

# Advising Presidents of US and Mexico on Climate Change:

*What can we expect at COP-21?*

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**UC Carbon Neutrality Summit 2015**  
**UC San Diego**



**San Diego, CA**

October 27, 2015

# United Nations Framework Convention on Climate Change

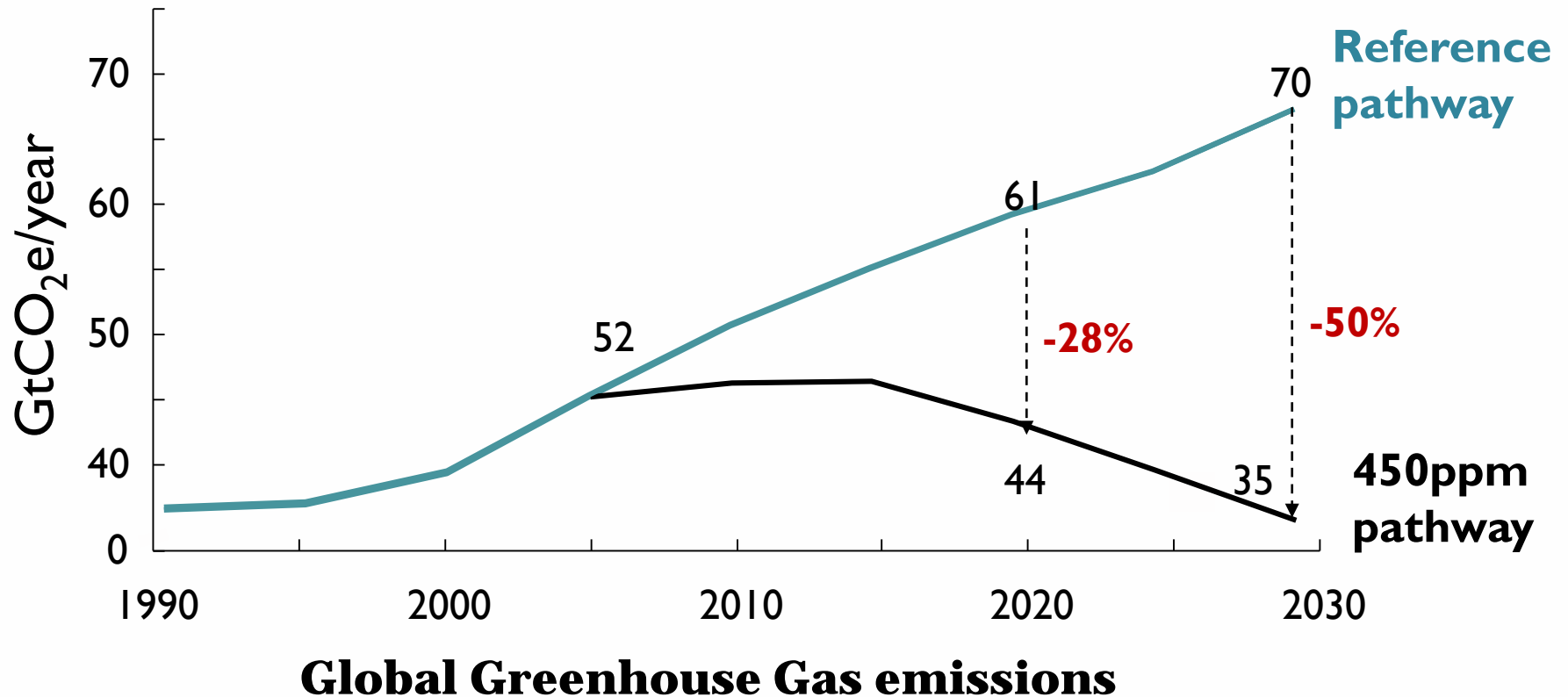
- 1992 The UN Conference on the Environment and Development is held in **Rio de Janeiro**, creating the *Framework Convention on Climate Change* ("[UNFCCC](#)").
- 1995 **COP 1** Parties meet in Berlin to outline specific targets on emissions.
- 1997 **COP 3** Parties conclude the **Kyoto Protocol** in Kyoto, Japan.
- 2005 **COP 11** **Kyoto Protocol enters into effect**  
(first commitment period **expires in 2012**)
- 2009 **COP 15** **Copenhagen Accord** (non-binding)
- 2015 **COP 21** The **Paris Climate Conference**, will, for the first time in over 20 years of UN negotiations, aim to achieve a **legally binding** and universal agreement on climate, with the aim of **keeping global warming below 2°C**.

