



The Upheaval in Energy and Climate Regulation—Is Here!

Steve Goreham



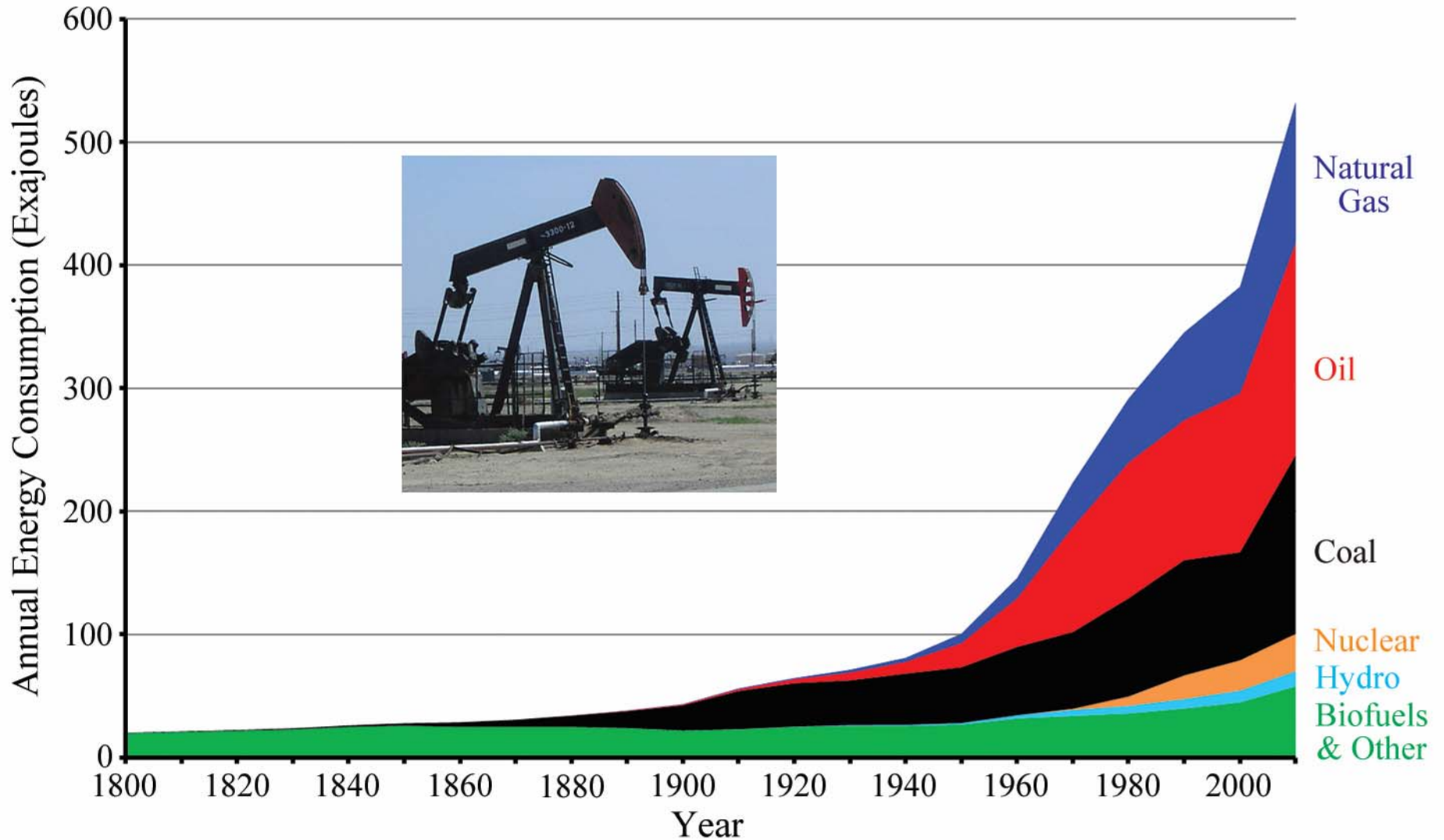
International Urban Planning Conference New York City, 1898



Historical Energy Use— Wood Burning and Muscle

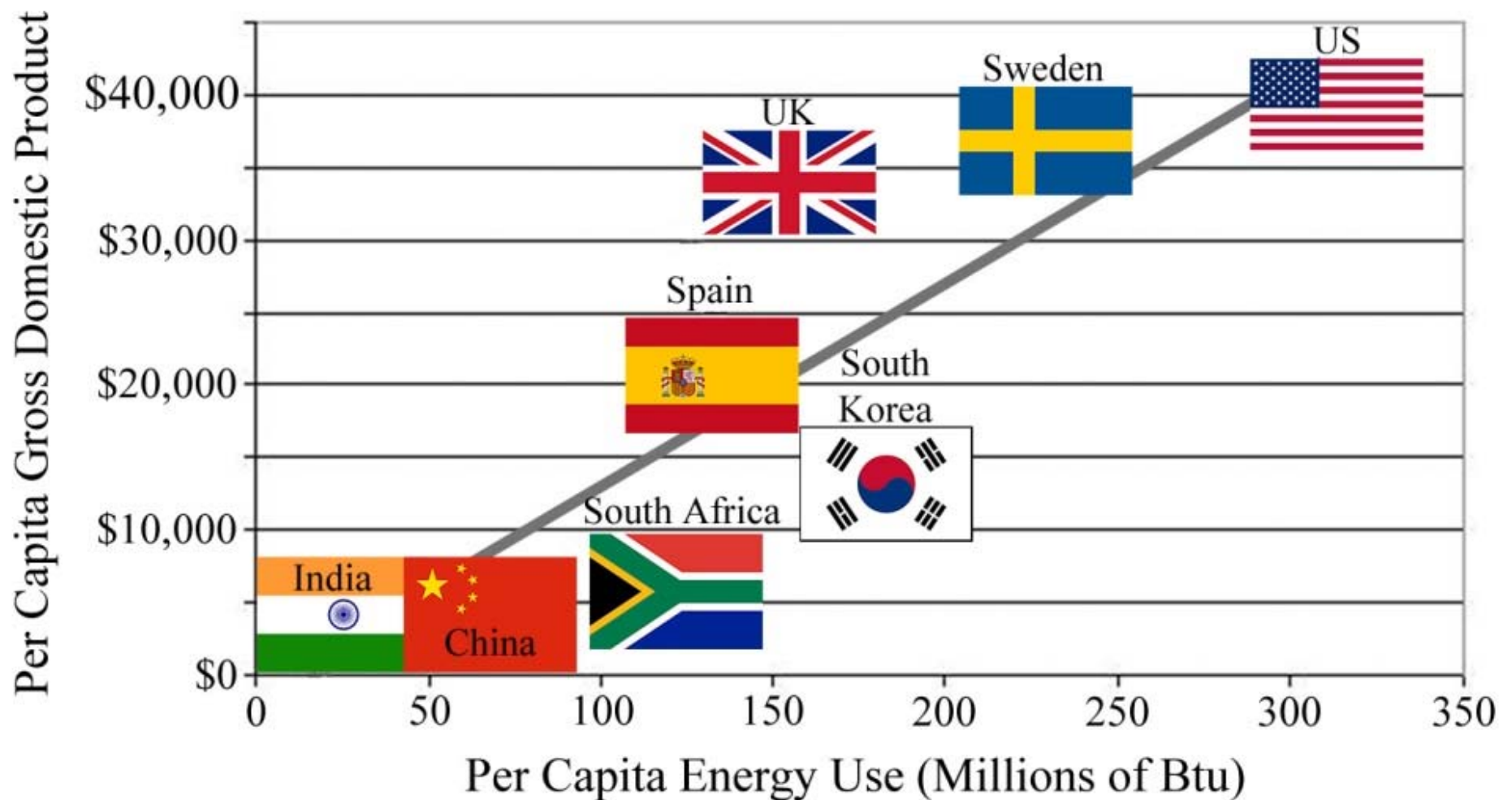


Golden Age: Low-Cost Energy



Smil (2010), IEA (2012)

Energy: Driver of Global Prosperity



The War on Energy



“If you ask me, it’d be little short of disastrous for us to discover a source of clean, cheap, abundant energy because of what we would do with it.”

— Amory Lovins (1977)

“Our insatiable drive to rummage deep beneath the surface of the earth is a willful expansion of our dysfunctional civilization into Nature.”

— Al Gore (1992)



When Did Energy Use Become Bad?



Home Energy Report

“You used 41% MORE energy than your efficient neighbors”

Three Misconceptions About Energy

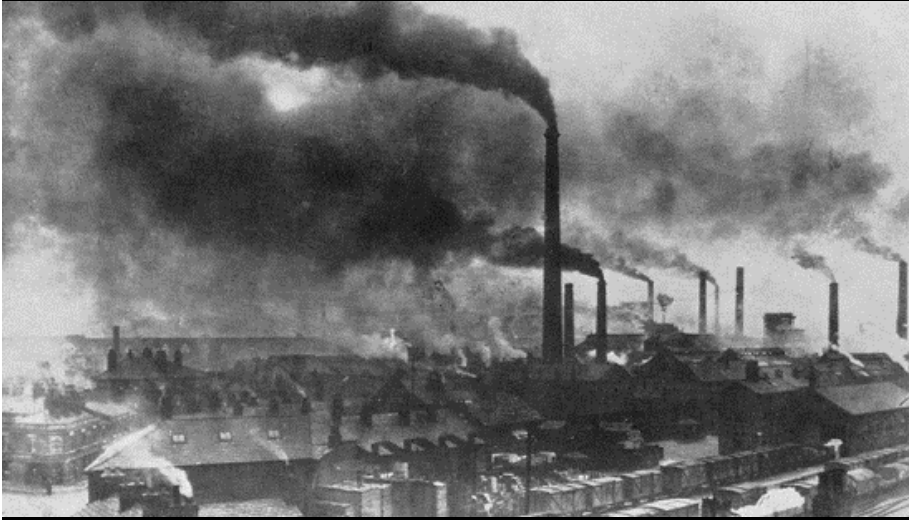
Polluted World

**Climate
Destruction**

**Resource
Depletion**



I. Polluted World?



**Widnes, England
Late 1800s**

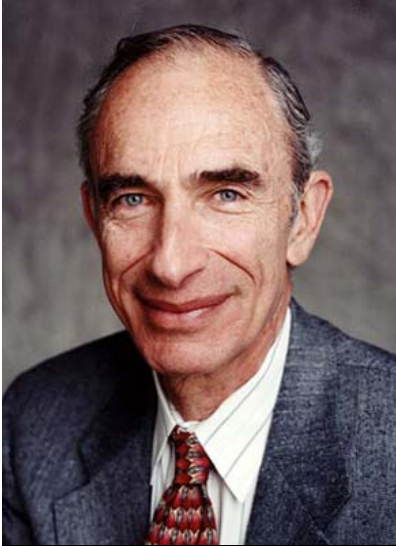


**San Juan
Express
1940s**



Cuyahoga River Fire (1952)

Increasing Global Pollution?



Paul Ehrlich



John Holdren

$$I = P \cdot A \cdot T$$

I = Environmental Impact

P = Population

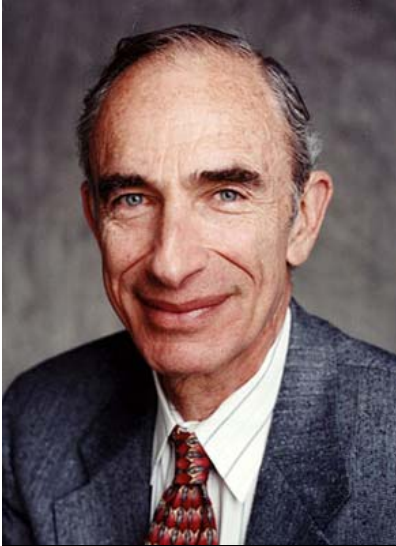
A = Affluence (Per Capita Consumption)

T = Technology

Hypothesis: Environmental Impact Increases with Population, Affluence, and Technology

Ehrlich and Holdren (1971)

Increasing Global Pollution?



Paul Ehrlich

$$I = P \cdot \underbrace{A \cdot T}_{\text{Energy}}$$



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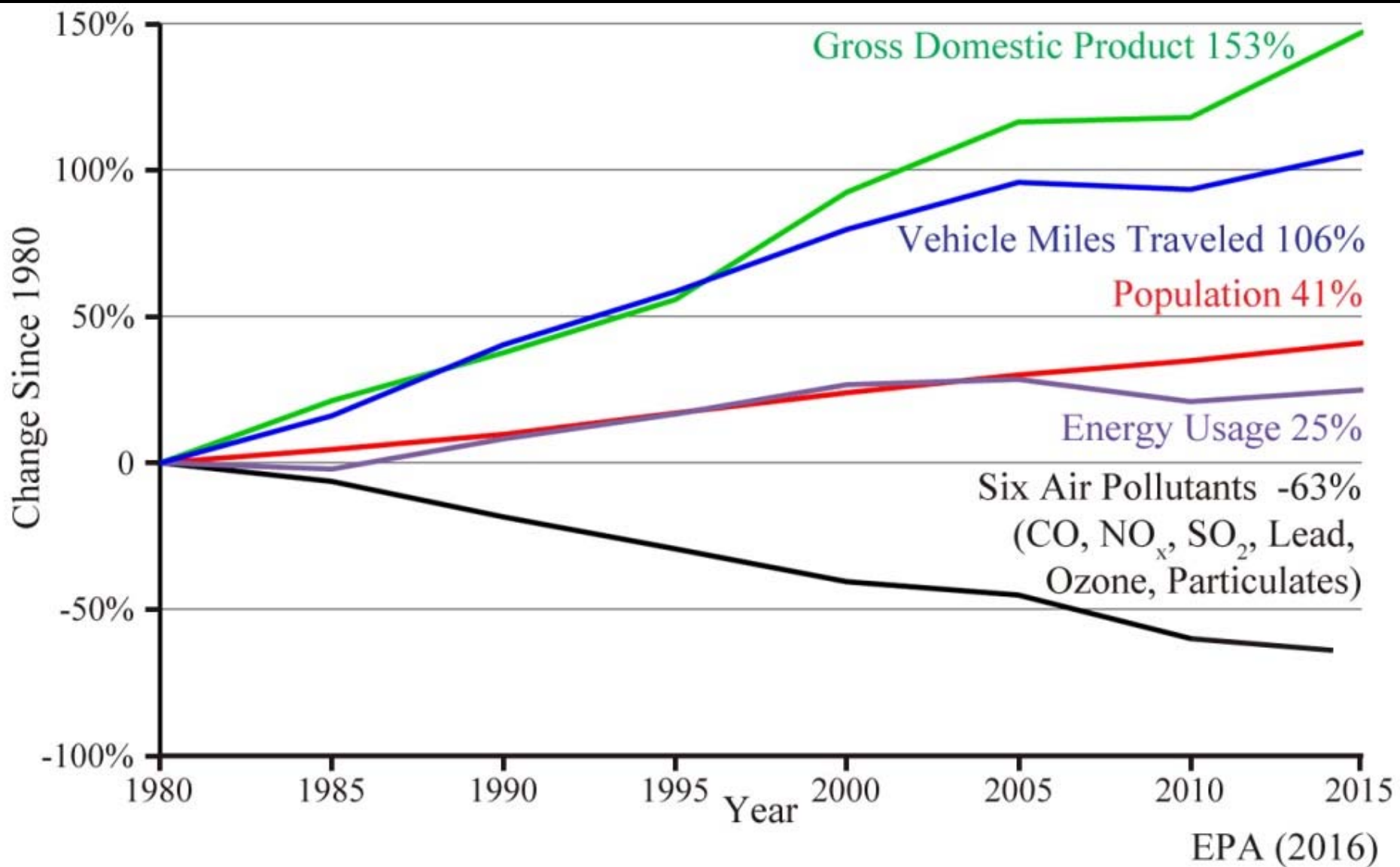
Ehrlich and Holdren (1971)

