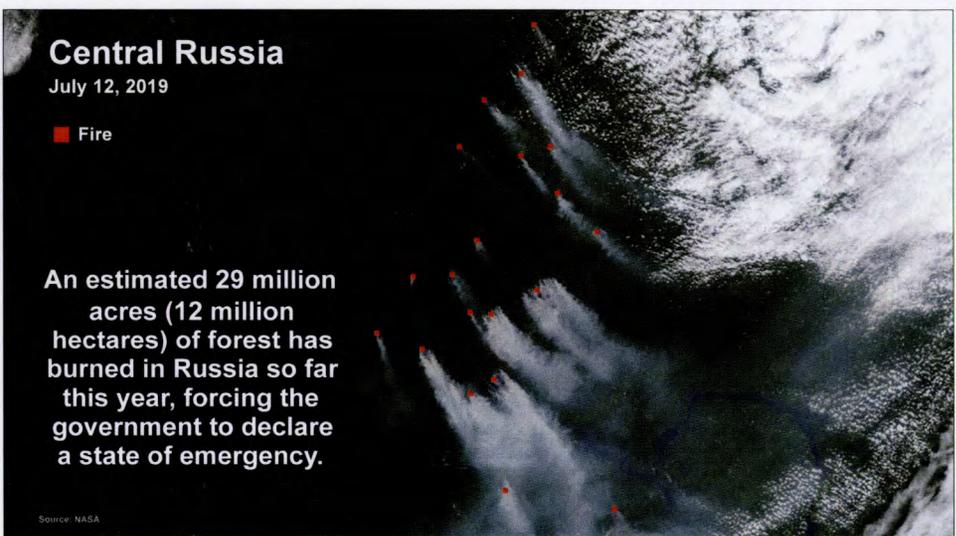
**Economic losses from extreme weather totaled \$653 billion over the past two years alone.**

The same extra heat that evaporates more water from the ocean, causing bigger downpours and floods...

...pulls moisture even more quickly from the soil, causing longer and deeper droughts.

An advertisement titled © 2006 by Paramount Classics, a Division of Paramount Pictures. All Rights Reserved.



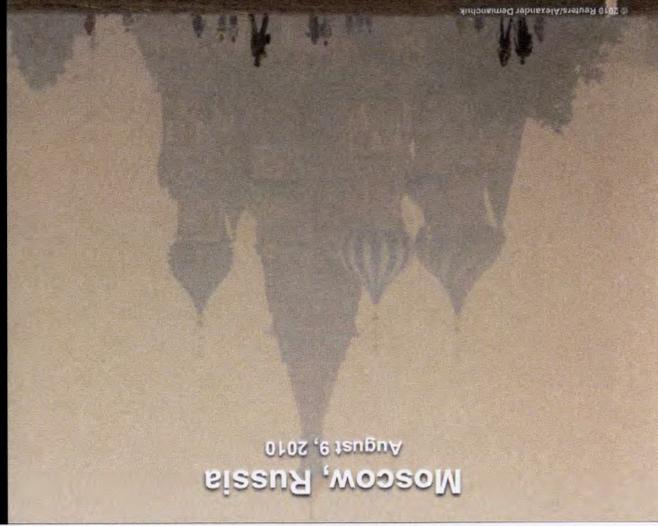


The world could see up to  
**1 billion climate migrants.**

The Lancet Countdown Report 2018

**55,000**  
**people**  
**died**

Moscow, Russia  
August 9, 2010



October 13, 2014

U.S. Department of Defense

2014 Climate Change Adaptation Roadmap

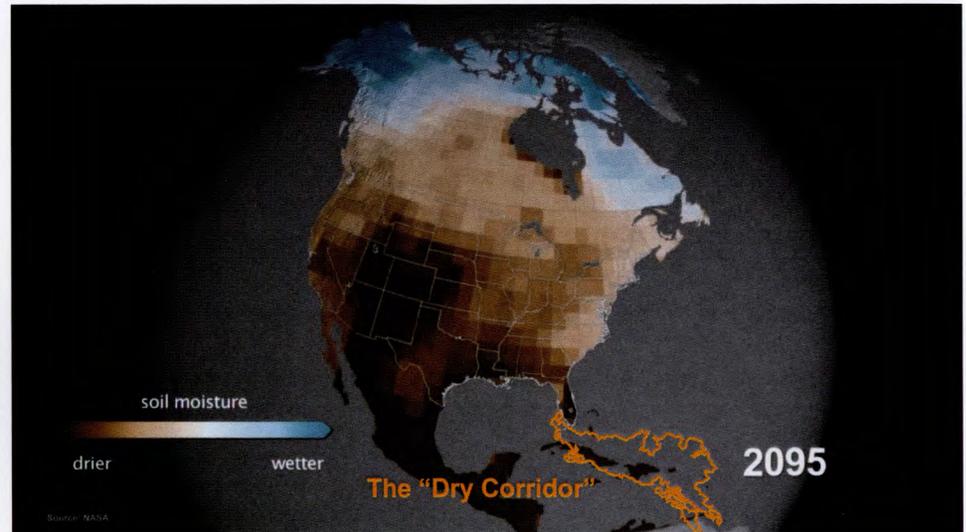
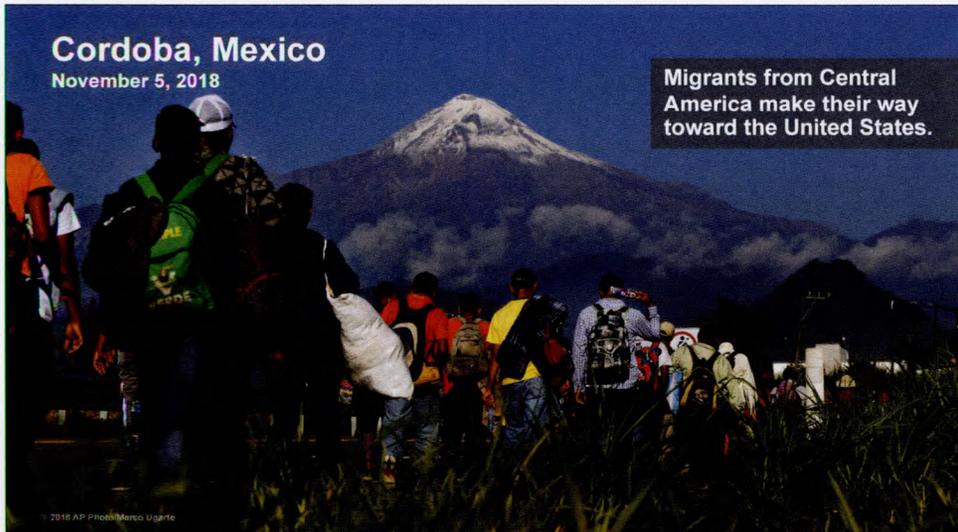
Climate change