# **The Copenhagen Accord**

## **The Conference of the Parties takes note of the Copenhagen Accord of 18 December 2009.**

- **The Heads of State, Heads of Government, Ministers, and other heads ... have agreed on this Copenhagen Accord which is operational immediately.**
- **We underline that climate change is one of the greatest challenges of our time.**
- **We agree that deep cuts in global emissions are required**  
**... to reduce global emissions to hold the increase in global temperature below 2 degrees Celsius ...**

# 450 ppm Pathway: < 2 °C Temperature Increase



*Source:* McKinsey Global GHG Abatement Cost Curve v2.0; Den Elzen, M.G.J. and M. Meinshausen, 2006: Multi-gas emission pathways for meeting the EU 2°C climate target; IEA World Economic Outlook 2007; Project Catalyst analysis

# Stern Review:

## The economics of climate change

*Sir Nicholas H. Stern, 2006*

- An estimate ... suggests that the annual cost of cutting total GHG to about three quarters of current levels by 2050, **will be in the range -1.0 to +3.5% of GDP**, with an average estimate of approximately 1%.
- **An annual cost rising to 1% of GDP by 2050 poses little threat to standards of living**, given that economic output ... is likely to rise in developing regions by 400% or more.
- **Well-formulated policies** with global reach and flexibility across sectors **will allow strong economic growth** to be sustained while making deep cuts in emissions.