We All Want Clean Air and Water

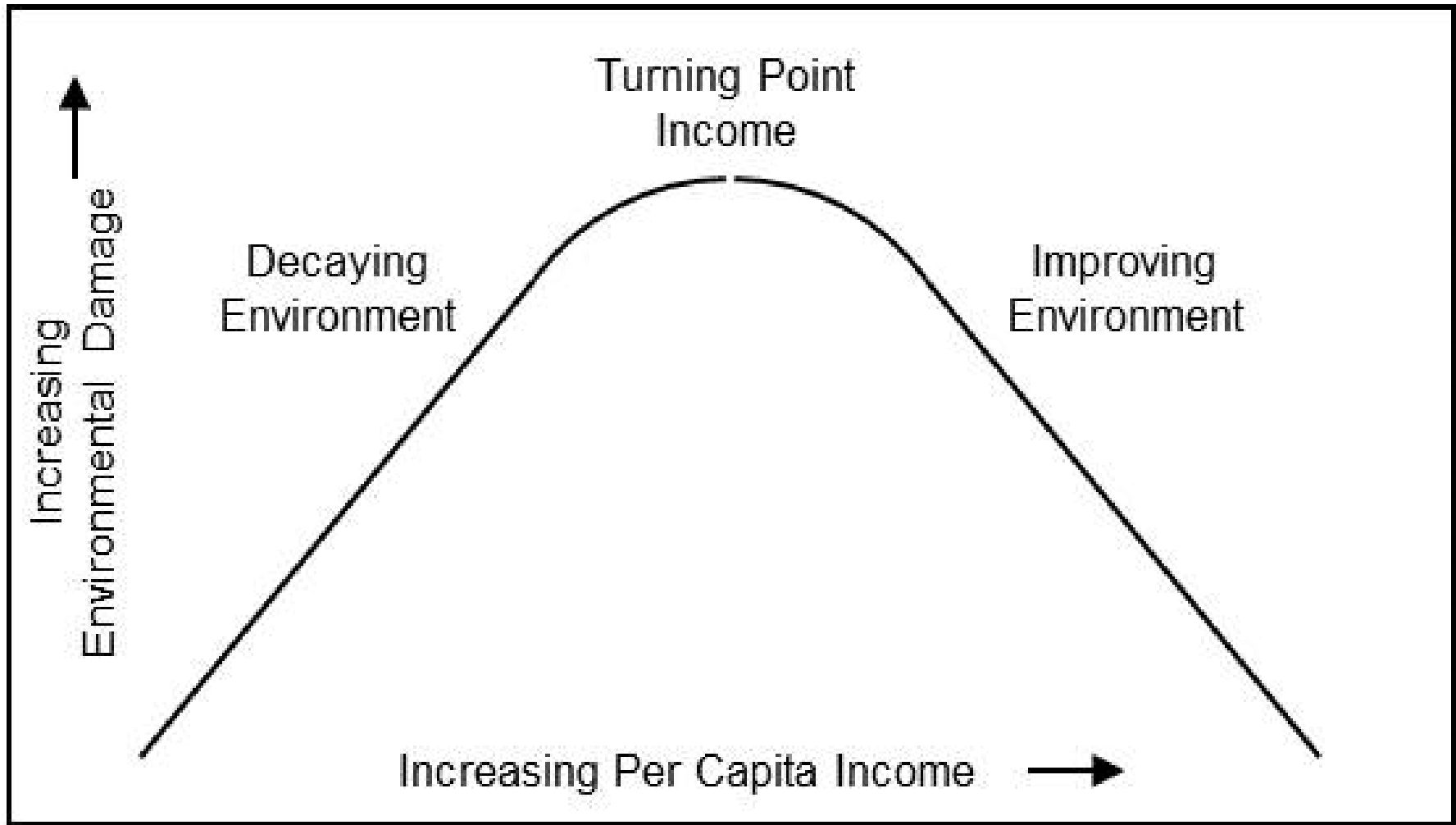


**First Drop,
Peshtigo River,
Wisconsin**

Improving U.S. Air Quality and Energy Growth

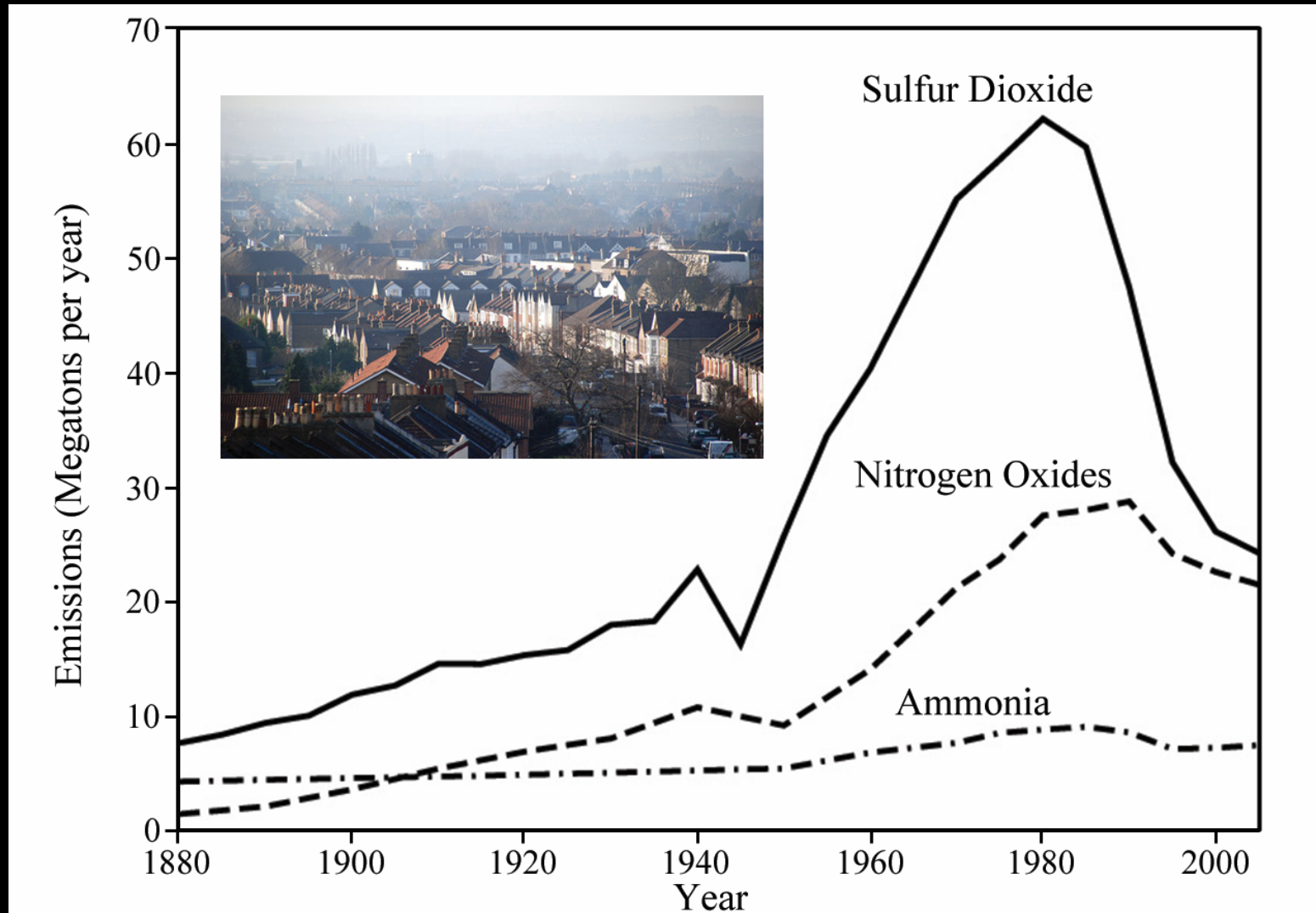


Environmental Kuznets Curve



Grossman and Krueger (1991)

Reduced Air Pollutant Emissions in Europe



Schöpp
(2003)

Pollution Declining in All Developed Nations

Modern Nations Control Their Pollution

- Lowest Pollution in Nations that Use the Most Energy
- Developing Nations Moving to Cleaner Environment

Pollution Best Reduced by Boosting the Income of Nations





“Carbon dioxide is a pollutant.”

**– News Media,
Environmental Protection Agency**



Carbon Pollution?



GOVERNMENT BUSINESS NO. 8
PARIS AGREEMENT
AFFAIRES ÉMANANT DU GOUVERNEMENT N° 8
ACCORD DE PARIS

**Justin Trudeau, Prime Minister of Canada,
House of Commons, October 3, 2016**

Carbon Dioxide is NOT a Pollutant!

- CO_2 is an Odorless, Harmless, Invisible Gas
- We Inhale Air with Little CO_2 , but Breathe Out 4% CO_2





What Do Cannabis Growers Know that Climate Scientists Don't Know?



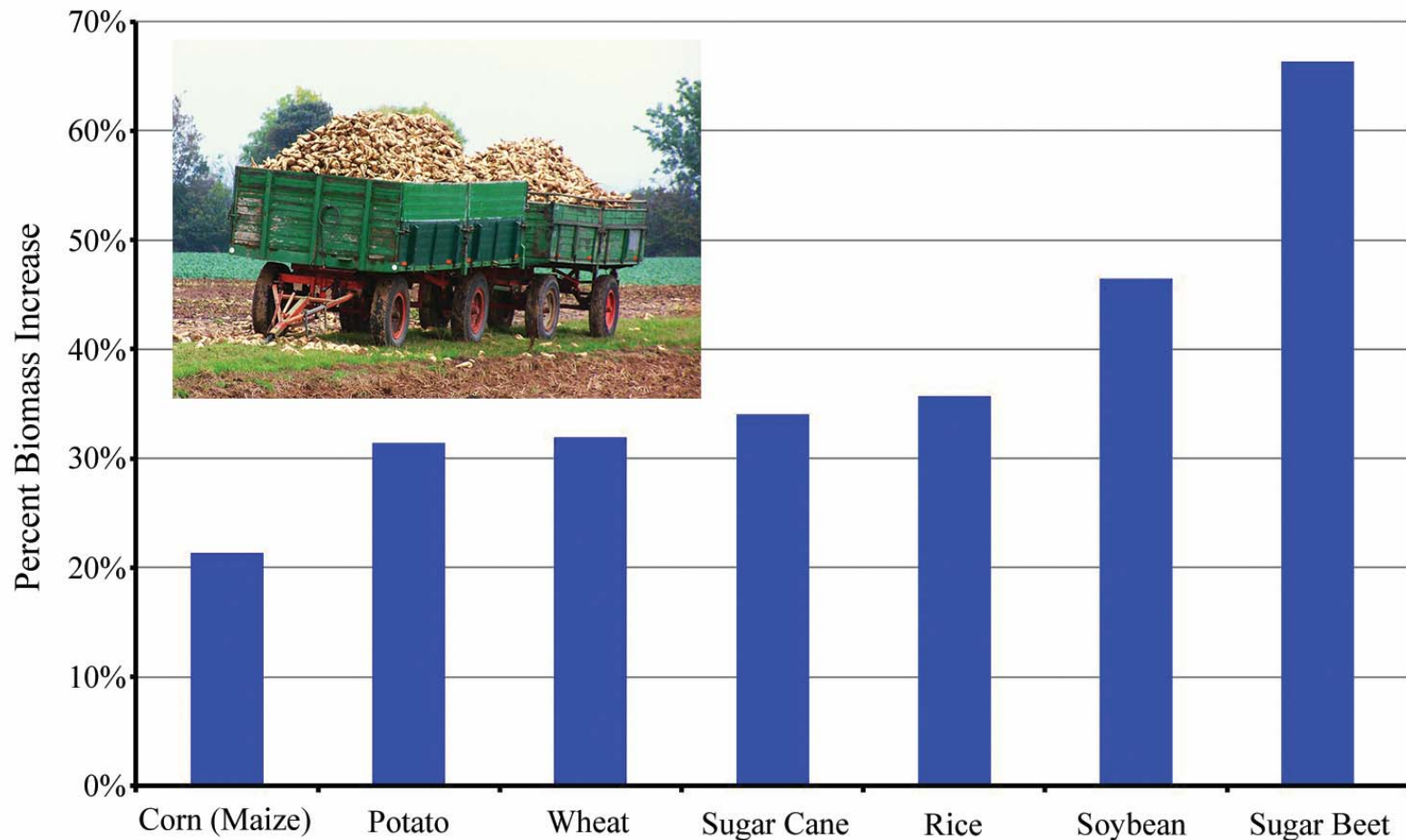
CO2 Makes Plants Grow!



CO₂ is Green!

- CO₂ is Plant Food, Essential for Life on Earth

Increased Food Crop Growth from Increased CO₂ (Additional 300 ppm Atmospheric CO₂ Concentration)



**Idso
(2011)**

II. Climate Destruction?



Former Vice President Al Gore,
Senate Foreign Relations Committee, January 28, 2009

We Live in a World of Superstition!



People's Climate March, April 29, 2018

Climatism: The Belief that Humans Are Causing Dangerous Global Warming

Accepted by:

- **More than 190 Heads of State**
- **The United Nations**
- **Most Scientific Organizations**
- **Most Fortune 500 Companies**
- **Most Universities**

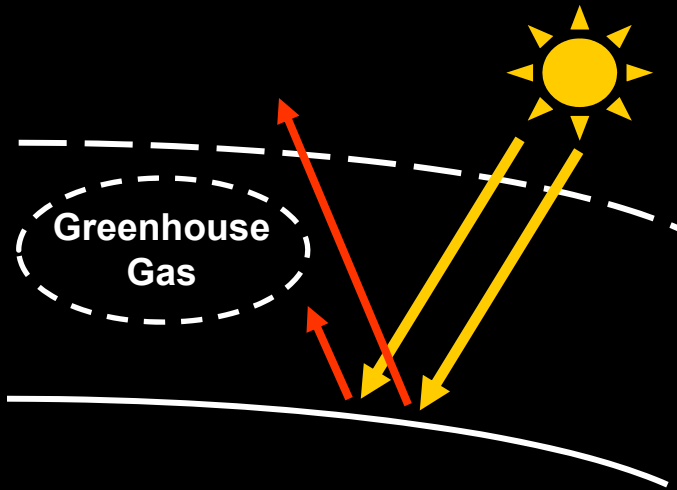


“They’re moving in herds!”

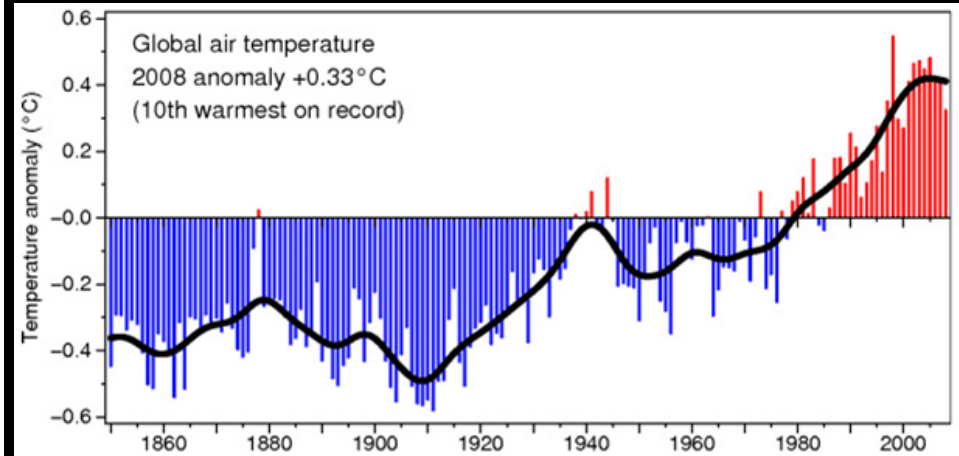
Over \$250 Billion per Year in Global Spending

The Theory of Man-Made Global Warming

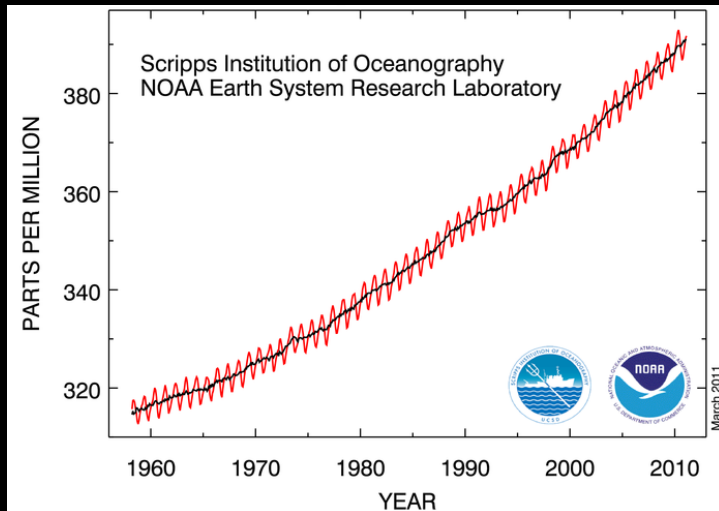
A. The Greenhouse Effect



C. Rising Global Temperatures



B. Rising Atmospheric CO₂ Level



D. Computer Model Projections



The Coming Disasters from Global Warming?



WARNING

Use of this fuel product contributes to climate change which may put up to 30% of species at a likely risk of extinction.