“will likely lead to

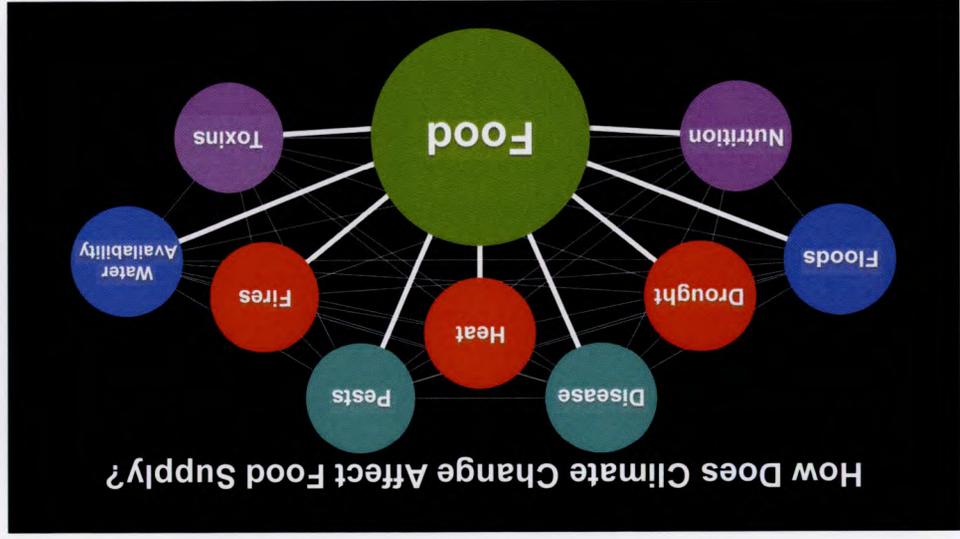
**food and water shortages,**  
**pandemic disease,**

disputes over **refugees** and resources, and destruction by natural disasters in regions across the globe.”

The 2006 – 2010 drought  
turned **60%** of Syria's  
fertile land into desert  
...and drove  
**1.5 million people**  
into Syria's  
already crowded cities



**Honduras was ranked #1**  
of all 184 countries on the  
Global Climate Risk Index.  
**Nicaragua was ranked #4.**

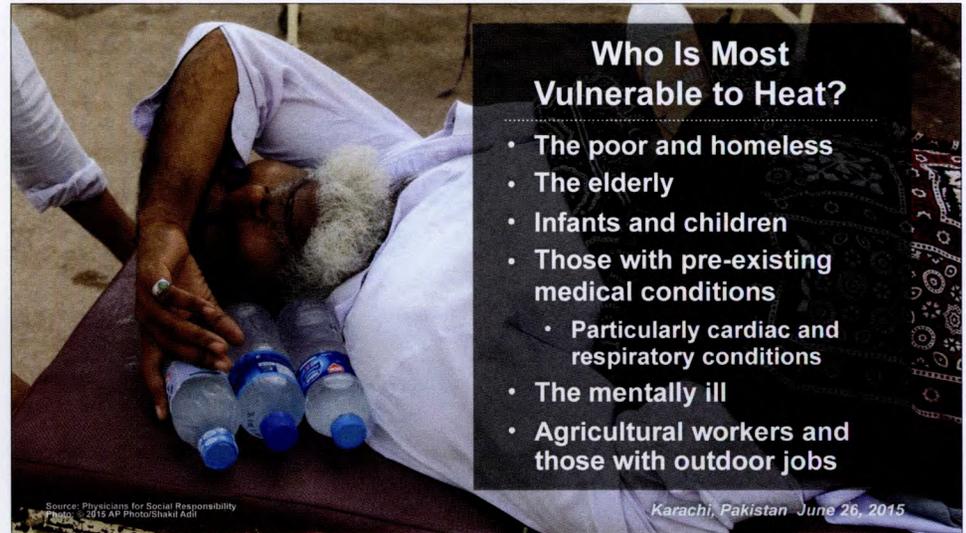


**“Climate Change is a Medical Emergency.”**

Professor Hugh Montgomery, Co-Chair,  
The 2015 Lancet Commission on  
Health and Climate Change  
June 2015

“Climate change is the **biggest global health threat** of the 21st century.”