# Financial Damage Caused by Global Warming



*Sir Nicholas H. Stern, 2013*

**“Climate change will ‘cost world far more than estimated”**

**“Current models do not adequately reflect the science and the impact on global economies”**

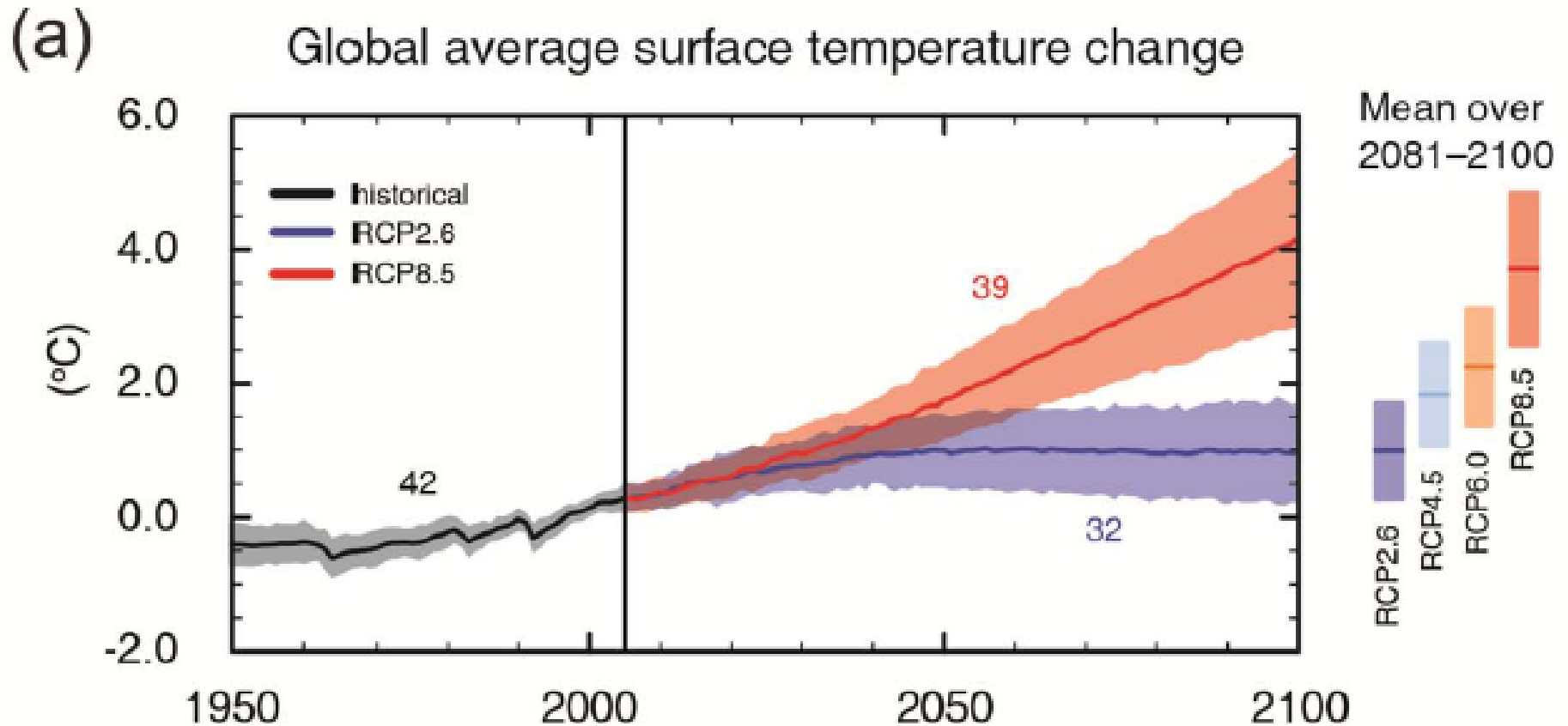
**“Economic models that have been used to calculate the fiscal fallout from climate change are woefully inadequate and severely underestimate the scale of the threat.”**

Source: Stern, Nicholas (2013) *The Structure of Economic Modeling of the Potential Impacts of Climate Change: Grafting Gross Underestimation of Risk onto already Narrow Science Models*, Journal of Economic Literature, 51(3), 838–859