Warning Label Proposed in Vancouver, Canada

However—There is

No Empirical Evidence

That Increasing Greenhouse Gases

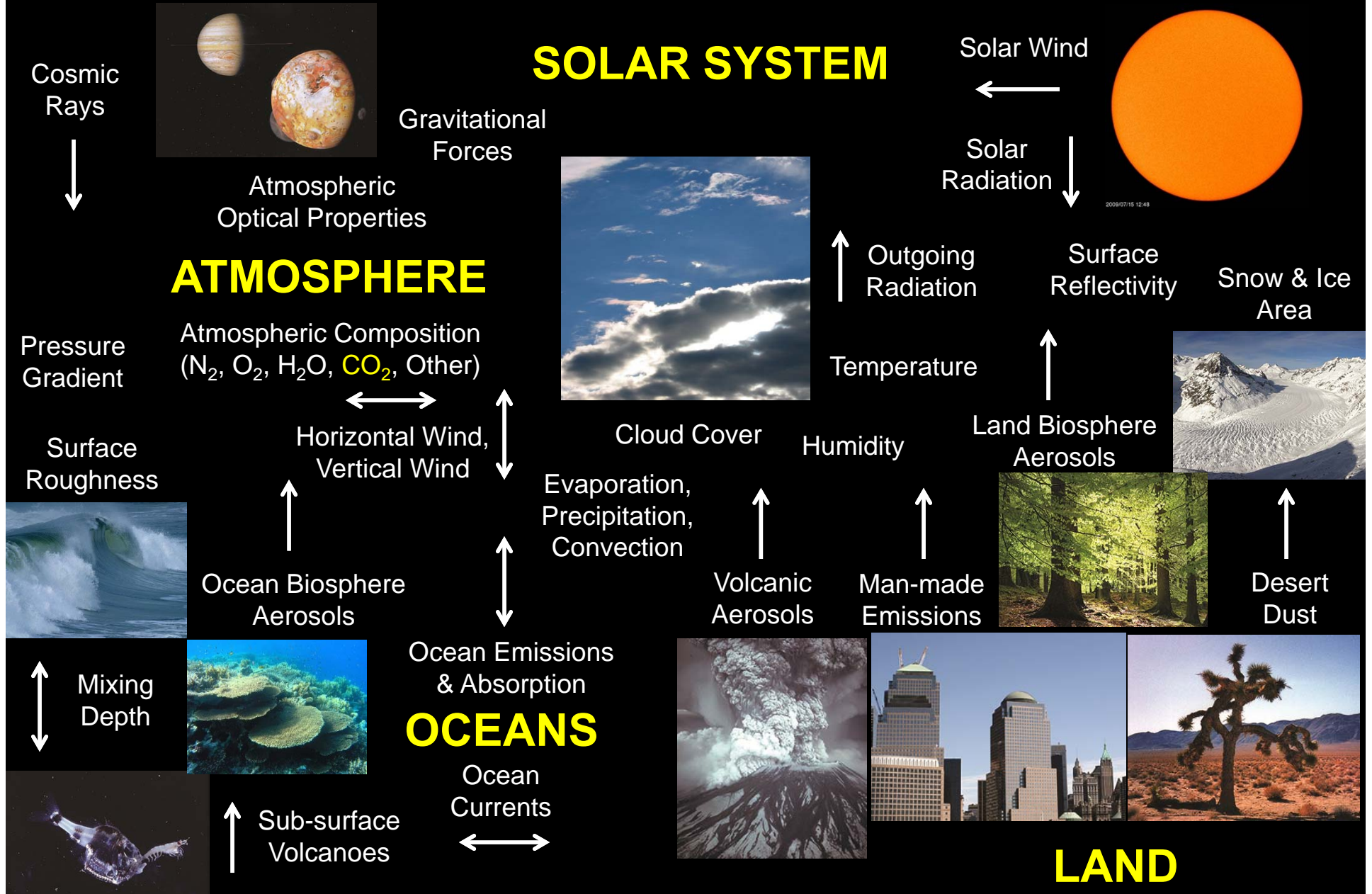
Are the Primary Cause of

Global Warming!



“...climate change is occurring and humans play a contributing role.”
***— Chris Christie,
Governor of New Jersey,
May 26, 2011***

CO₂: A Small Part of Earth's Climate System



CO₂ is a Trace Gas

Only Four of Every 10,000 Molecules Are Carbon Dioxide



Duke Cameron Arena (2010)

CO₂ is a Trace Gas

Humans Responsible for Part of One in 10,000 Molecules!



Duke Cameron Arena (2010)

**What is Nature's
Most Abundant
Greenhouse Gas?**

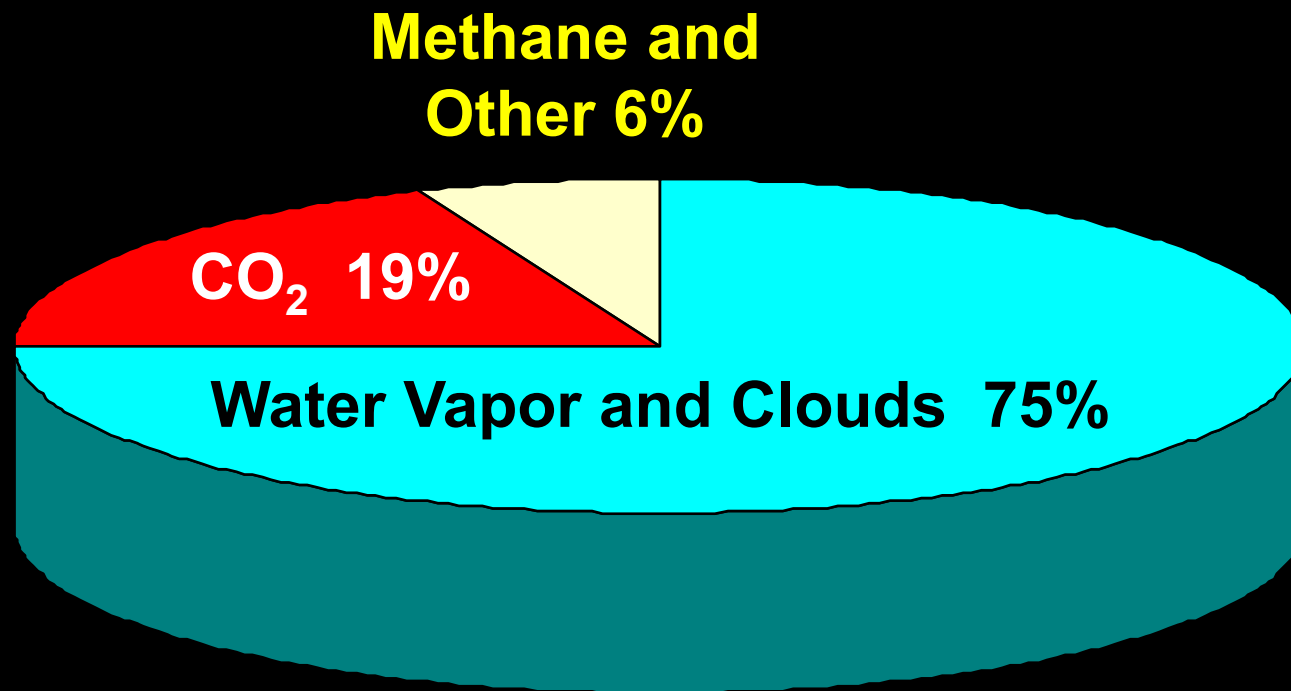
**What is Nature's Most Abundant
Greenhouse Gas?**

Water Vapor!



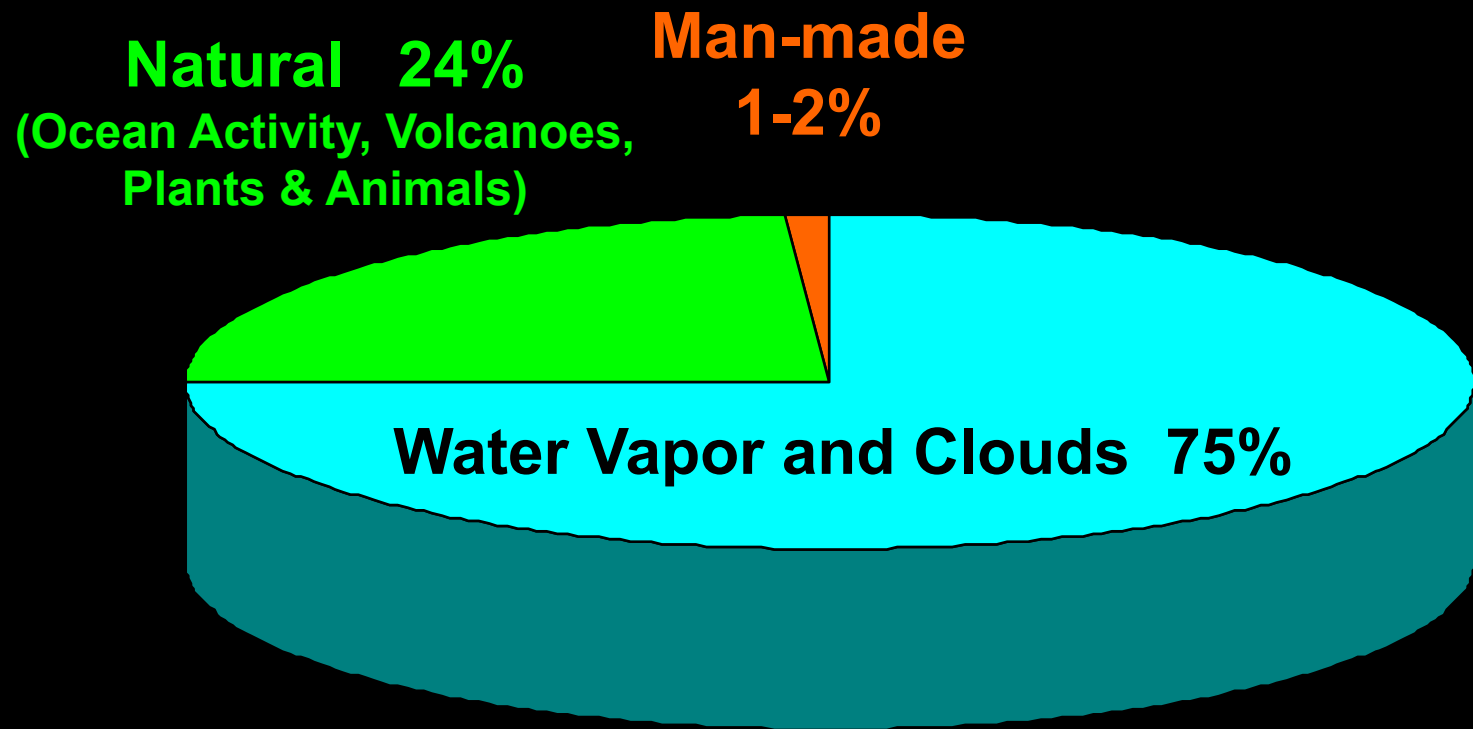
Greenhouse Effect in Earth's Atmosphere

(Greenhouse Gases are 1%-2% of Atmosphere)



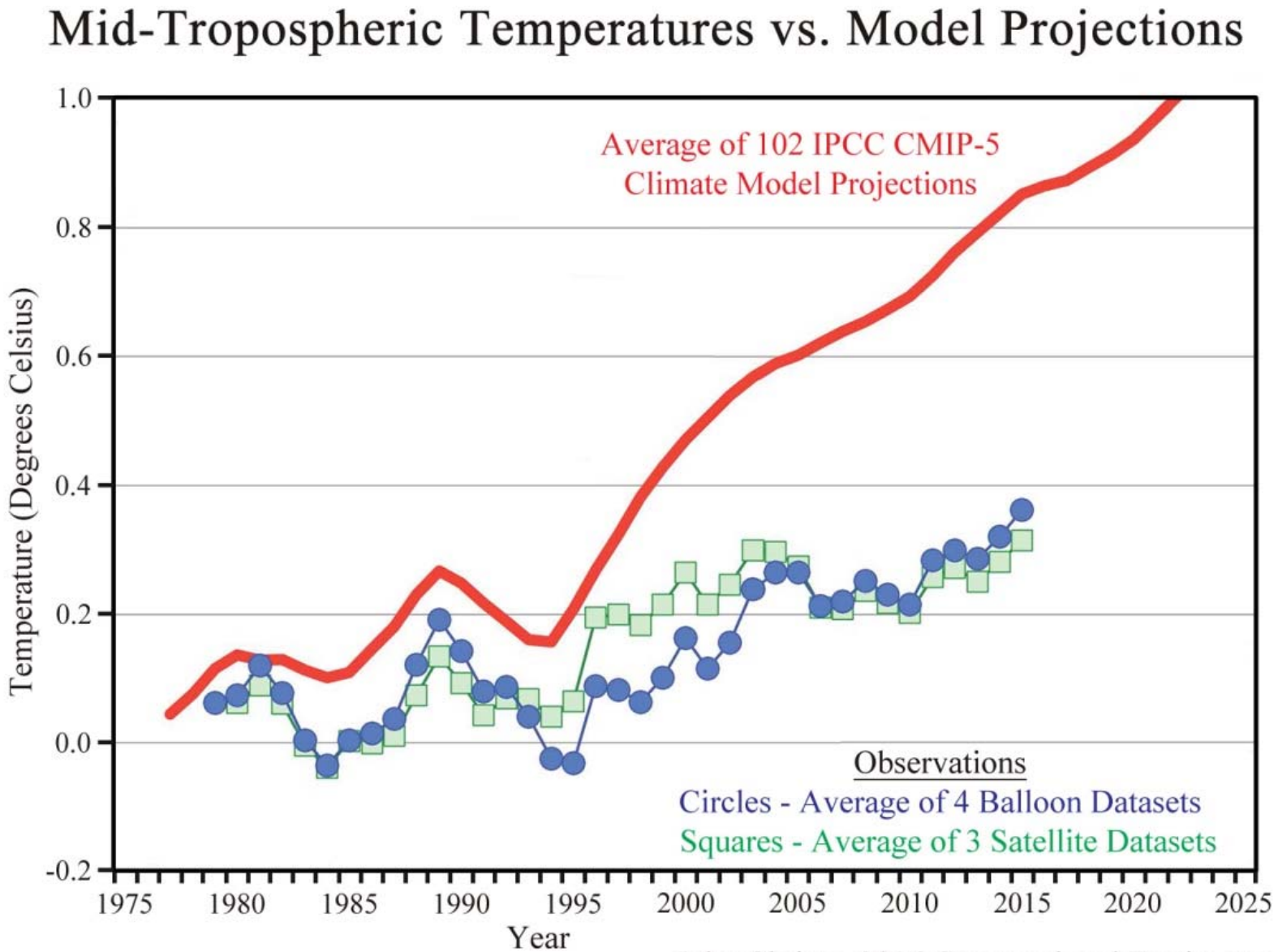
Schmidt et al. (2010)

Human Contribution to Greenhouse Effect



Mankind Responsible for about 1 or 2 Parts in 100!

Evidence Mounting That Models Are Wrong



John Christy, 2016 Congressional Testimony

Evidence of Man-Made Warming?



Evidence of Man-Made Warming?



**Melting Ice is Evidence of Warming But,
Does Not Tell the Cause of the Warming**

Climate Change is Continuous!

Medieval Warm Period (900-1300 AD)

- Viking Eric the Red Settles Hvalsey Greenland—985 AD
- Settlement Grows to 5,000 by 1300
- Dies Out by 1408 as Climate Cools

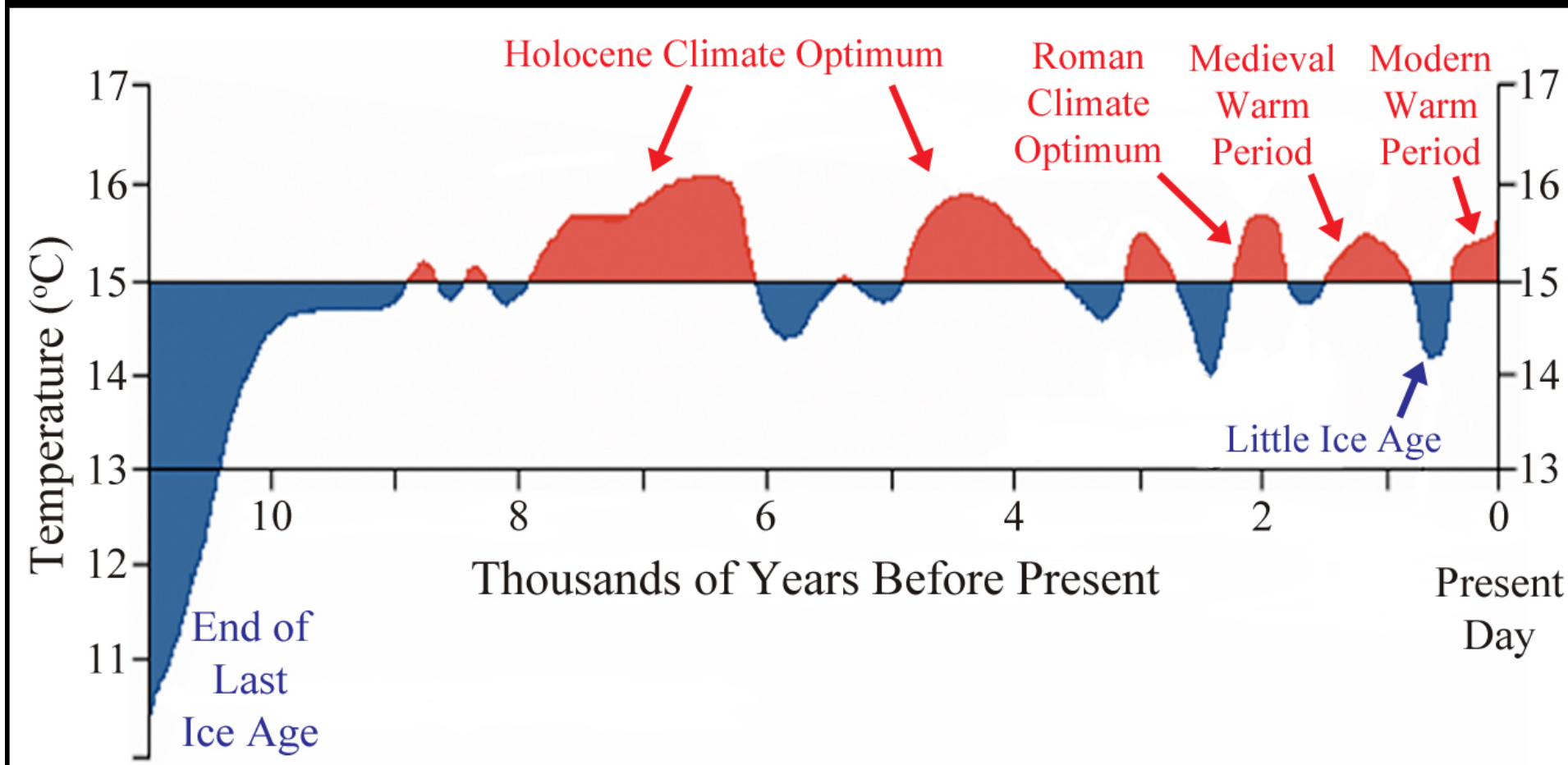
Little Ice Age (1300-1850 AD)