The 2018 Report of the Lancet Countdown on Health and Climate Change

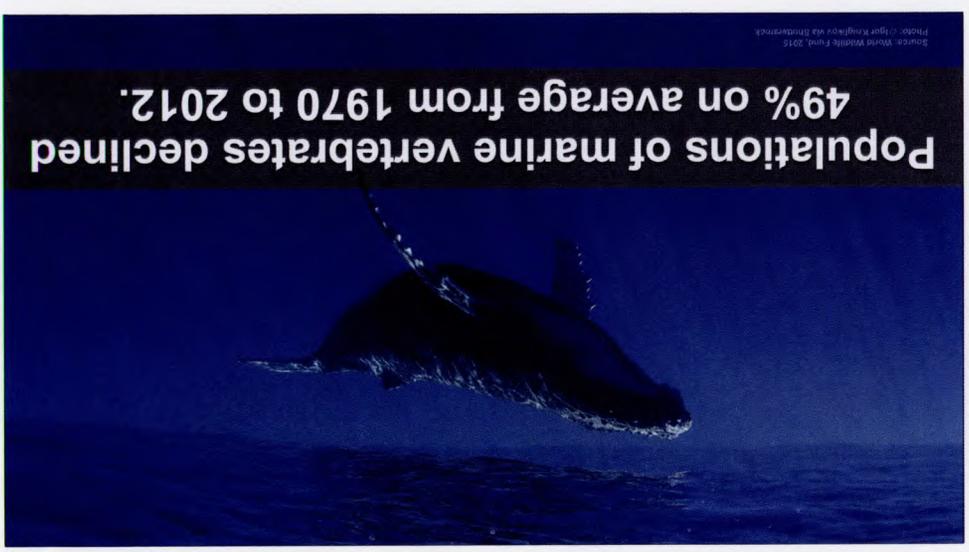
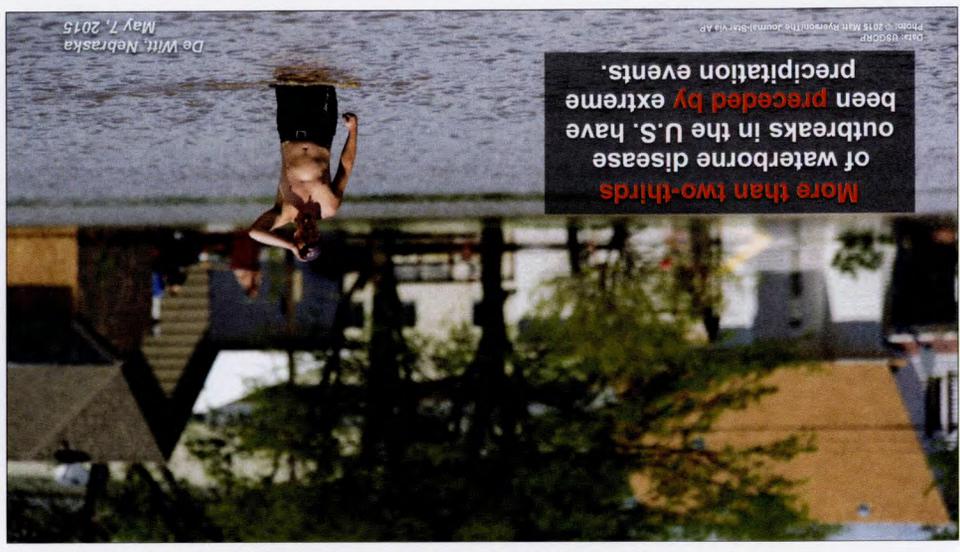
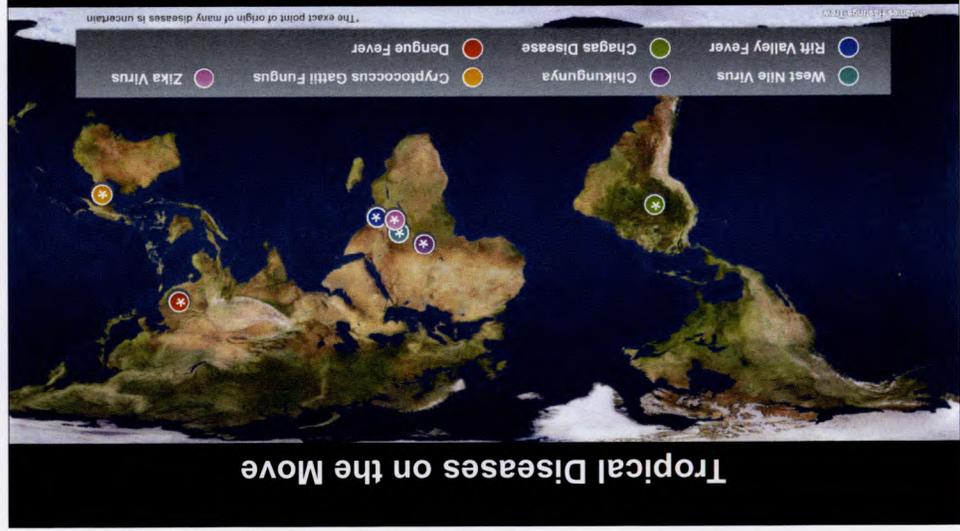


Extreme heat events cause **more deaths annually** in the U.S. than all other extreme weather events combined.

Source: National Centers of Disease Control

Worldwide, air pollution kills **9 million people** every year

Data: The Lancet Commission on Pollution and Health



We now risk losing up to **50% of all land-based species** in this century



Sources: Nicholas Stern, The Economics of Climate Change; Photo: Dirk Ercken/istockphoto

## The Cost of Carbon

- \$ *Political Instability*
- \$ *Floods & Mudslides*
- \$ *Wildfires*
- \$ *Drought*
- \$ *Storm Damage*
- \$ *Ocean Acidification*
- \$ *Infrastructure Loss*
- \$ *Climate Refugees*
- \$ *Species Extinction*
- \$ *Melting Glaciers*
- \$ *Famine*
- \$ *Water Scarcity*
- \$ *Ecosystem Loss*
- \$ *Our Way of Life*
- \$ *Infectious Diseases*
- \$ *Sea Level Rise*



\$ "The #1 Threat to the Global Economy"

... And much, much more

2005 (istockphoto/istockphoto)

## Global Energy Subsidies

\$5.5 T  
\$5.0 T  
\$4.5 T  
\$4.0 T  
\$3.5 T  
\$3.0 T  
\$2.5 T  
\$2.0 T  
\$1.5 T  
\$1.0 T  
\$0.5 T  
\$0.0 T

\$143 Billion

Renewables

\$5.2 Trillion

36x

Fossil Fuels

Sources: International Energy Agency, International Monetary Fund

## Energy Subsidies in the United States

\$700 B  
\$600 B  
\$500 B  
\$400 B  
\$300 B  
\$200 B  
\$100 B  
\$0 B

\$27 Billion

Renewables (2013)

\$649 Billion

Fossil Fuels (2015)

Sources: International Energy Agency, International Monetary Fund



© 2009 iStockphoto/Marko Gorenec

**We have  
the solutions  
at hand...**

### Green Energy Progress How Do Projections Compare With Reality?

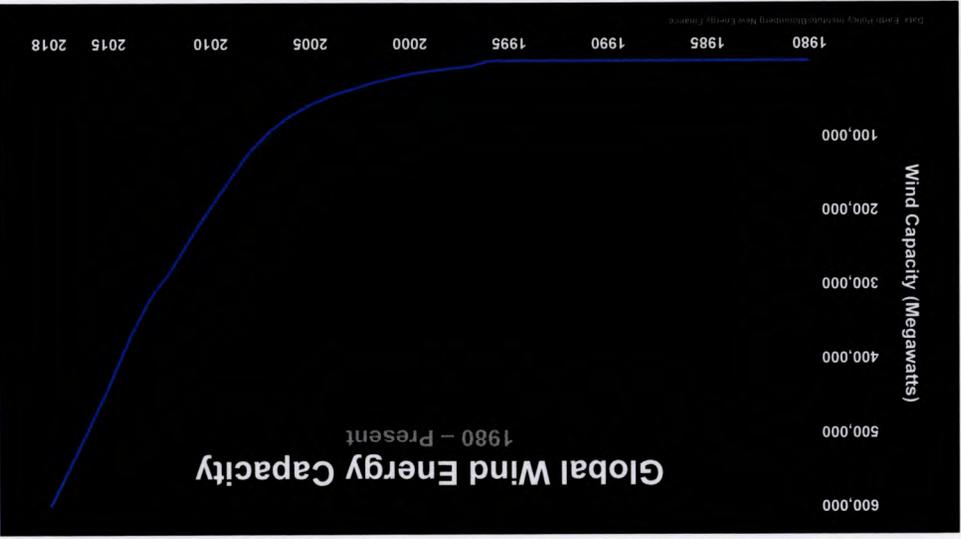
**20 X**  
a factor of  
was exceeded by  
By 2018 that goal