# IPCC Fifth Assessment Report - Working Group I

## *Climate Change 2013: The Physical Science Basis*

### Summary for Policymakers



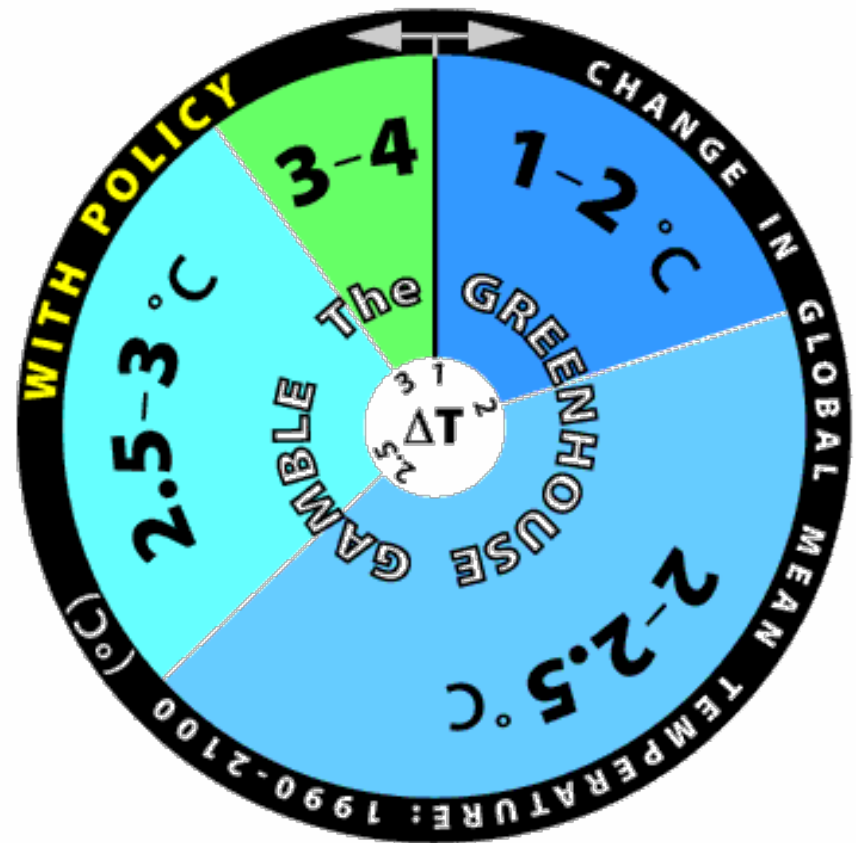
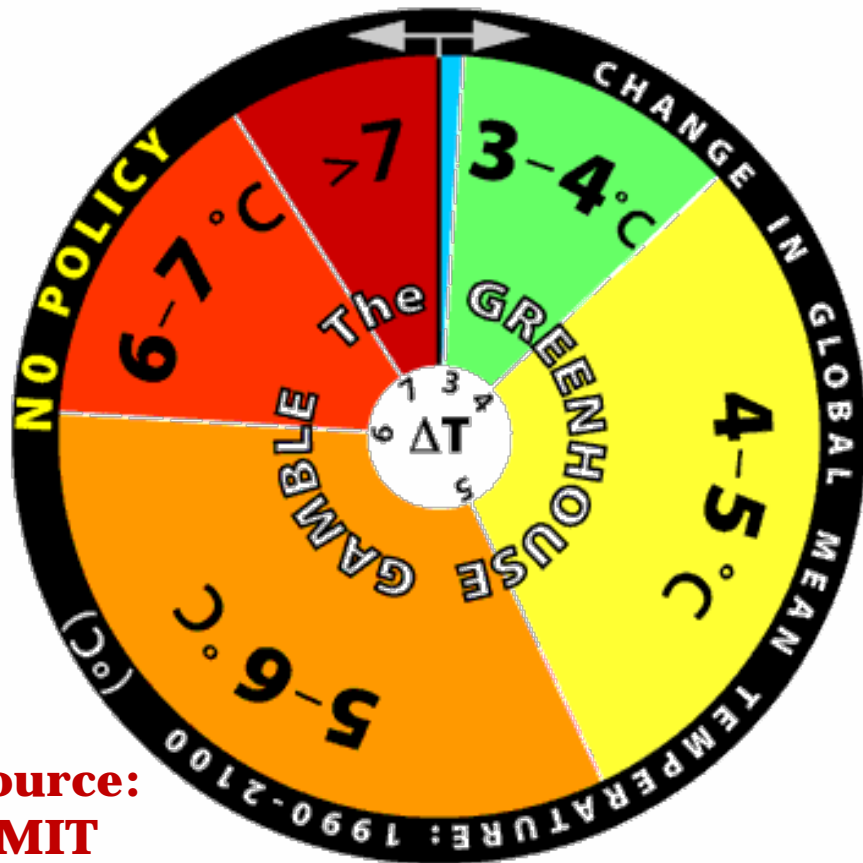
**Figure SPM.7:** CMIP5 multi-model simulated time series from 1950 to 2100 for (a) change in global annual mean surface temperature relative to 1986–2005

# Value of a Climate Policy Under Uncertainty

No Policy

What would we buy with **STABILIZATION** of CO<sub>2</sub> at 550 ppm?