- Shorter Growing Seasons
- Famine in Europe
- Thames Freezes Hard at London



The 1500-Year Temperature Cycle

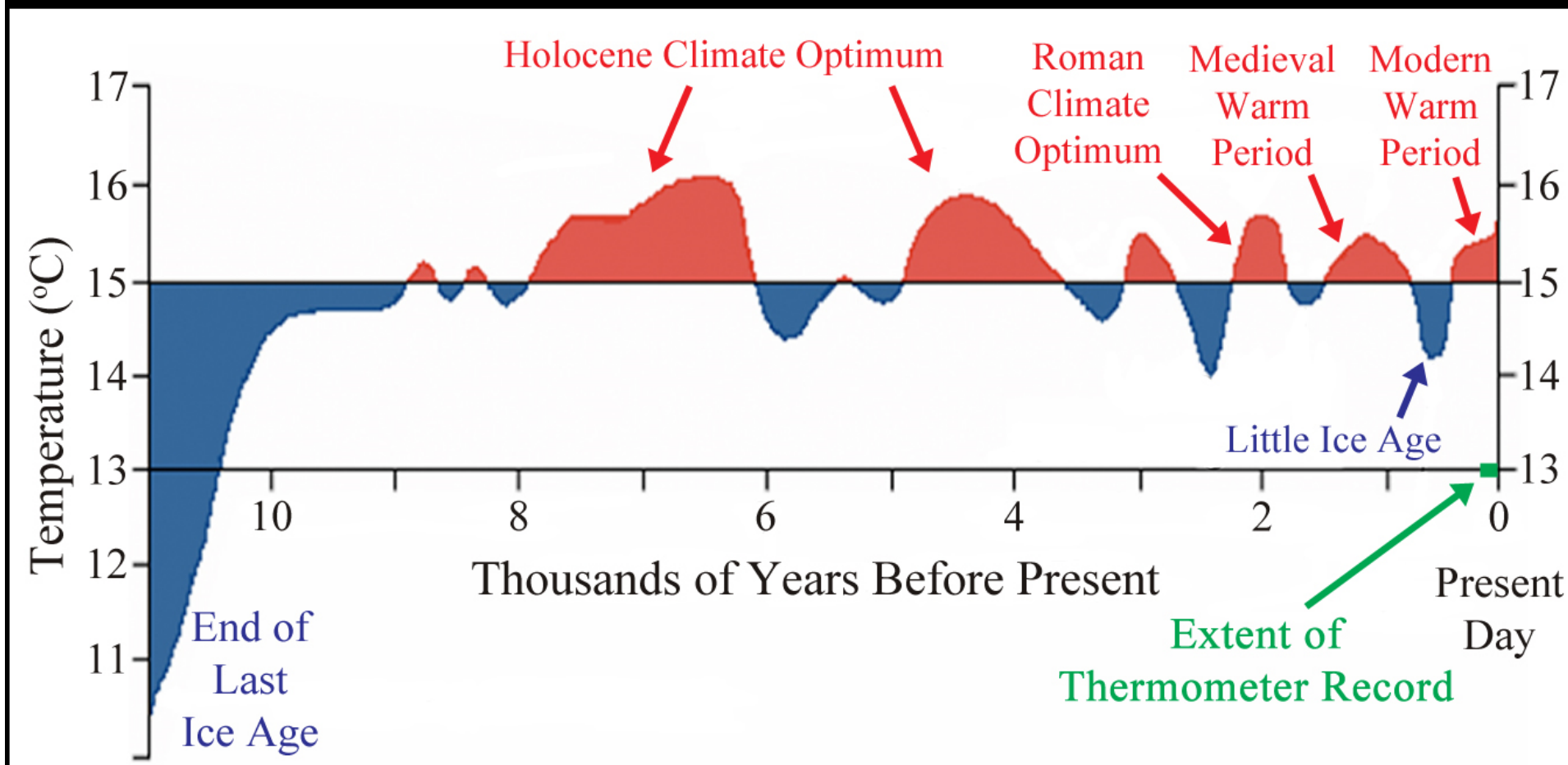
Ice Core Data from Crete Site in Central Greenland



W. Dansgaard (1984), Adapted by Dennis Avery (2009)

The 1500-Year Temperature Cycle

Ice Core Data from Crete Site in Central Greenland



W. Dansgaard (1984), Adapted by Dennis Avery (2009)

WWW.THIS IS CLIMATE CHANGE.ORG



THEN
(1894)



NOW
(2008)

MENDENHALL GLACIER - ALASKA

Under the Mendenhall Glacier—A Forest!



**Bradshaw
(2013)**

But Aren't Natural Disasters Evidence of Man-Made Climate Change?



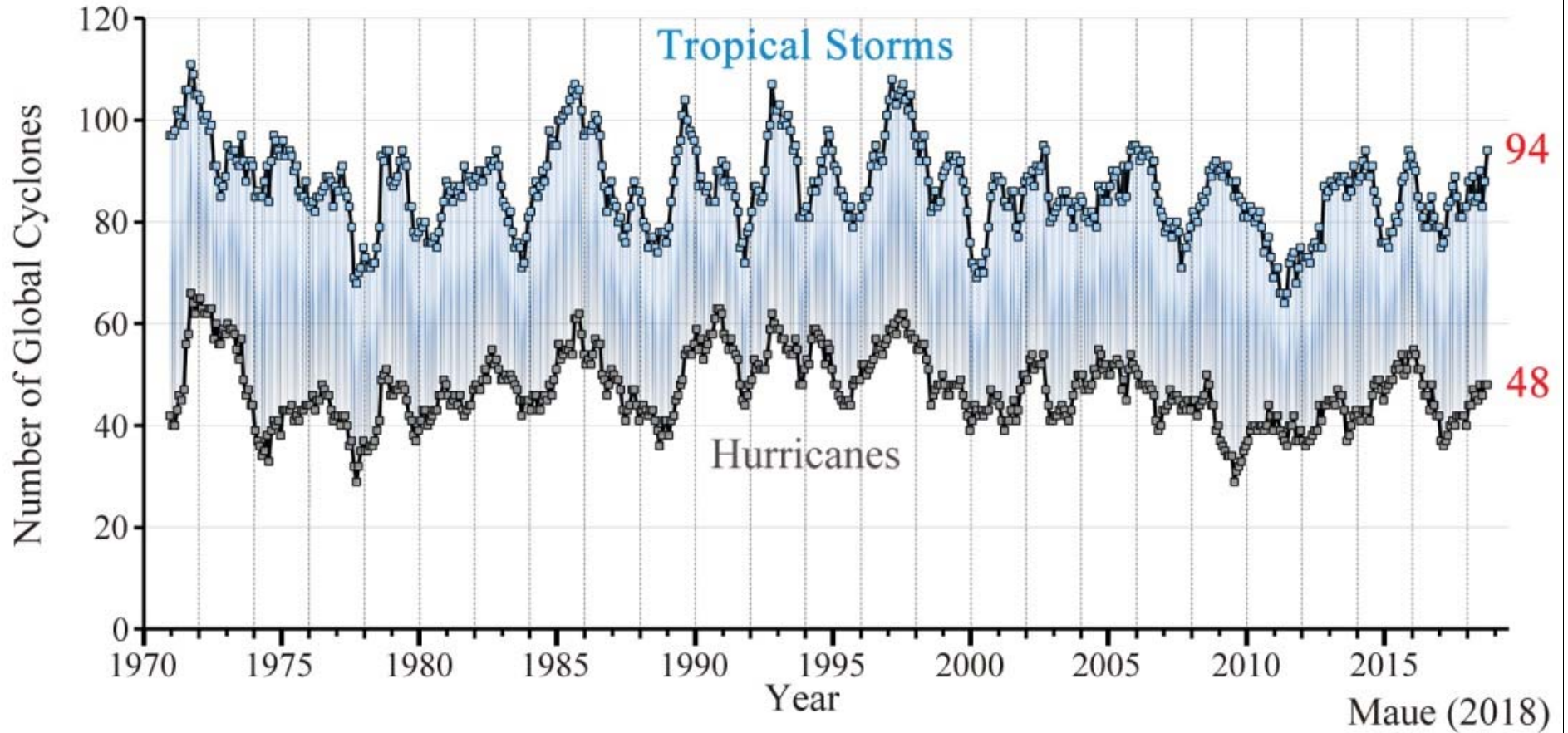
Are Weather Events More Extreme?



Dr. David Suzuki, 2014

No Increase in Global Cyclone Frequency Or Intensity

Number of Global Cyclones 1971-2018
(12 Month Running Sums)



Great Plains Drought of 2012

- 80% of US Agricultural Land in Drought
- USDA Designated Over 2,000 Counties Disaster Areas

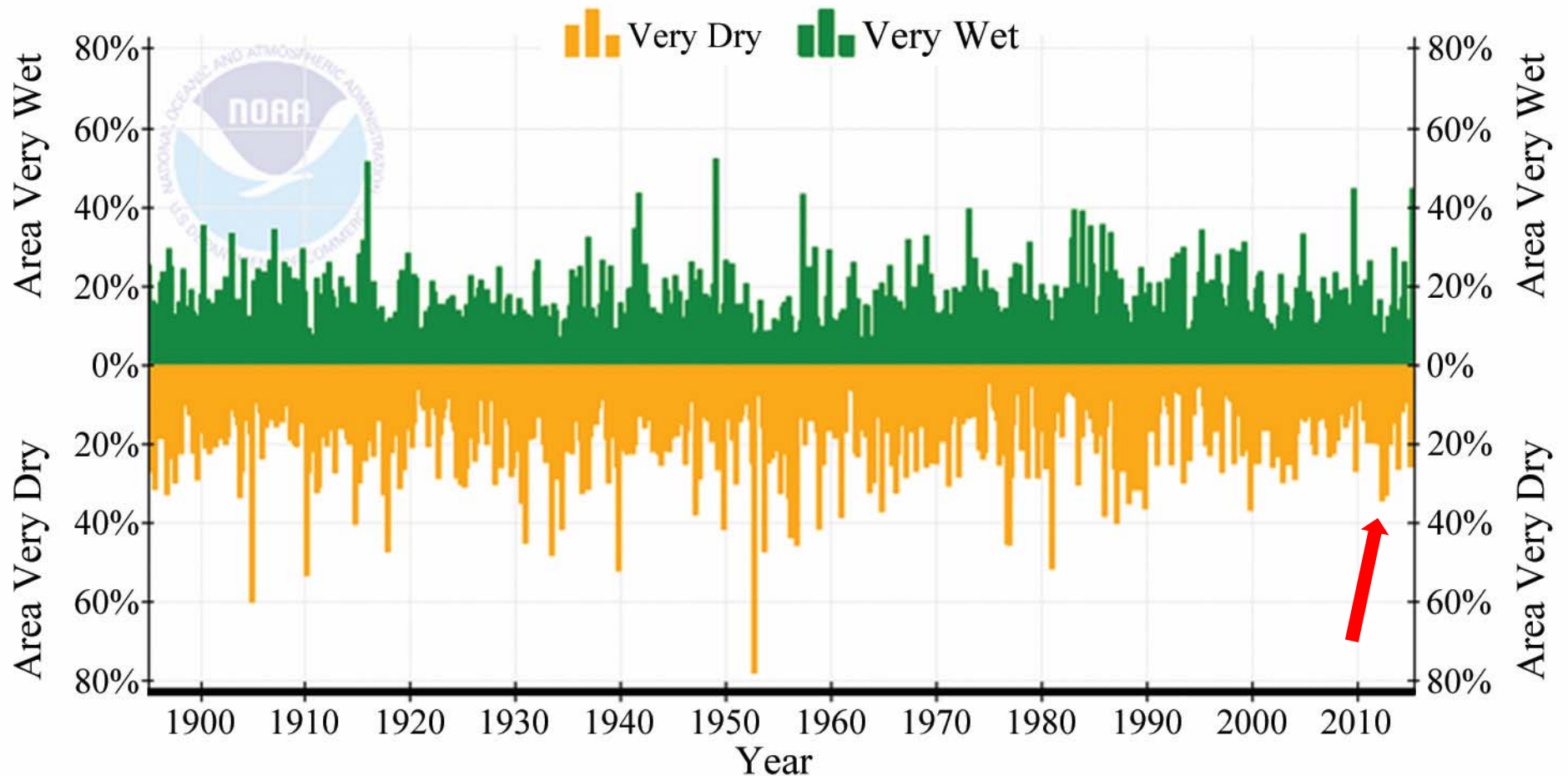
“This is what I and many other climate scientists have been warning about...This is what global warming looks like on a regional or personal level.”

—Dr. James Overpeck, 2013



No Trend of Increasing in Drought or Flood

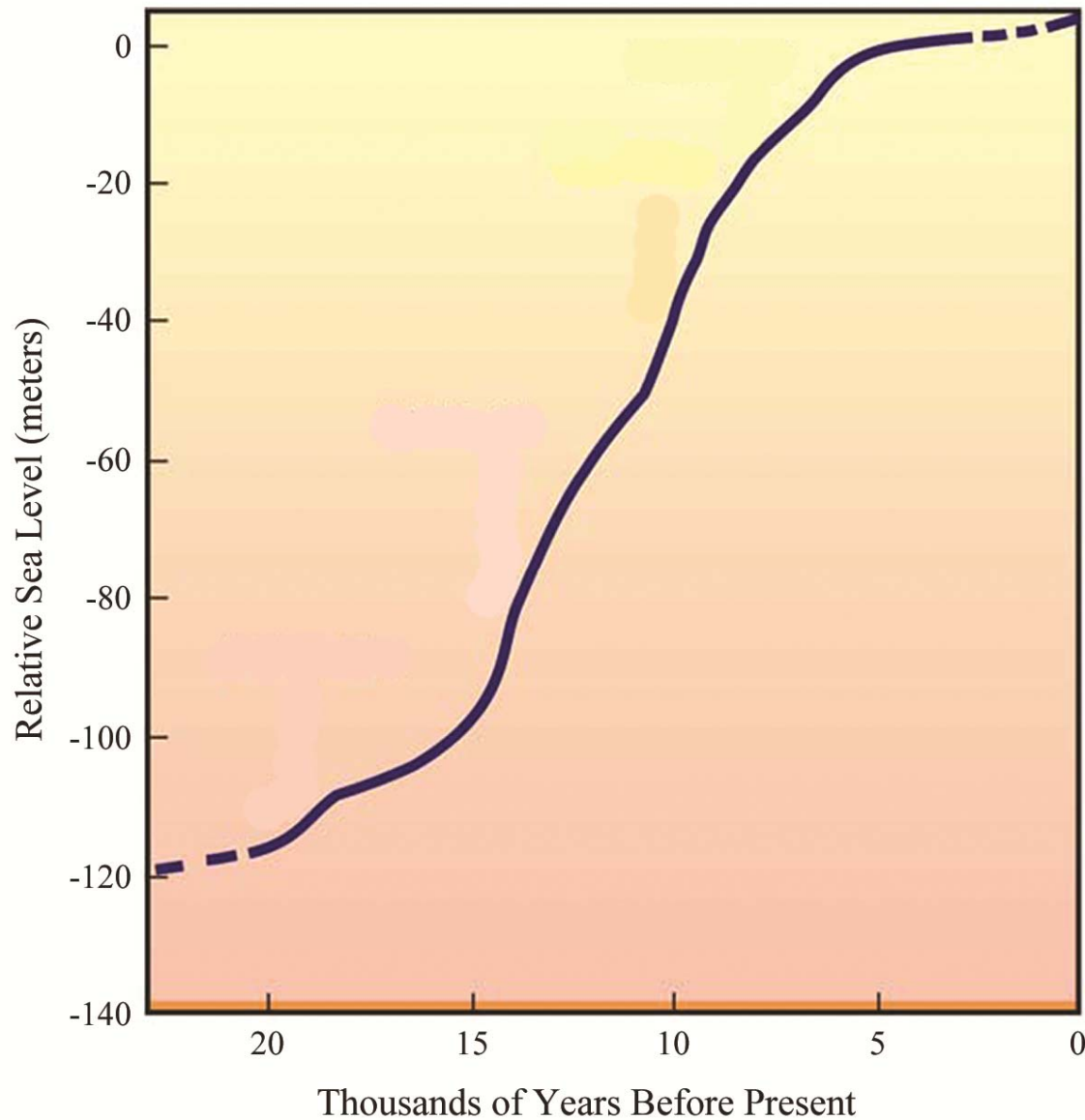
Continental US Very Dry and Very Wet Area (1895-2015)



But What About Sea Level Rise?