**Reality**

Worldwide  
wind capacity  
will reach 30  
GW by 2010

**2000 Projection**

Data: International Energy Agency, Global Wind Energy Council, International Renewable Energy Agency



**Globally, wind could supply  
worldwide electricity consumption  
40 times over**



**“Today more than two-thirds of the global population lives in countries where solar and wind are the cheapest sources of new bulk generation.”**

**Bloomberg New Energy Finance**  
*New Energy Outlook 2019*

## Solar Energy Progress

How Do Projections Compare With Reality?

### 2002 Projection

The solar energy market will grow one gigawatt per year by 2010

### Reality

The reality is that it was exceeded by

**109x**

Source: Earth Energy Institute, Bloomberg New Energy Finance

## World Solar PV Installations

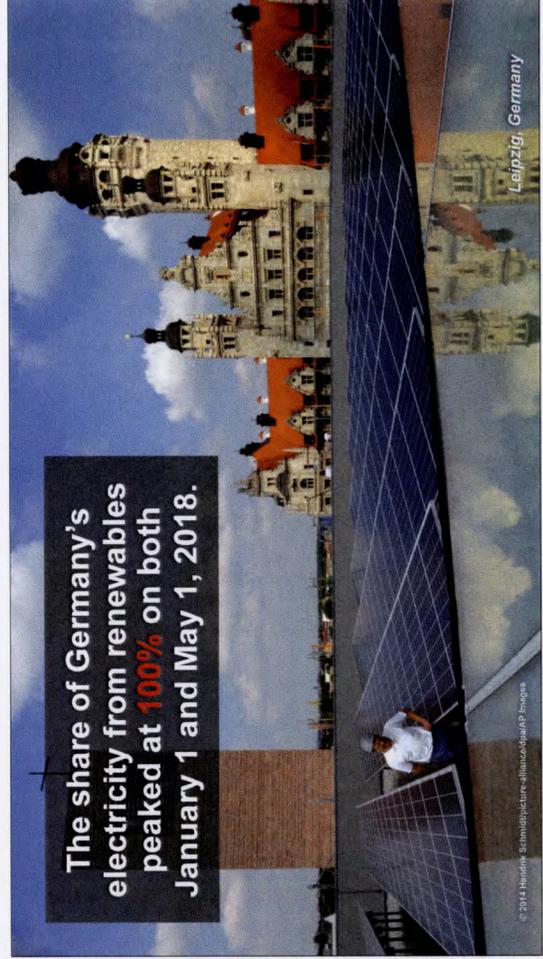
1980 – 2018



Data: Earth Energy Institute, BP Statistical Review of World Energy, June 2014, (London: 2014); Bloomberg New Energy Finance

In June 2018, Nevada's NV Energy signed an agreement to purchase solar electricity at **2.4 cents per kilowatt hour**, the lowest price paid so far in the United States.

The share of Germany's electricity from renewables peaked at **100%** on both January 1 and May 1, 2018.

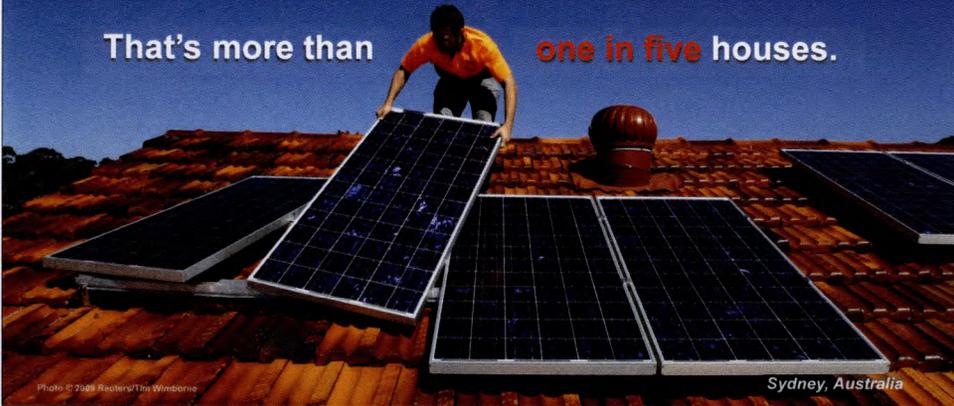


© 2014 Heinrich Schmidpeter/Allanah/Alamy/Alamy

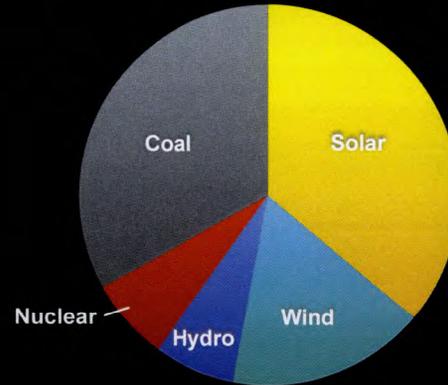
Leipzig, Germany

More than two million residential properties in Australia now have solar systems installed.

That's more than **one in five** houses.



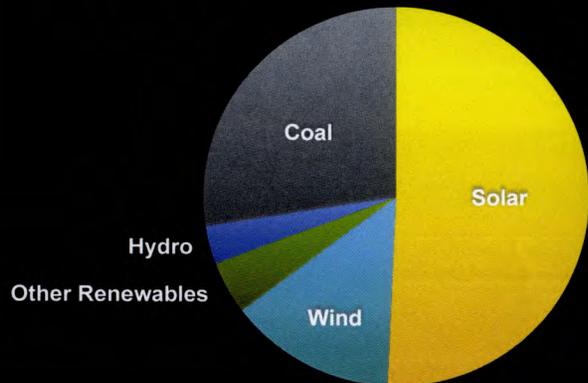
### New Electricity Capacity in China, 2018



53% of new capacity was from solar and wind.