A NEW WHEEL with lower odds of **EXTREMES**





# **Actions Needed To Address Climate Change**

- Put a ***price on carbon emissions*** so marketplace can work to find cheapest reductions, through a new international agreement in the post-Kyoto period
- Increase investments in ***energy-technology research***, development and demonstration
- Expand ***international cooperation*** on deploying advanced energy technologies
- Accelerate ***“win-win” measures***

# President's Council of Advisors on Science and Technology



EXECUTIVE OFFICE OF THE PRESIDENT

**PRESIDENT'S COUNCIL OF ADVISORS ON  
SCIENCE AND TECHNOLOGY**

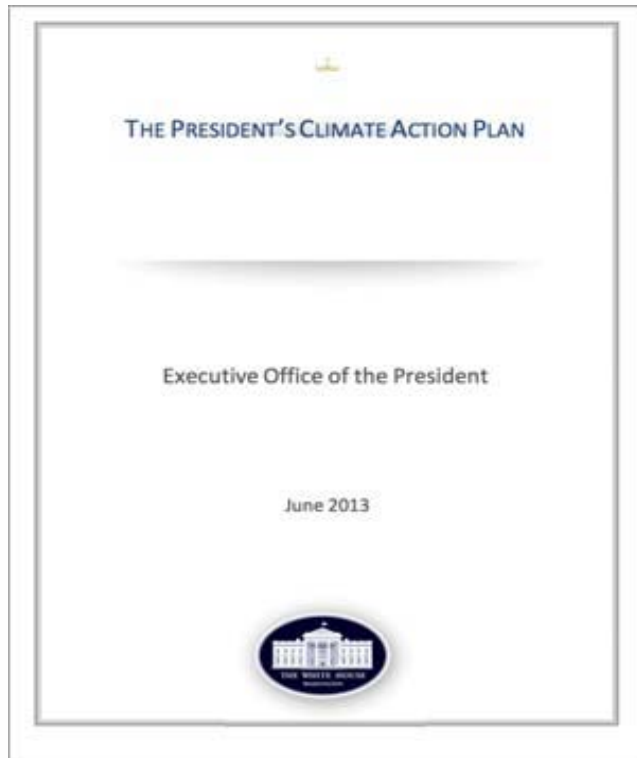
**March 2013**

**Dear Mr. President:**

... you noted that your Administration was in the process of developing a strategy for addressing climate change ... and you asked for our input. ...

- 1. Focus on national preparedness for climate change**
- 2. Continue efforts to decarbonize the economy, with emphasis on the electricity sector**
- 3. Level the playing field for clean-energy and energy-efficiency technologies**
- 4. Sustain research on next-generation clean-energy technologies**
- 5. Take additional steps to establish U.S. leadership on climate change internationally**

# President Obama's Climate Action Plan



June 2013

- Cutting carbon pollution in America (mitigation)
- Preparing the United States for the impacts of climate change (adaptation)
- Leading international efforts to address climate change

# Executive Office of the President

August 3, 2015

## **PRESIDENT OBAMA ANNOUNCES HISTORIC CARBON POLLUTION STANDARDS FOR POWER PLANTS**

*The Clean Power Plan is a Landmark Action to Protect Public Health, Reduce Energy Bills for Households and Businesses, Create American Jobs, and Bring Clean Power to Communities across the Country*

**President Obama and Environmental Protection Agency (EPA) Administrator Gina McCarthy release the final  
**CLEAN POWER PLAN,**  
a historic step in the Obama Administration's fight  
against climate change.**

# American Business Act on Climate Pledge

October 19, 2015

The White House announced new commitments from  
**81 American companies**  
who are joining the  
**American Business Act on Climate Pledge.**

These companies have:

- **operations in all 50 states**
- **employ over 9 million people**
- **represent more than \$3 trillion in annual revenue**

# COP-21: MEXICO'S INDC



## INTENDED NATIONALLY DETERMINED CONTRIBUTION

### *Unconditional Reduction:*

Mexico is committed to reduce unconditionally 25% of its Greenhouse Gases and Short Lived Climate Pollutants emissions (below BAU) for the year 2030.

### *Conditional Reduction:*

The reduction commitment could increase up to a 40% subject to a global agreement that includes an international carbon price, technical cooperation and technology transfer, etc.