Oceans Rising for Last 20,000 Years

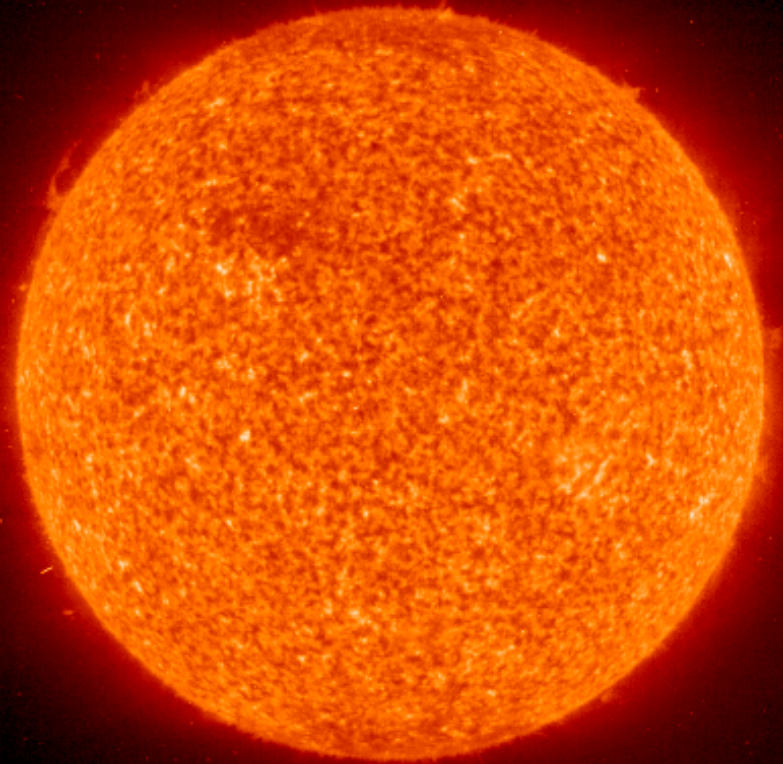


**Sea Levels Rose
7-8 Inches Per Century
Over Last 150 Years**

NASA (2007)

Climate Change is Natural, Not Man-Made

- **Global Warming is Caused by Natural Cycles of Earth**
- **Earth's Climate Cycles are Driven by the Sun**
- **Man-made Greenhouse Gases Play Only a Minor Role in Global Warming**



III. Resource Depletion?



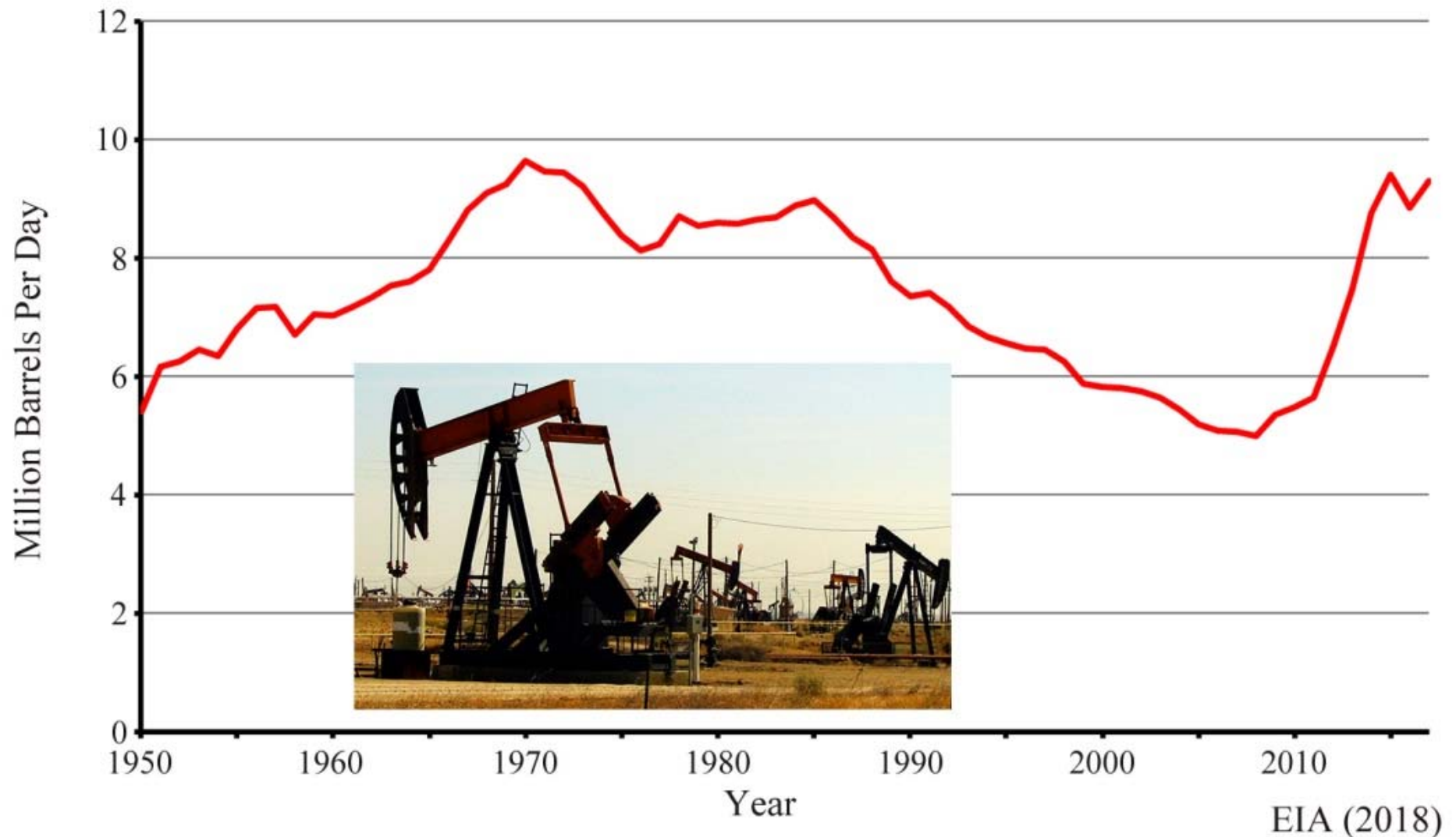
Peak Oil and Gas?



President Jimmy Carter, Address to the Nation, April 18, 1977

The Shale Shock—A Modern Miracle

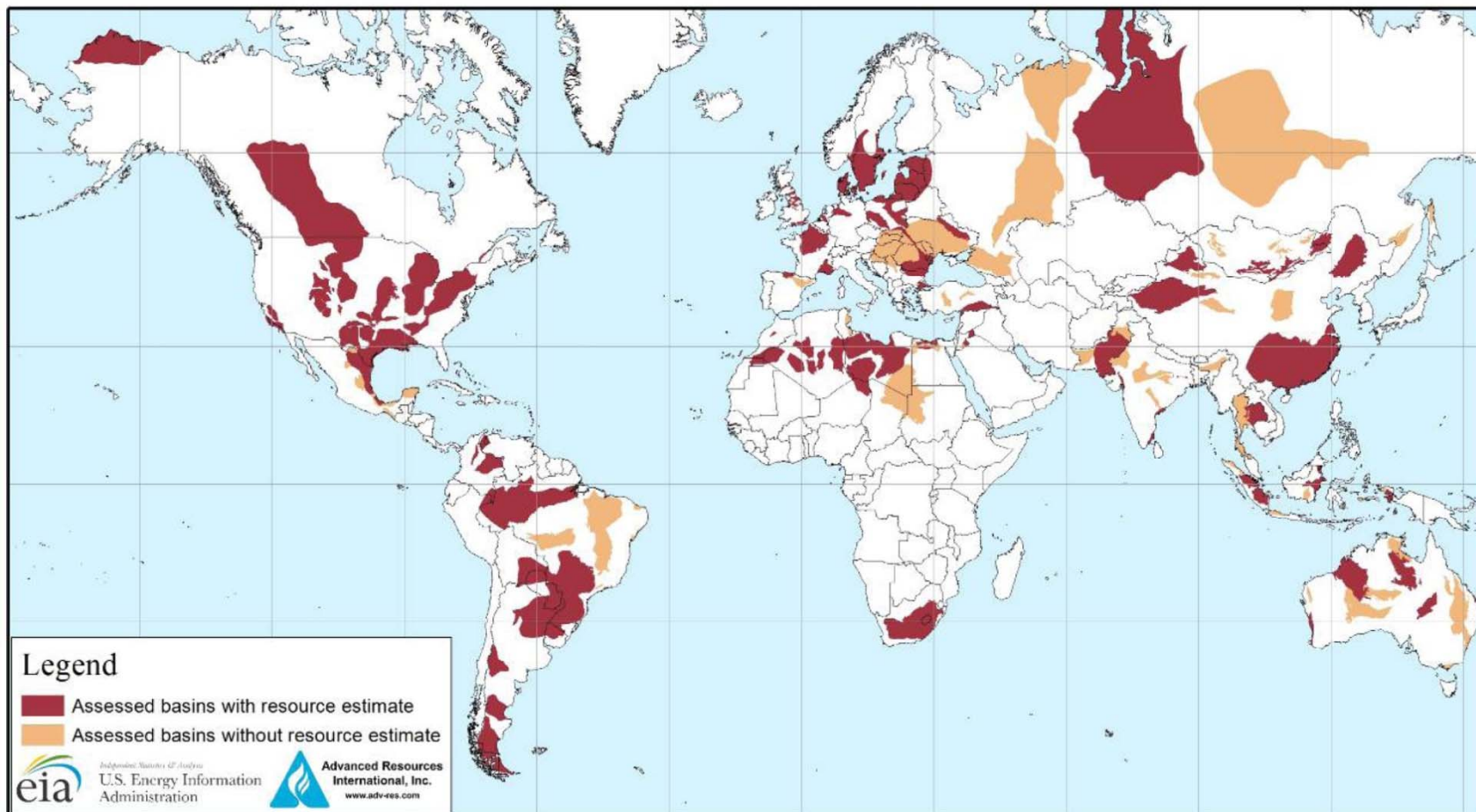
US Crude Oil Production (1950-2017)



Hydrocarbons—Centuries of Supply Remaining

“...the world shale gas and shale oil resource is vast.”
— US Energy Information Administration (2013)

Major World Shale Basins with Oil and Gas



EIA
(2013)

The Oil and Gas Revolution is Not Welcome



“The real problem is that there may be too much fossil fuel, not too little.” — Dieter Helm (2011)



“We were wrong about peak oil: there’s enough in the ground to deep-fry the planet.” — George Monbiot (2012)

NOPE

EcoWatch

April 23, 2015

Confirmed: Oklahoma Earthquakes Caused by Fracking

Ut sed tellus. Ut egestas justo quis fr. Cras molestie ullamcorper est. Fusce quam fringilla risus. Proin condimentum pellentesque non velit. Donec ante m ultrices a, pretium sit amet, gravida v Praesent pede magna, pharetra at, bla lobortis non, metus. Nam id sapien. M fermentum mollis ligula. Nunc lobortis cursus faucibus, ligula mauris accums. eget tincidunt pede massa eget nisi. Et augue, blandit vel, accumsan ac, tincid quam. Praesent mauris orci, ultricies e vel, laoreet eu, lacus.

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CLIMATEPROGRESS

September 30, 2014

Explosive Debate Over a New Natural gas Pipeline Through the Northeast

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New Scientist

March 3, 2016

Oregon Becomes the First US State to Go Coal Free

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NOPE (Not On Planet Earth)

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Fossil FREE
MELBOURNE UNIVERSITY



Seattle Harbor Protest, June 2015

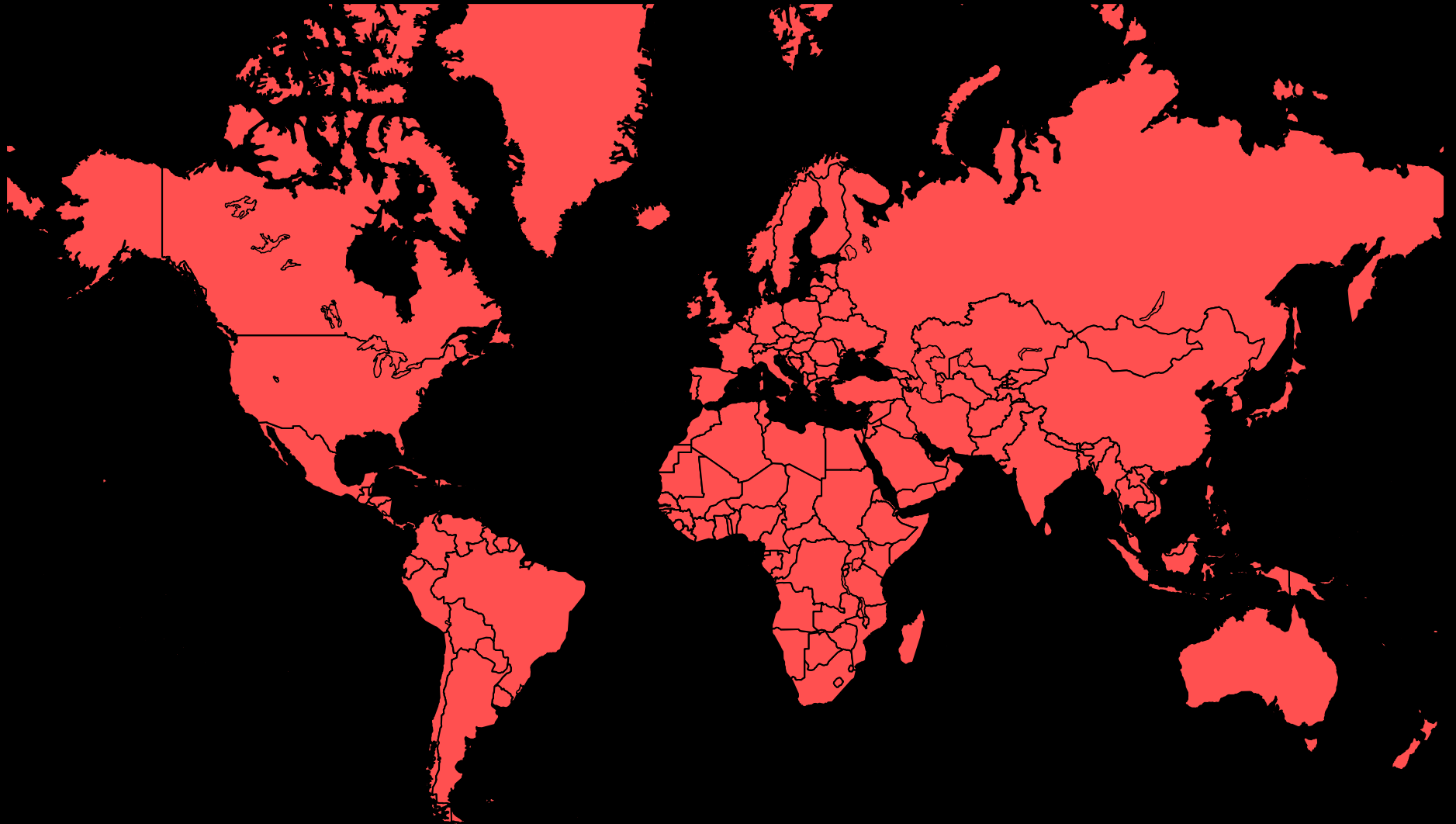




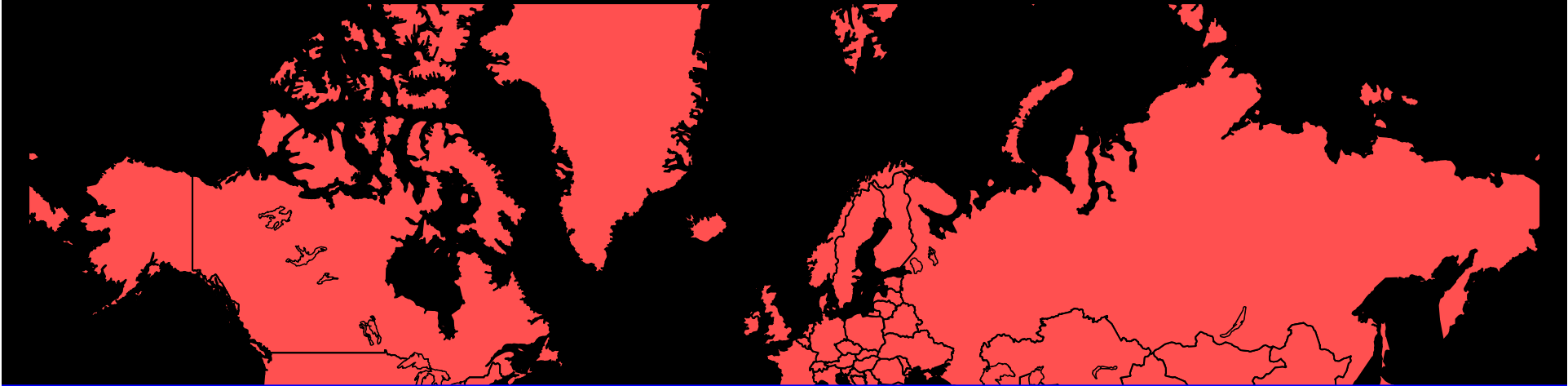
Public Policy “Remedies” And Results



Our World Is Beset by Climate Legislation



Climate Legislation Promotes Renewables



2017 Global Climate Legislation Study (164 Countries “Covering 95 Percent of Emissions”)

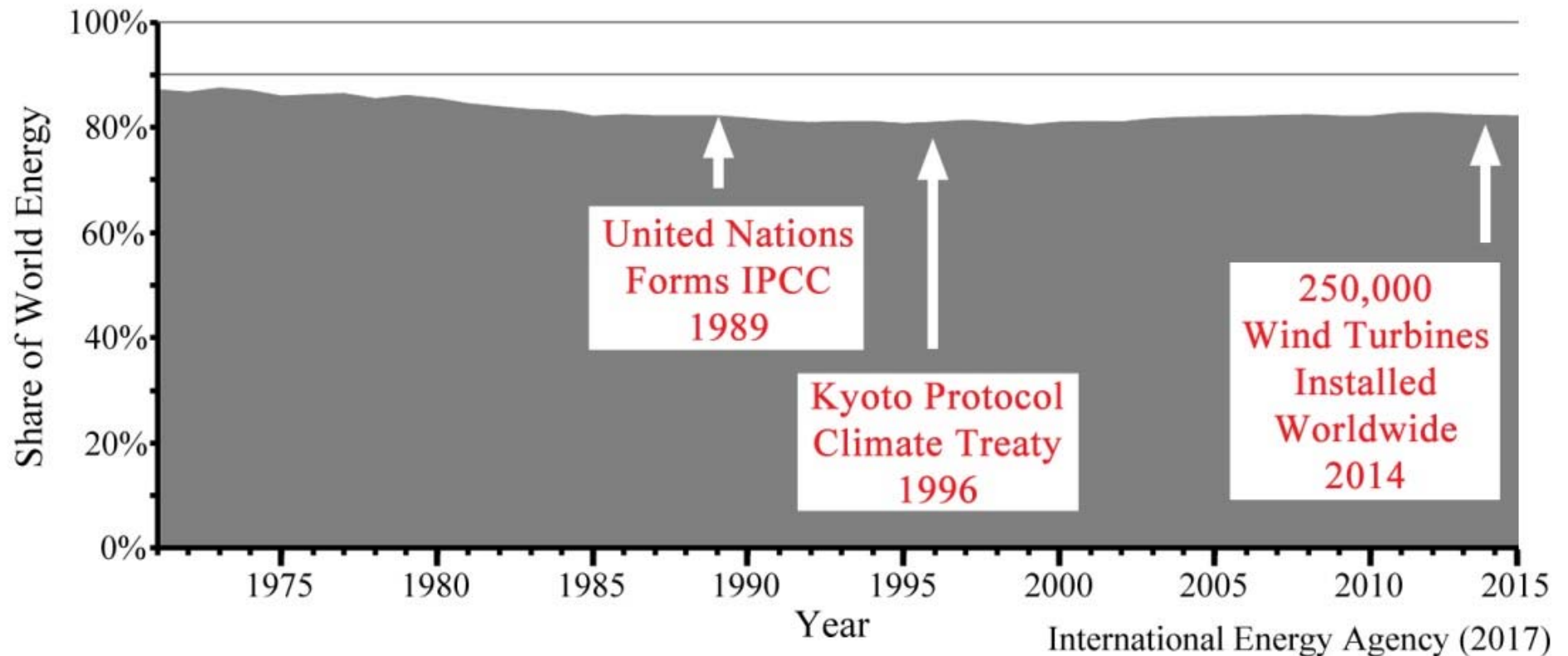
More than 1,200 National Climate Laws in 164 Nations