Data: China Energy Portal

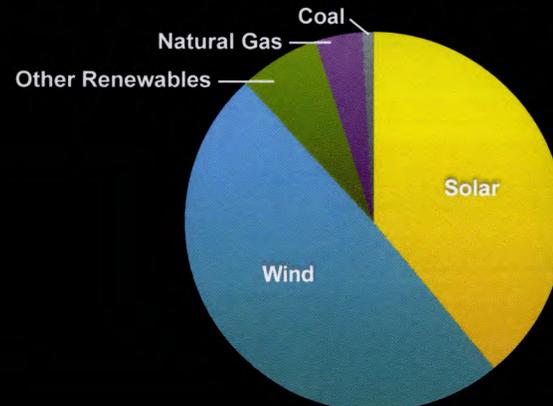
### New Electricity Capacity in India, 2018



65% of new capacity was from solar and wind.

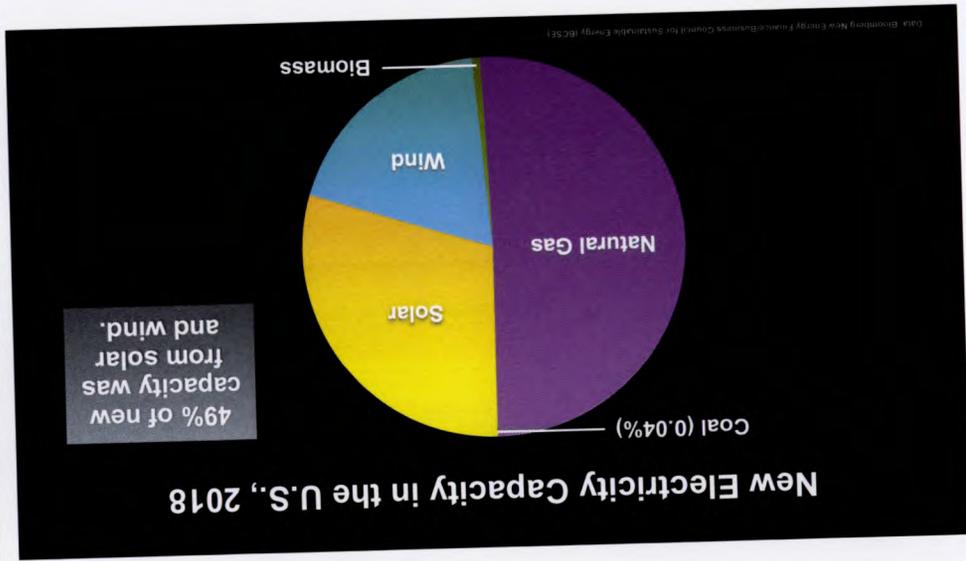
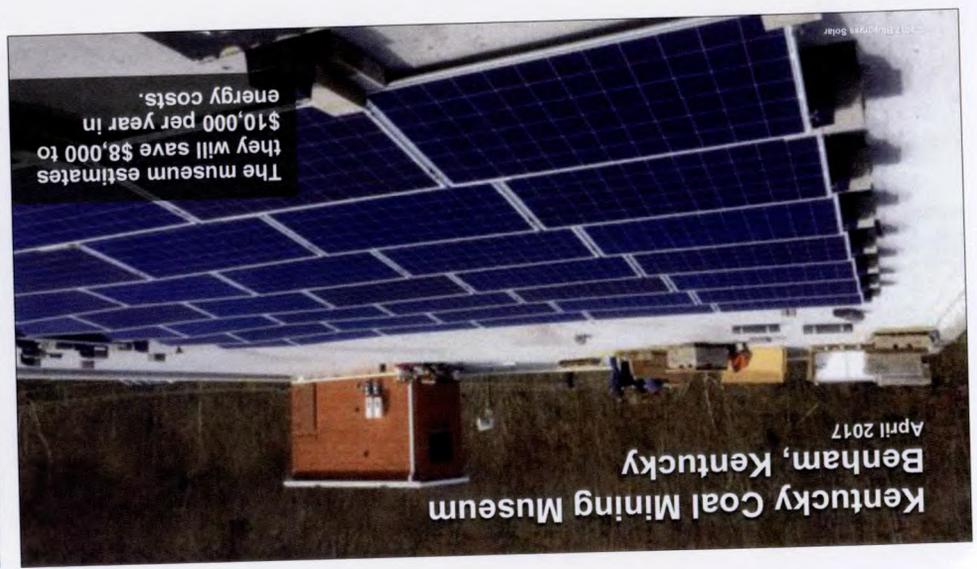
Data: Bloomberg Intelligence