# WHAT WE KNOW:

## THE REALITY, RISKS AND RESPONSE TO CLIMATE CHANGE

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The AAAS Climate Science Panel



## The AAAS Climate Science Panel

### **Mario Molina (Chair)**

Univ. of California, San Diego and Scripps Inst. of Oceanography

### **James McCarthy (Co-chair)**

Harvard University

### **Diana Wall (Co-chair)**

Colorado State University

### **Richard Alley**

Pennsylvania State University

### **Kim Cobb**

Georgia Institute of Technology

### **Julia Cole**

University of Arizona

### **Sarah Das**

Woods Hole Oceanographic Institution

### **Noah Diffenbaugh**

Stanford University

### **Kerry Emanuel**

Massachusetts Institute of Technology

### **Howard Frumkin**

University of Washington

### **Katharine Hayhoe**

Texas Tech University

### **Camille Parmesan**

University of Texas, Austin and University of Plymouth, UK

### **Marshall Shepherd**

University of Georgia



# WHAT WE KNOW

## THE REALITY, RISKS AND RESPONSE TO CLIMATE CHANGE

- Based on well-established evidence, about **97% of climate scientists** have concluded that human-caused climate change is happening here and now.
- We are **at risk** of pushing our climate system toward **abrupt, unpredictable, and potentially irreversible changes** with highly damaging impacts.
- The **sooner we act, the lower the risk and cost**. And there is much we can do.

# International Agreement to Control CFC Emissions

UNITED NATIONS ENVIRONMENT PROGRAM (UNEP)