- Carbon Pricing and Emissions Trading**
- Feed-in Tariffs, Renewable Subsidies and Mandates**
- Laws to Reduce Energy Demand**
- Biofuels or Transportation Regulations**

Grantham Institute (2017)

Hydrocarbons 82% of World Energy in 2016— Same as 1985

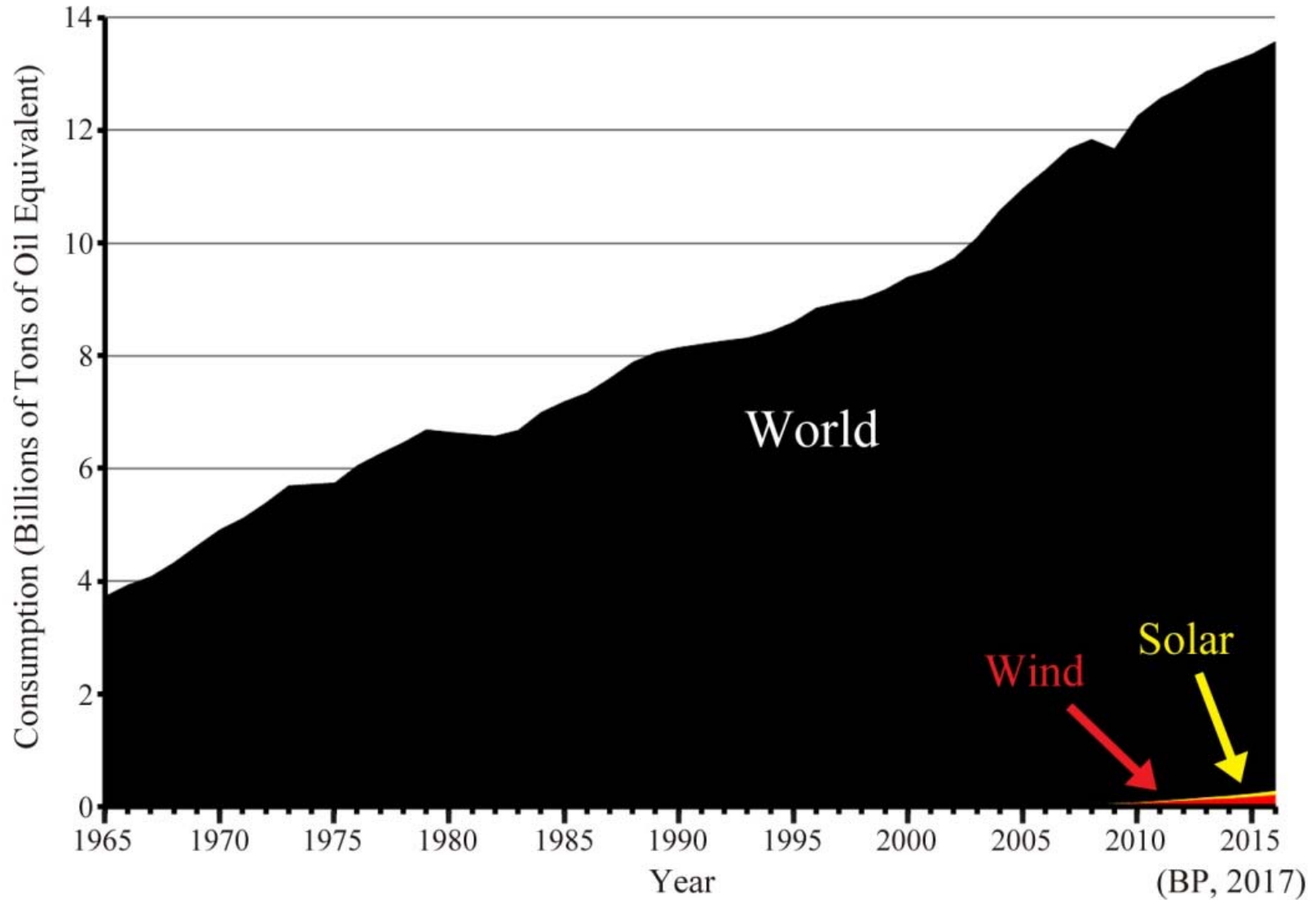
Coal, Oil, and Gas Share of World Total Primary Energy Supply
1971-2015



Renewable Spending 2004—2016: \$3 Trillion!

Wind, Solar, and the Energy Mountain

Total World, Wind, and Solar Energy Consumption (1965-2016)



Solar Mania in Germany

More than One Million Solar Installations

- Capacity Factor: **10.6% of Rated Output** in 2016
- About 1% of Germany's Energy, 6.4% of Electricity
- Over \$400 Billion in Subsidies Paid & Obligated



Solar Mania in Germany

More than One Million Solar Installations

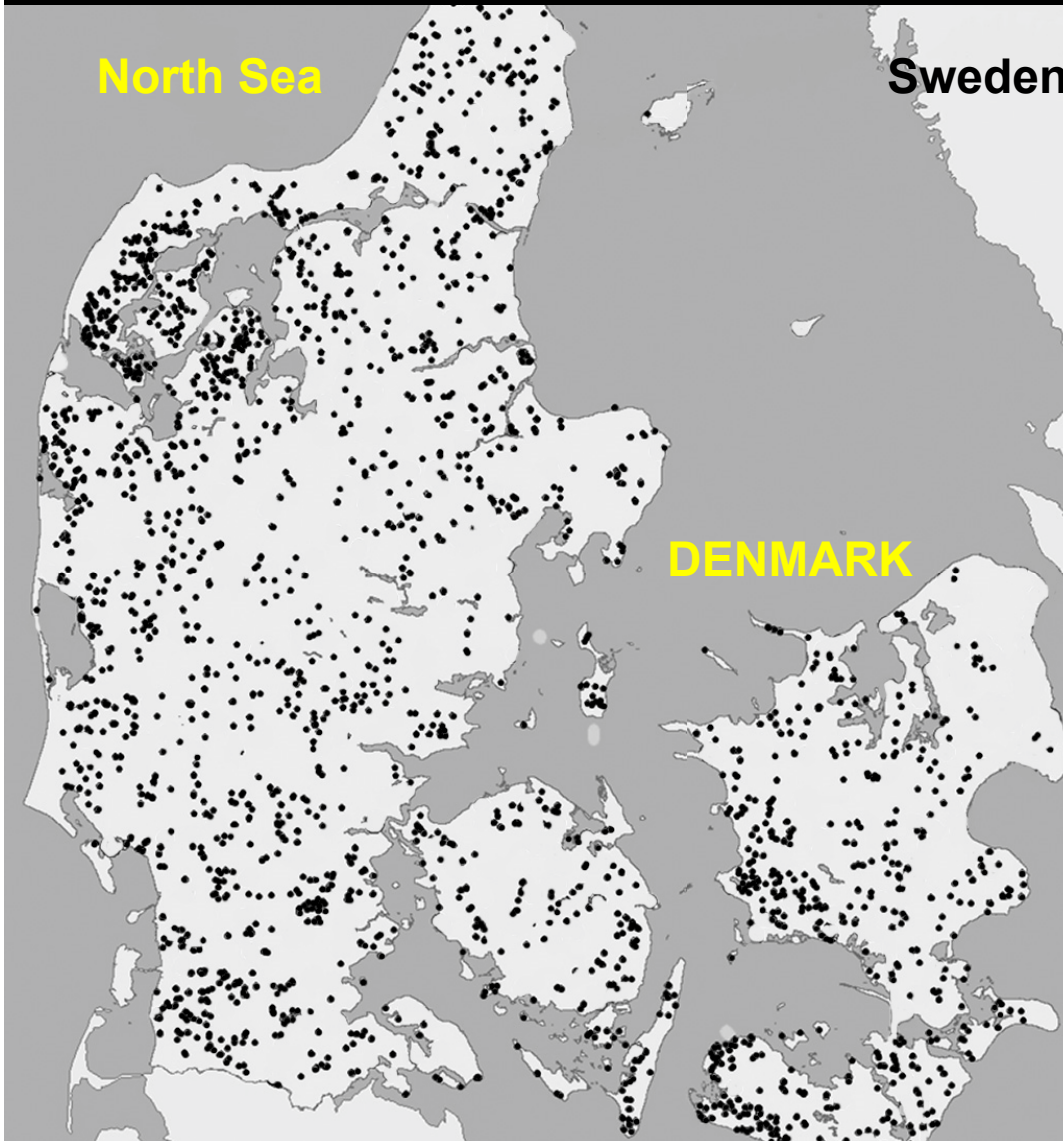
- Capacity Factor: **10.6% of Rated Output** in 2016
- About 1% of Germany's Energy, 6.4% of Electricity
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“To produce solar power in Germany is as sensible as to grow pineapples in Alaska.”

***—Juergen Grossman, CEO
of Energy Utility RWE***

Climate Madness in Denmark



**6,000 Wind Towers,
Ave. Output = 1.5 GW**

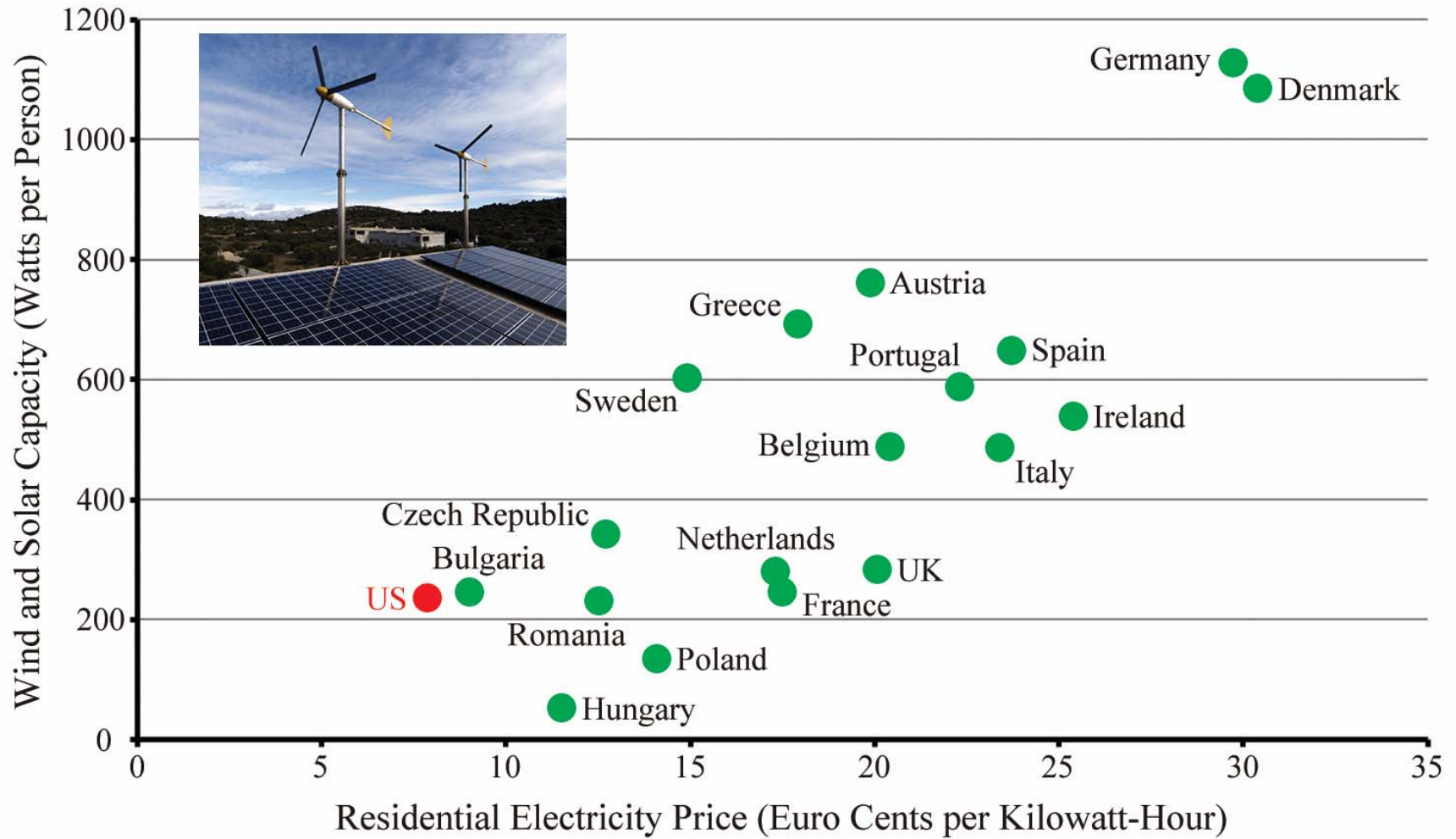
**All Could be Replaced By
One Conventional
Power Plant!**



Adapted from Energinet.Dk (2009)

The More Wind and Solar...

Wind, Solar, and Electricity Prices in Europe



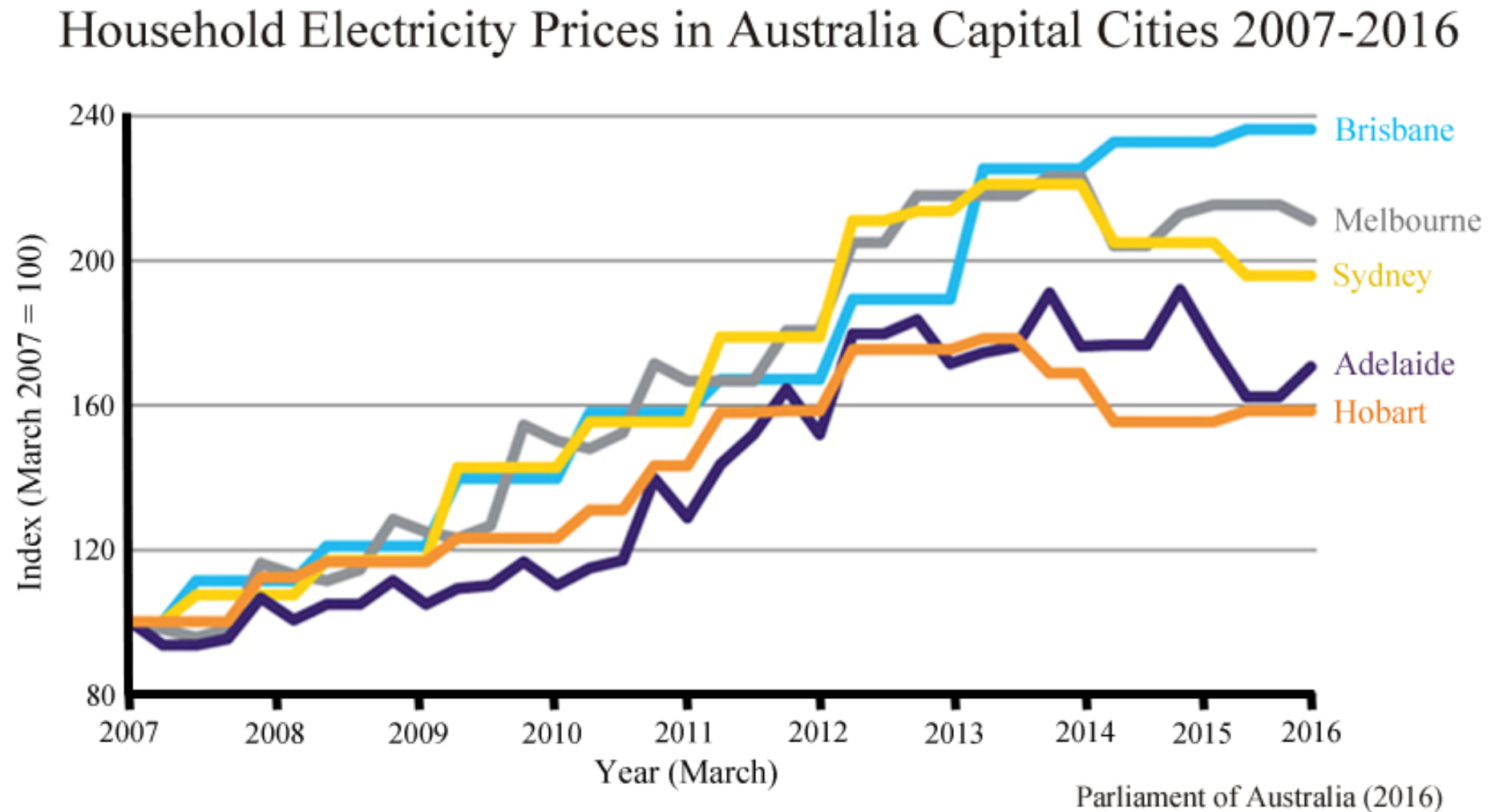
Eurostat, EurObserv'ER, World Bank, EIA (2015)

Australia—All In for Green Energy



**Prime Minister Julia Gillard,
Australia National Press Club Address, July 17, 2011**

Rapid Electricity Price Increases in Australia



One Demonstrated Result of Green Energy

Rolling Blackouts in South Australia



Adelaide, AU
October, 2016

The Mark of a Undeveloped Nation?