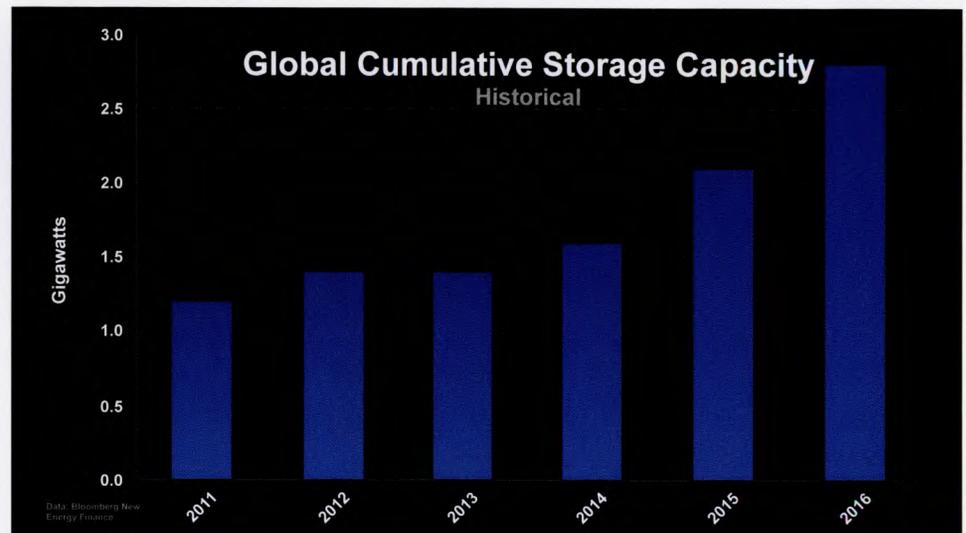
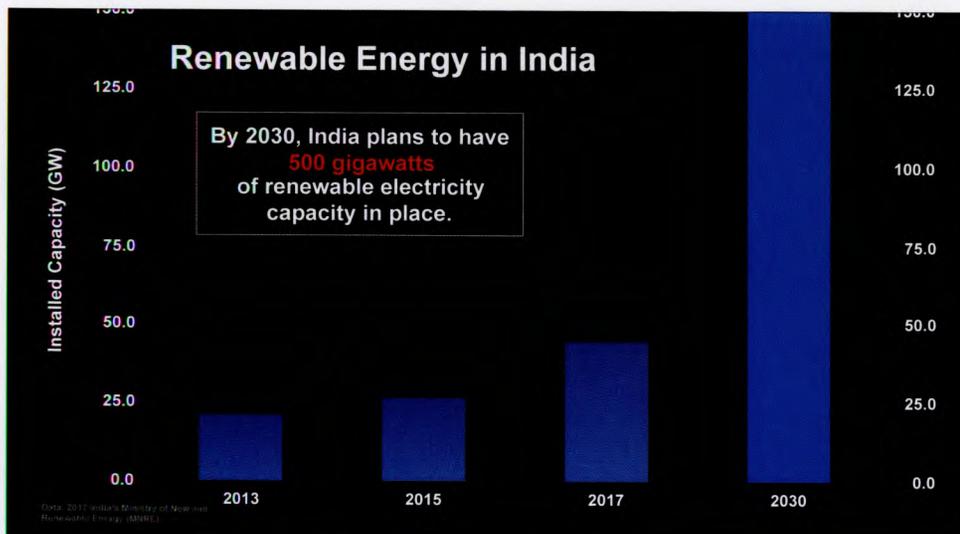
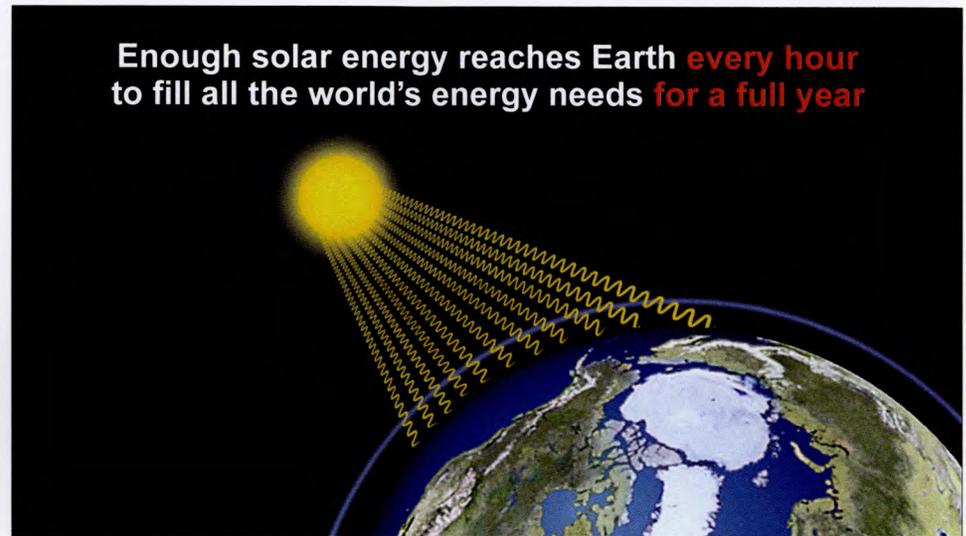
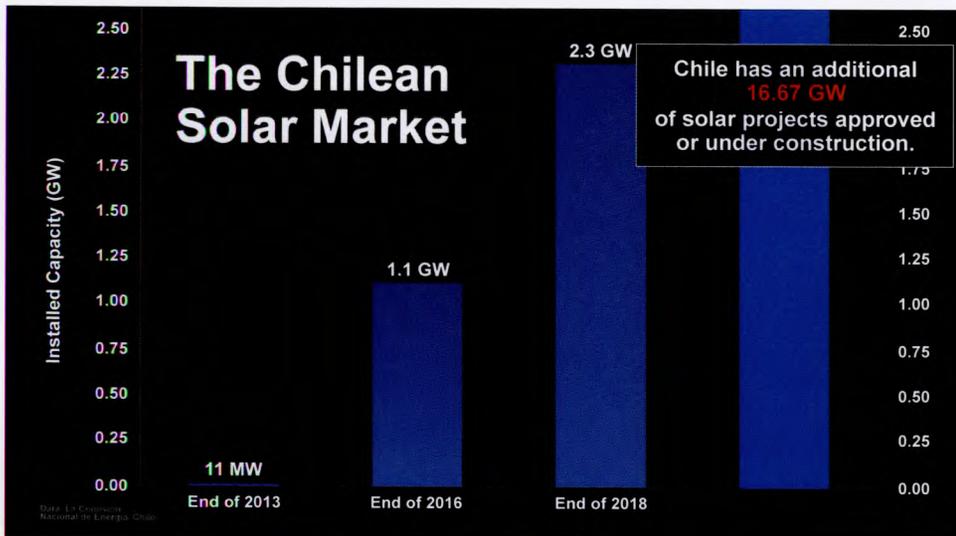
### New Electricity Capacity in Europe, 2018