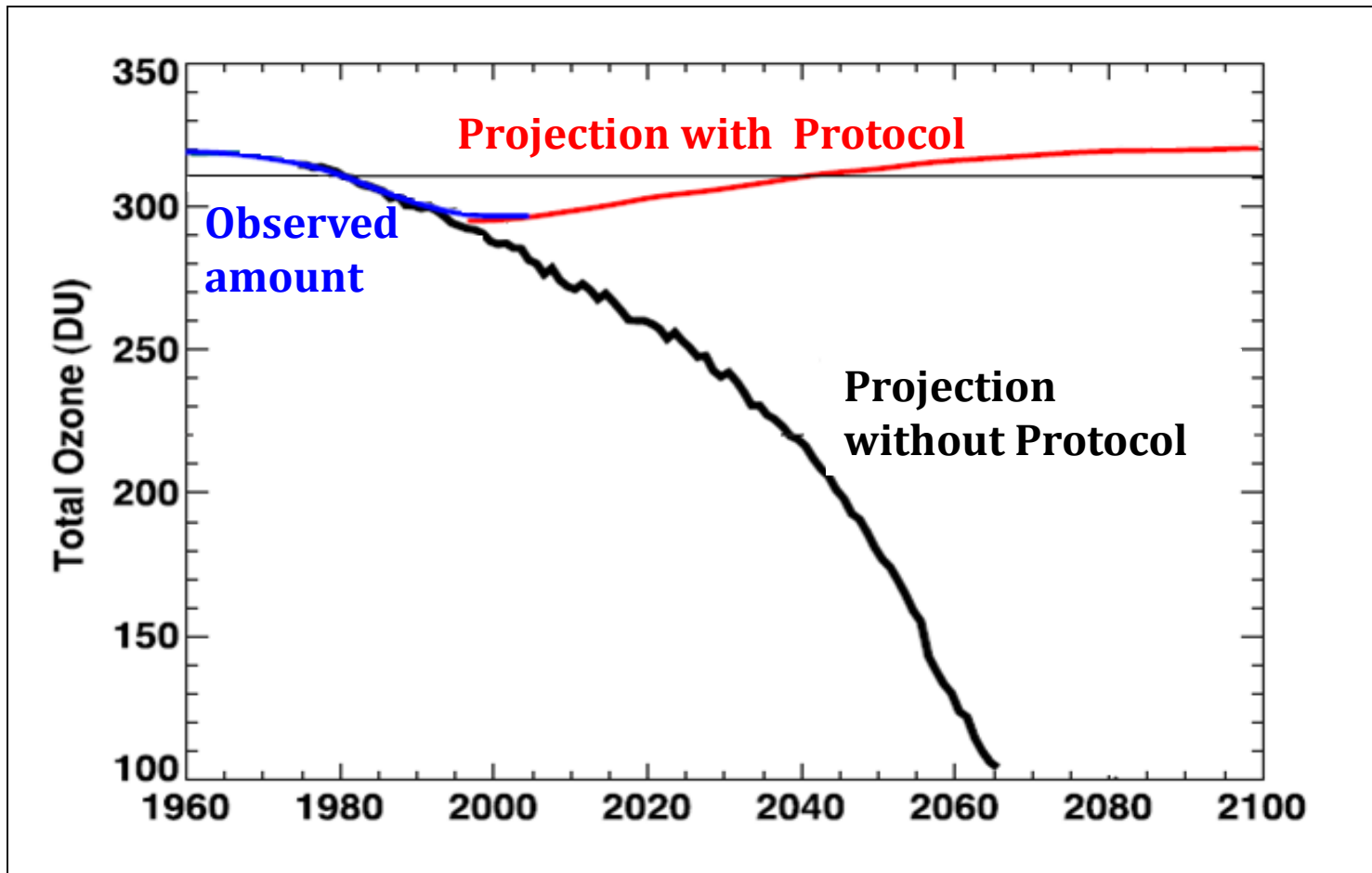


## **MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER**

**FINAL ACT**

**1987**


# Montreal Protocol Achievements



Source: Newman et al., *What would have happened to the ozone layer if chlorofluorocarbons (CFCs) had not been regulated?*

Atmos. Chem. Phys. Discuss., 9, 2113–2128, 2009

# Is Climate Change real?




**“...global warming is a total fraud ...the federal government, they want to create global government to control all of our lives.”**

**Dana Rohrabacher** [*Huffington Post*, 8/12/13]



**“The science is not settled on this. The idea that we would put Americans' economy at jeopardy based on scientific theory that's not settled yet to me is just nonsense.”**

**Rick Perry** [*International Business Times*- 9 September, 2011]



**“Carbon dioxide is portrayed as harmful, but there isn't even one study that can be produced that shows that carbon dioxide is a harmful gas... It is a harmless gas”**

**Michele Bachmann** [*The Minnesota Independent*-24 April, 2009]



**“The idea that carbon dioxide is a carcinogen that is harmful to our environment is almost comical. Every time we exhale, we exhale carbon dioxide.”**

**John Boehner** [*ABC News Transcript*, 4/19/09]



# RISKY BUSINESS

The Economic Risks of Climate Change in the United States

June 2014

A CLIMATE RISK ASSESSMENT  
FOR THE UNITED STATES

RISKY BUSINESS:

## THE ECONOMIC RISKS OF CLIMATE CHANGE IN THE UNITED STATES

*Co-Chairs:*

**Michael R. Bloomberg**

Founder, Bloomberg Philanthropies;  
108th Mayor of the City of New York;  
founder, Bloomberg L.P.

**Henry M. Paulson, Jr.**

Chairman of the Paulson Institute;  
former U.S. Secretary of the Treasury

**Thomas F. Steyer**

Retired founder, Farallon Capital  
Management LLC

# The New York Times

**Sunday Review** | OPINION

## The Coming Climate Crash

Lessons for Climate Change in the 2008 Recession

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By [Henry Paulson Jr.](#)

June 29th, 2014

... When the **credit bubble burst** in 2008, the damage was devastating. Millions suffered...

...We're making the **same mistake** today with **climate change**.

...We're staring down a **climate bubble** that **poses enormous risks** to both our environment and economy.



*In 1987, **George Shultz** was serving as President Reagan's Secretary of State, he urged the President to take action on that decade's hotly-contested scientific issue:*

***The ozone layer.***

*“Rather than go and confront the people who were doubting it ... we'd say to them: Look, there must be, in the back of your mind, at least a little doubt. ... So let's all get together on an **insurance policy.**”*

*That insurance policy became the **Montreal Protocol on Substances that Deplete the Ozone Layer**, an international treaty still in effect to this day.*