Ivanpah Concentrated Solar Facility

- 21.2% Capacity Factor vs. 32.7% Planned
- 290 Times the Land and 18 Times Less Output than Diablo Canyon Nuclear Facility
- Ignites Birds in Flight

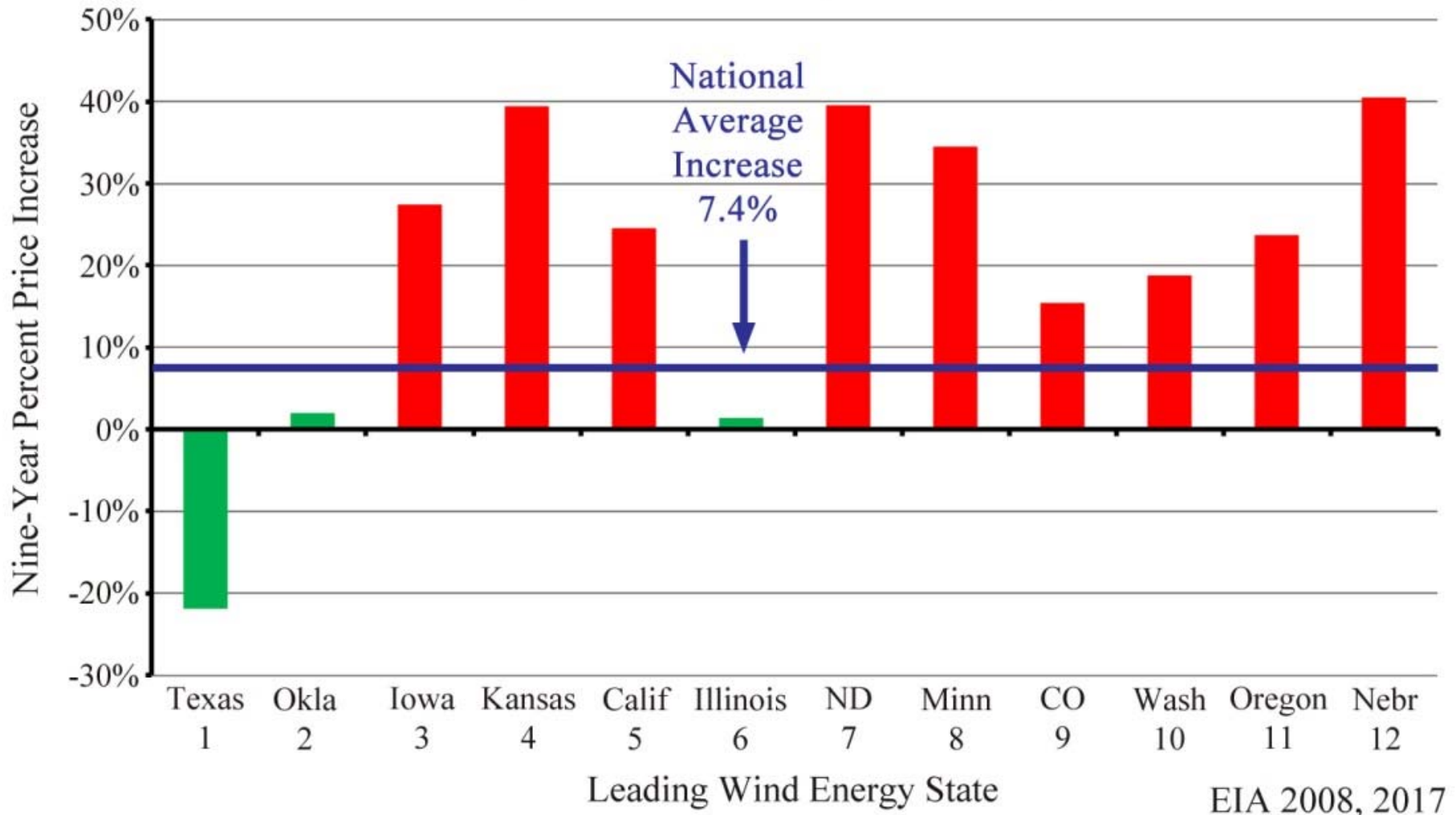
**Electricity Price:
18.5 Cents per kW-hr
— 4 Times the Current
California Wholesale Rate**



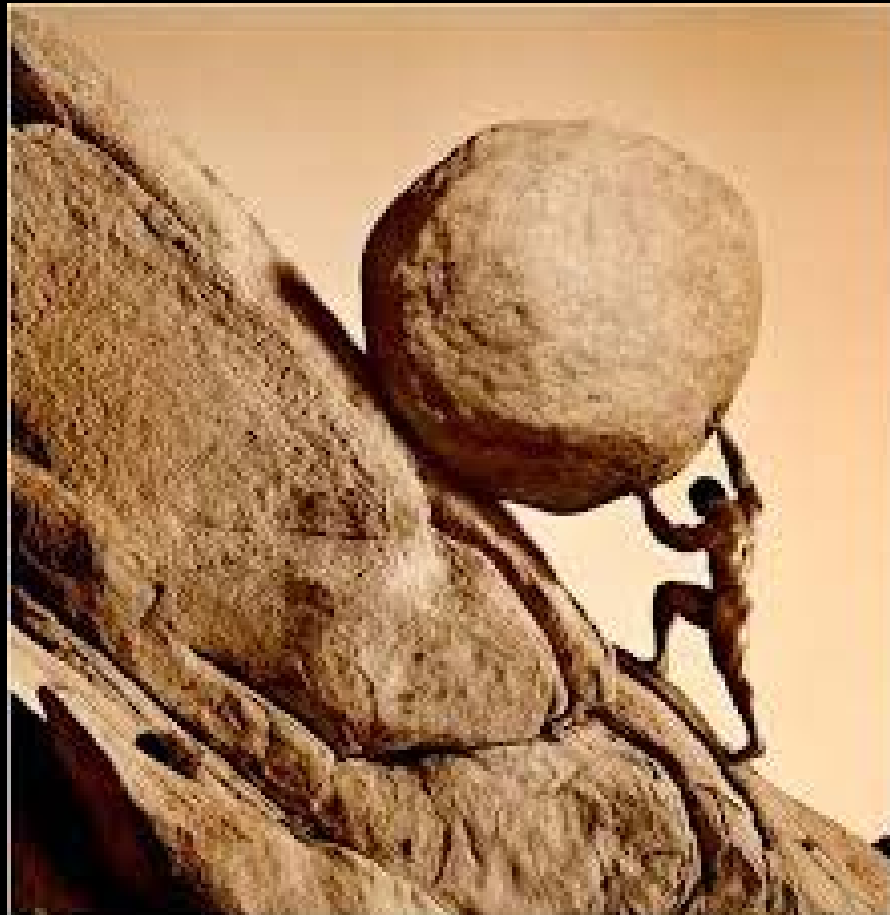
Ivanpah Solar Facility (2016)

US Prices Increasing Faster in Wind States

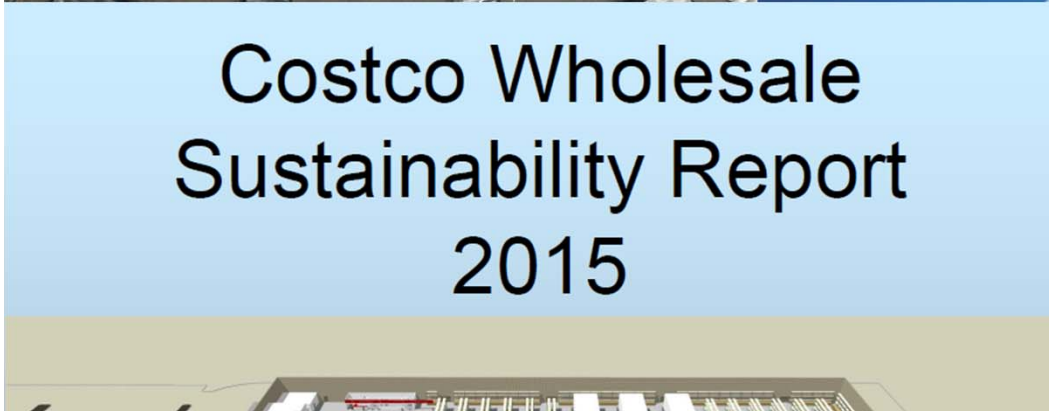
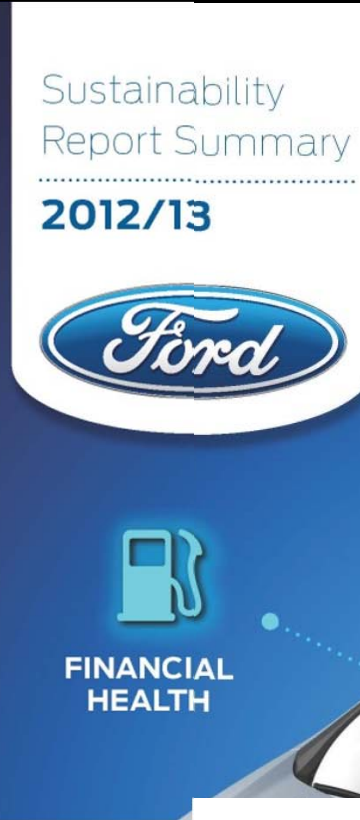
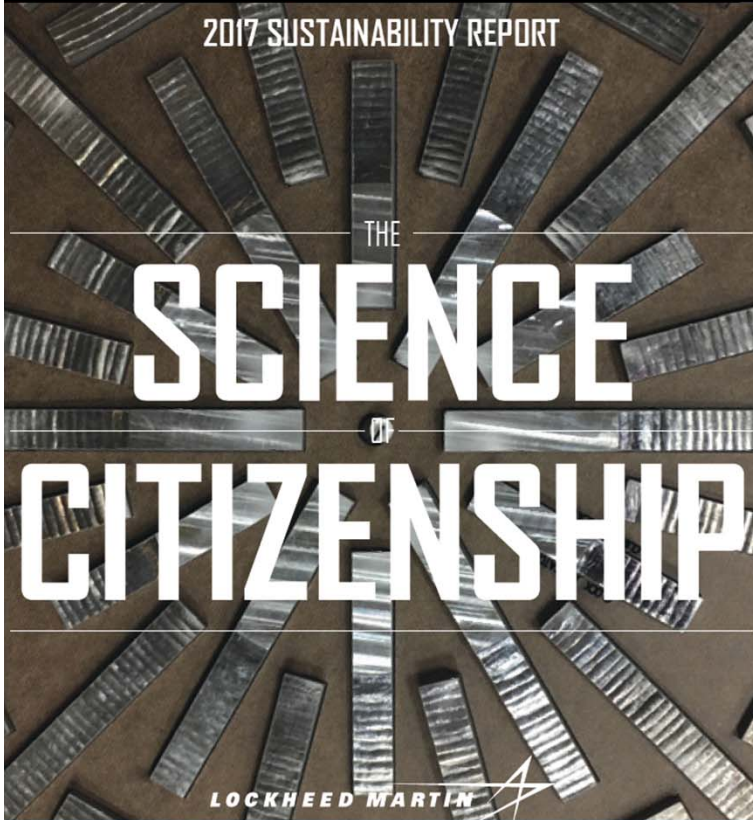
Electricity Price Change in Leading Wind States (2008-2017)
Average Retail Price (All Sectors)



Is It Time for US Industry To Push Back?



US Industry Acceptance



Oil and Gas is Destroying the Environment?



Aiming at Your Corporate Foot

Oil Giants Call for Global Carbon Pollution Fees

“Six major European oil companies are asking the United Nations to help impose carbon dioxide emissions pricing in all countries...”

—*The Hill*, June 1, 2015

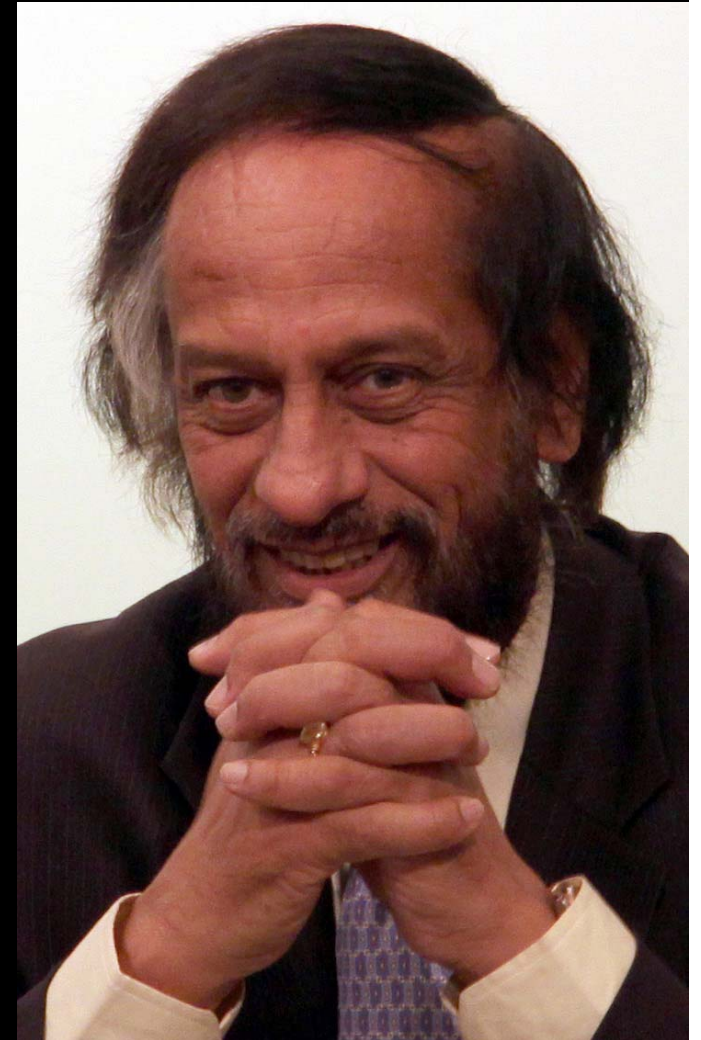
???



Elimination of All Emissions by 2100

“...our emissions should drop by 40 to 70 percent globally between 2010 and 2050, falling to zero or below by 2100.”

— Rajendra Pachauri, Chair of Intergovernmental Panel on Climate Change (2014)



ipcc
climate change



The War on Hydrocarbons



**\$26 Million in Donations
From the Gas Industry**

2007

The War on Hydrocarbons



SIERRA
CLUB
FOUNDED 1892



May, 2012

2007

“An appeaser is one who feeds the crocodile, hoping it will eat him last.”