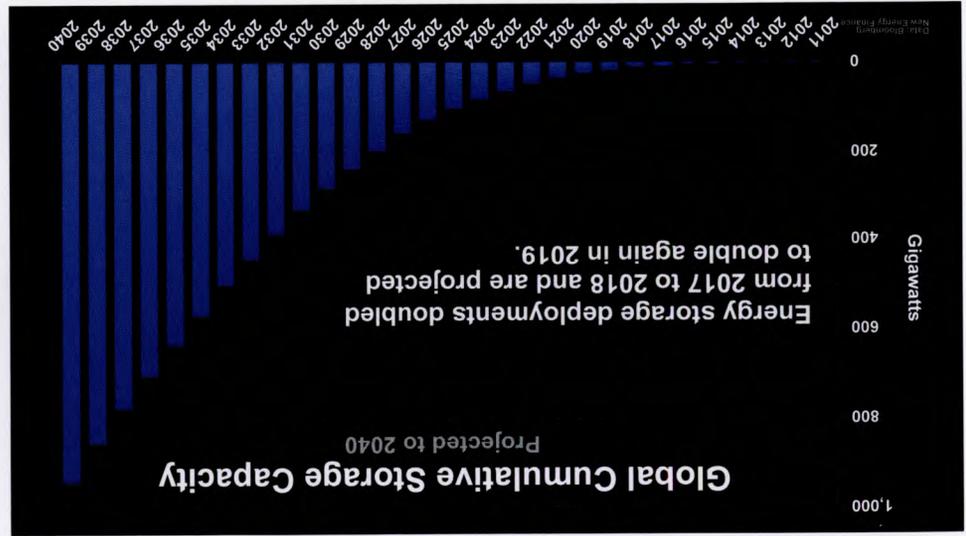


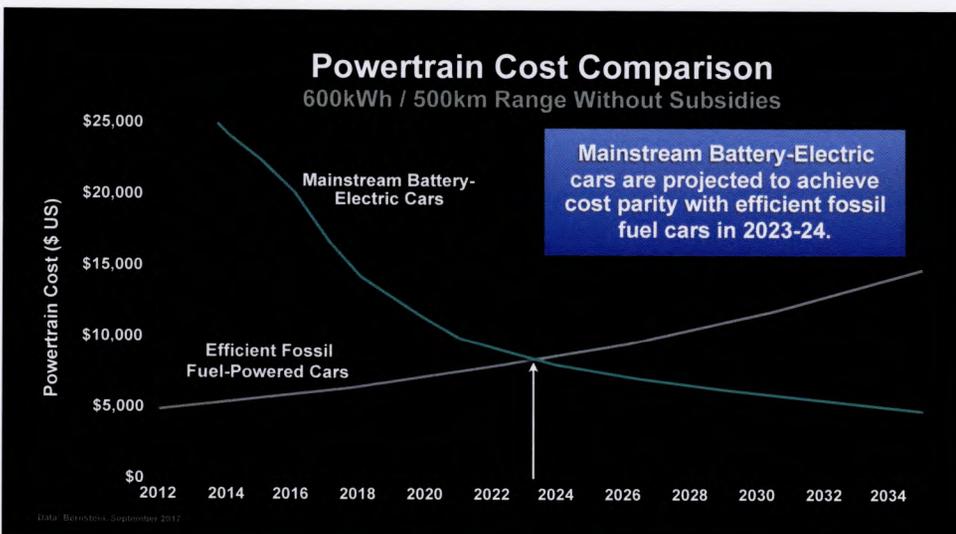
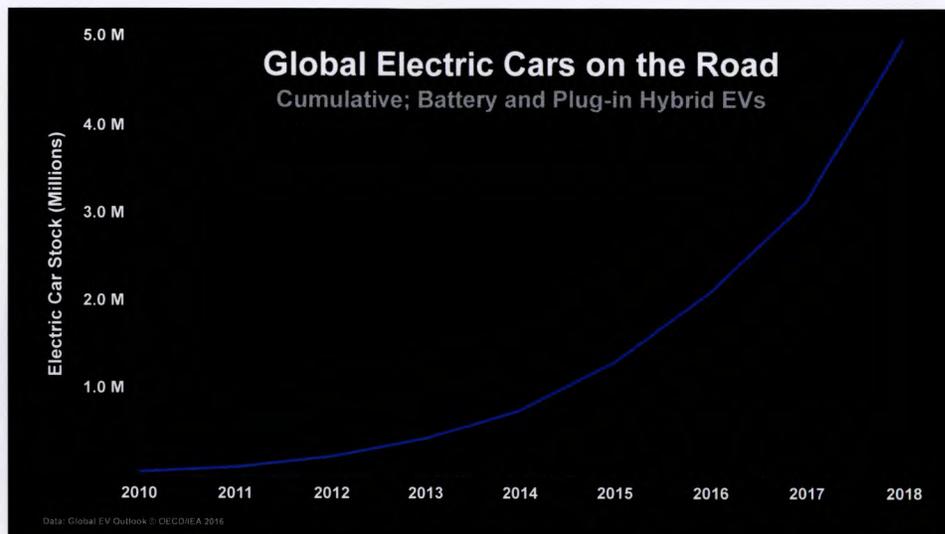
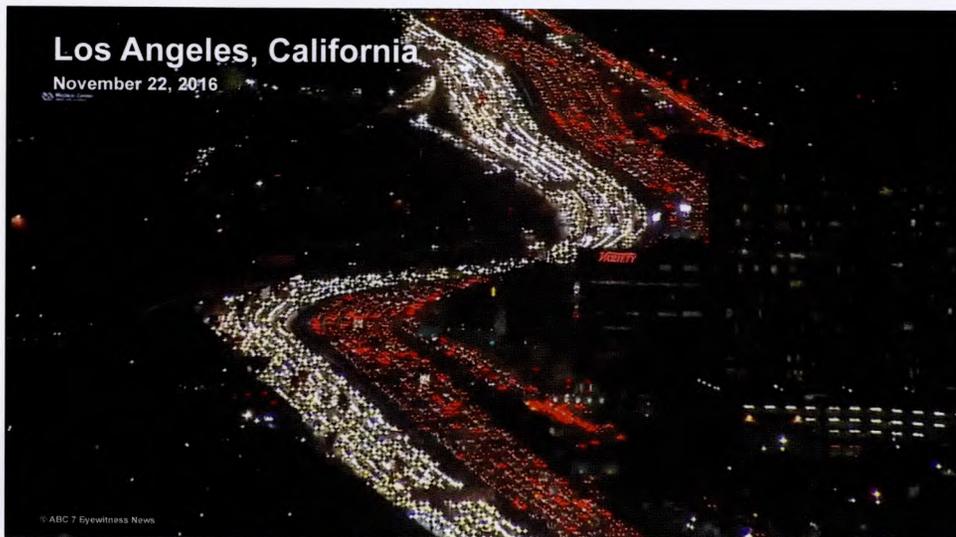
88% of new capacity was from solar and wind.

Data: WoodMackenzie



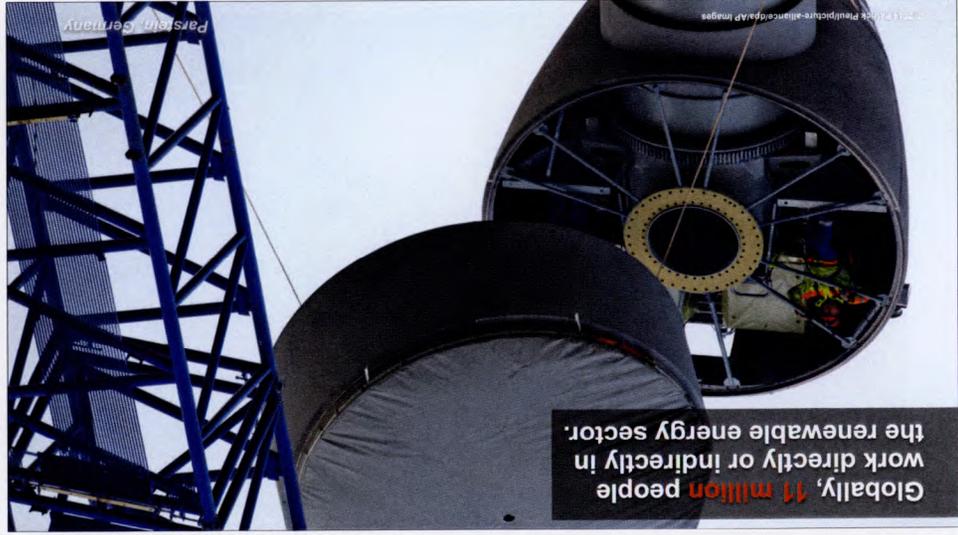






### Countries Planning a Fossil Fuel Vehicle Phase-Out:

<u>Country/State</u>	<u>Phase-Out Begins</u>	<u>Country/State</u>	<u>Phase-Out Begins</u>
Norway	2025	Taiwan	2040
Denmark	2030	Costa Rica	2050
Iceland	2030	China	"In the near future"
India	2030?	Germany	Date of phase-out pending. Merkel: "The approach is right."
Ireland	2030		
Israel	2030		
Netherlands	2030		
Slovenia	2030		
Scotland	2032		
Britain	2040		
Canada	2040		
France	2040		
		<u>Phase-Out Completed in:</u>	
		Sri Lanka	2040
		Sweden	2045



Globally, **11 million** people work directly or indirectly in the renewable energy sector.

Photo: iStockphoto.com/Andreas Hagemann

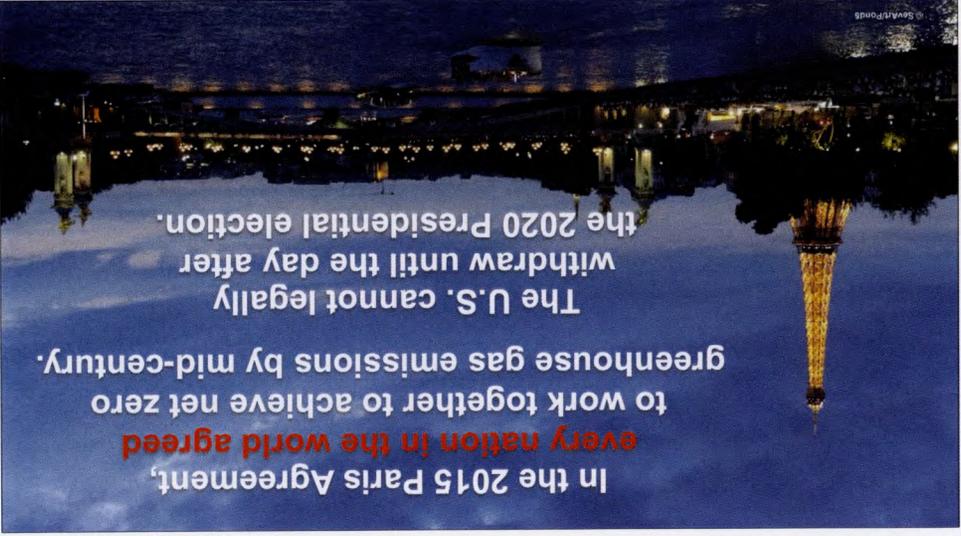


**"Solar installer"** is forecast to be the fastest-growing job category in the U.S. through 2026, and **"wind turbine service technician"** is second.

Colorado Highlands Wind Farm, Fleming, Colorado

Photo: U.S. Bureau of Labor Statistics via Getty Images

Over the last five years, U.S. solar energy jobs have grown **6x** faster than the overall economy.



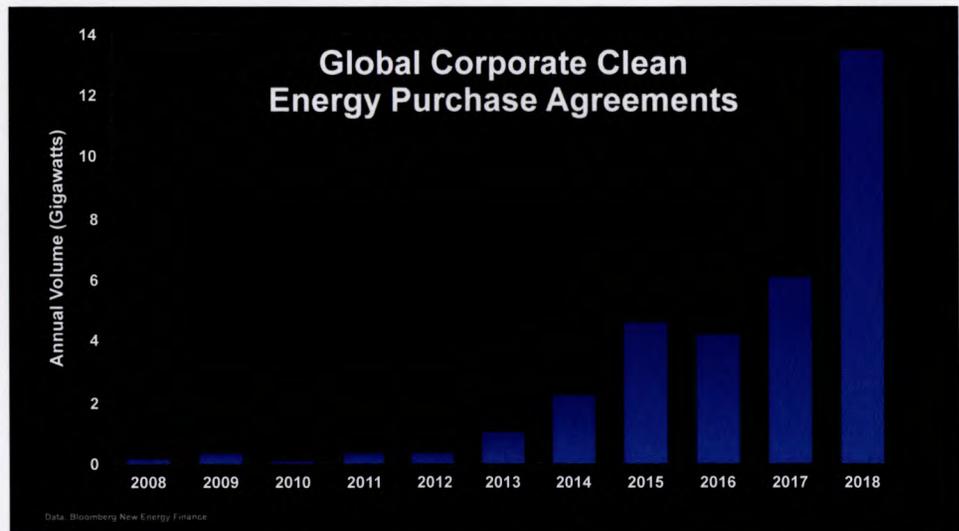
In the 2015 Paris Agreement, every nation in the world agreed to work together to achieve net zero greenhouse gas emissions by mid-century. The U.S. cannot legally withdraw until the day after the 2020 Presidential election.

© Getty Images

Northern Indiana Public Service Co., which currently produces 65% of its electricity from coal, has announced it will **close all its coal plants** by 2028 — which will **save** its customers **more than \$4 billion.**

In the U.S., California, Hawaii, Nevada, New Mexico, New York, Washington state, Washington, D.C. and Puerto Rico have all committed to using 100% clean electricity by 2050 at the latest.

Over 190 global companies have made a commitment to go 100% renewable





**Recommendations for Maui**

- #1 - Climate Action Plan
- #2 - Commission on Climate Action
- #3 - Mitigation, Adaptation, Resilience
- #4 - Climate Justice & Just Transition