— Winston Churchill

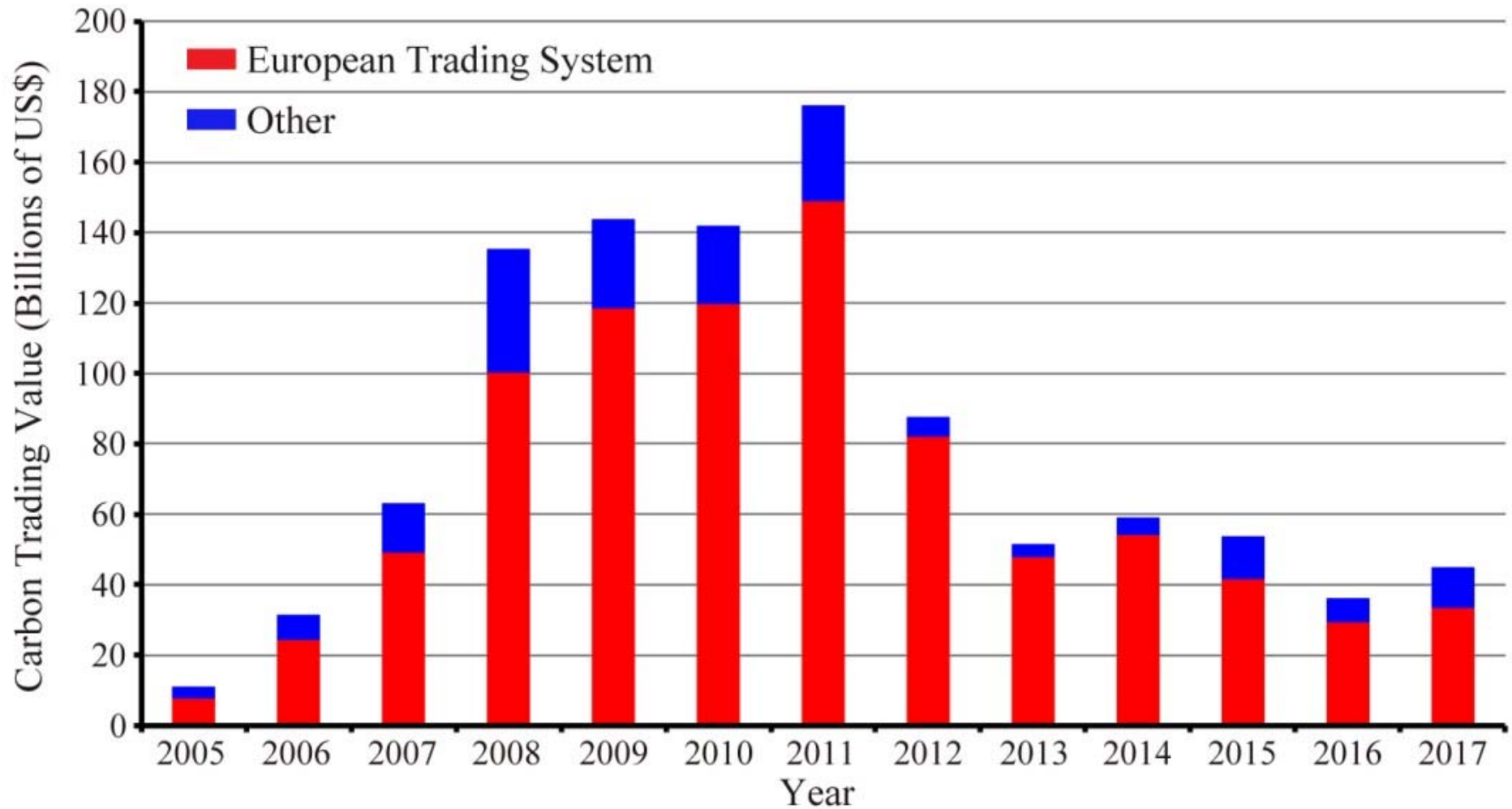


The Upheaval in Energy and Climate Regulation



The Carbon Markets Are Failing

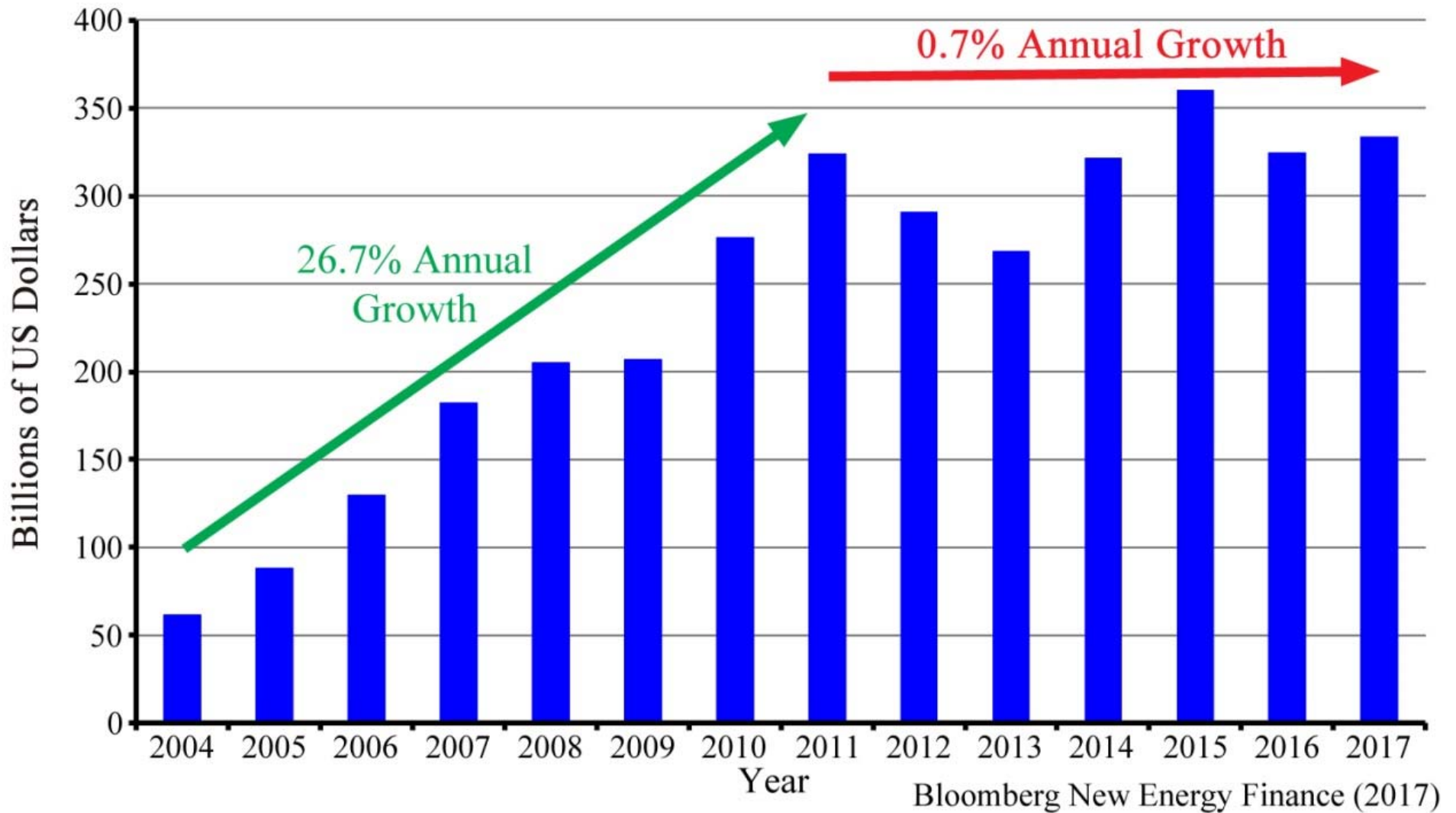
Global Carbon Trading Value (2005-2017)



World Bank (2012), Thomson Reuters (2018)

Global Renewable Investment Has Stalled

Global Investment in Renewable Energy 2004-2017



Europe: Rollback of Renewable Subsidies

England

- Wind and Solar Subsidy Cuts
- ➔ Wind and Solar Projects Cancelled
- ➔ Solar Investment Down 70%

Germany

- Feed-In Tariff Reductions
- Exports of Subsidized Power Ending
- ➔ Solar Employment Dropped 50%
- ➔ Renewable Company Bankruptcies

Belgium

- Subsidy Cuts & Tax Increases
- ➔ Renewable Activity Halted

Spain

- Feed-In Tariff Ended
- 7.5% Profit Cap
- ➔ 75,000 Renewable Layoffs,
- ➔ Solar Investment Down 90%

Italy

- 10.5% “Robin Hood” Tax in 2013
- ➔ Bankruptcies, Investments Down



Major Changes to US Climate/Energy Budget

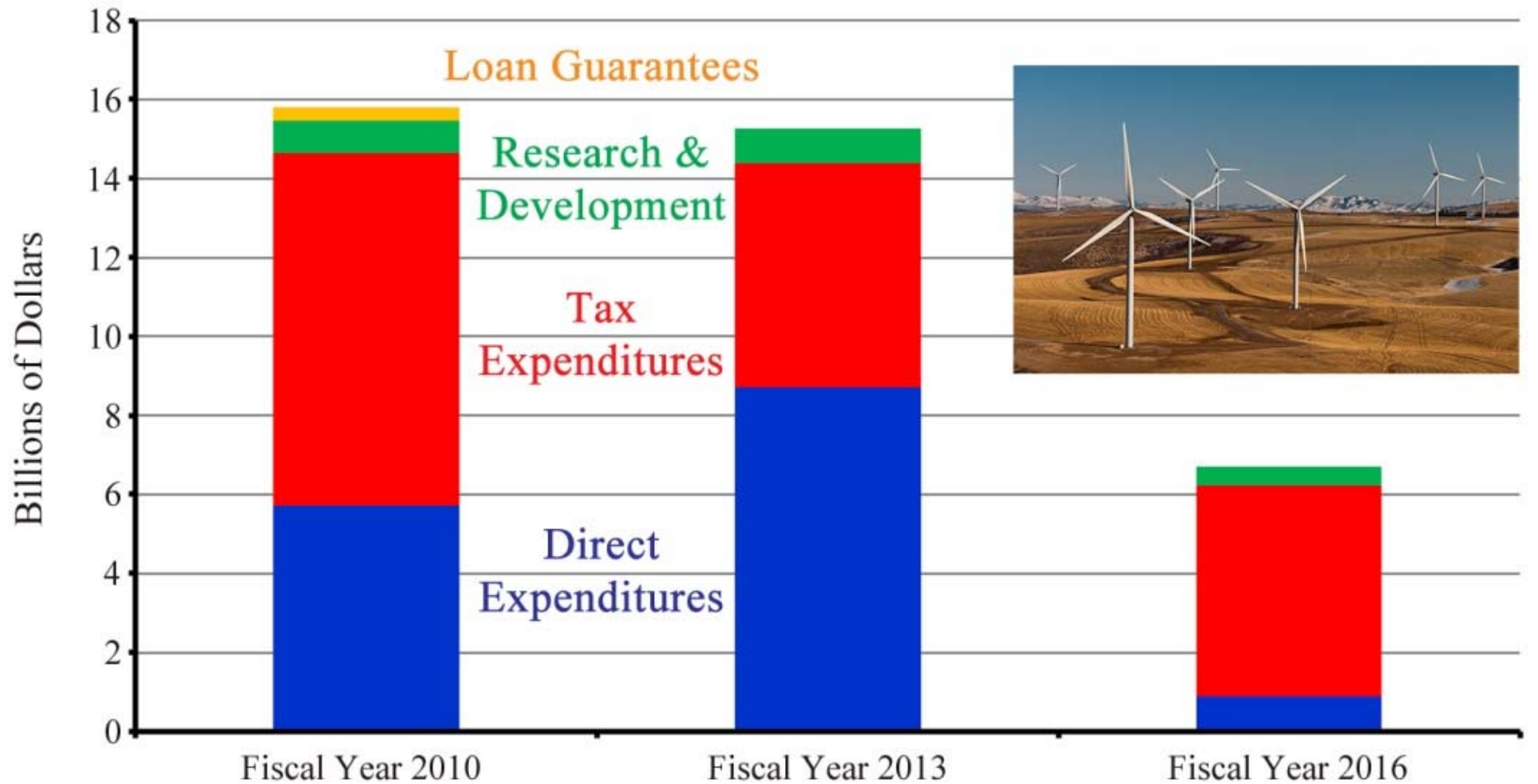


**Mick Mulvaney,
Director of Office of
Management and Budget,
March 16, 2017**

- **EPA Budget Cut from \$8.2 to \$5.7 Billion**
- **“Clean Energy” Cuts from Department of Energy**
- **Climate Programs Cut at NASA, NOAA, and the State Department**

US Renewable Energy Subsidies Disappearing

US Federal Renewable Energy Subsidies (2010-2016)



EIA (2018)

A Climate Change Revolt in Australia

- On August 24, Scott Morrison Named New Prime Minister
 - Malcolm Turnbull Out
 - In July, Former PM Tony Abbott Called for Withdrawal from Paris Accords
 - In July 2014, Australia Revoked Its Carbon Tax



Prime Minister
Scott Morrison



“My number one priority...is to reduce power prices and to do this while we keep the lights on.”

—Angus Taylor, Minister for Energy

Is Paris Burning?

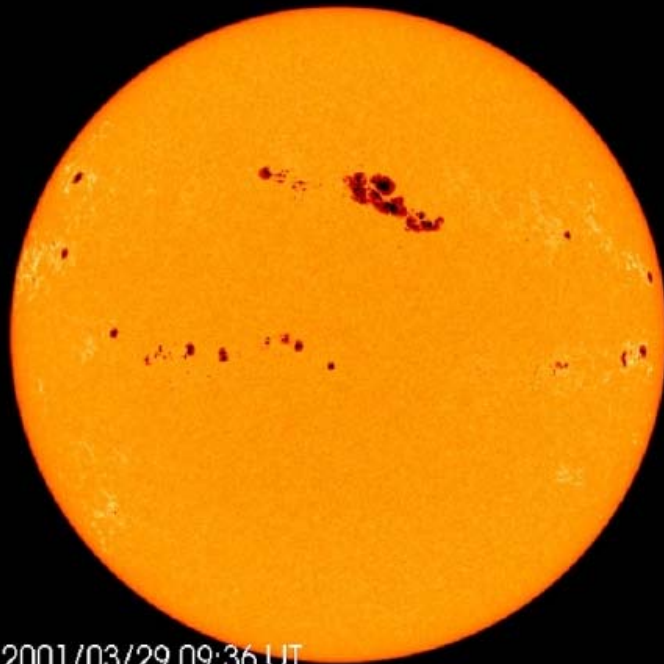


The Response to Emmanuel Macron's Carbon Tax

Climate Forecast: Period of Cooling?

Cooling Oceans:

- Pacific Ocean in Cool Phase (PDO)
- Atlantic Ocean to Follow (AMO)



Less Active Sun:

- Low Solar Activity for Sunspot Cycle 24

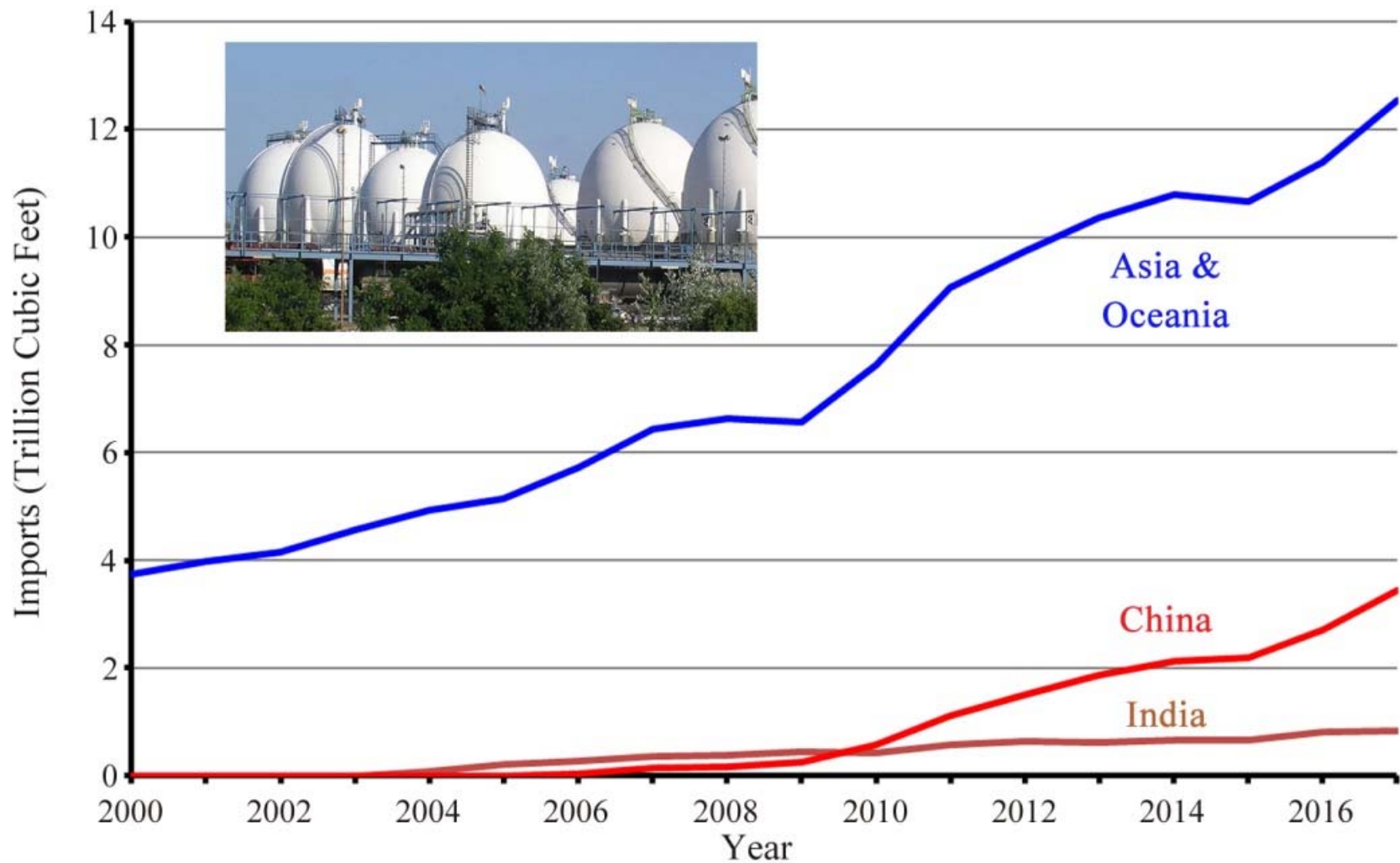
2001/03/29 09:36 UT



**Energy
Opportunity
For
Alaska**

Supply Asia with Natural Gas

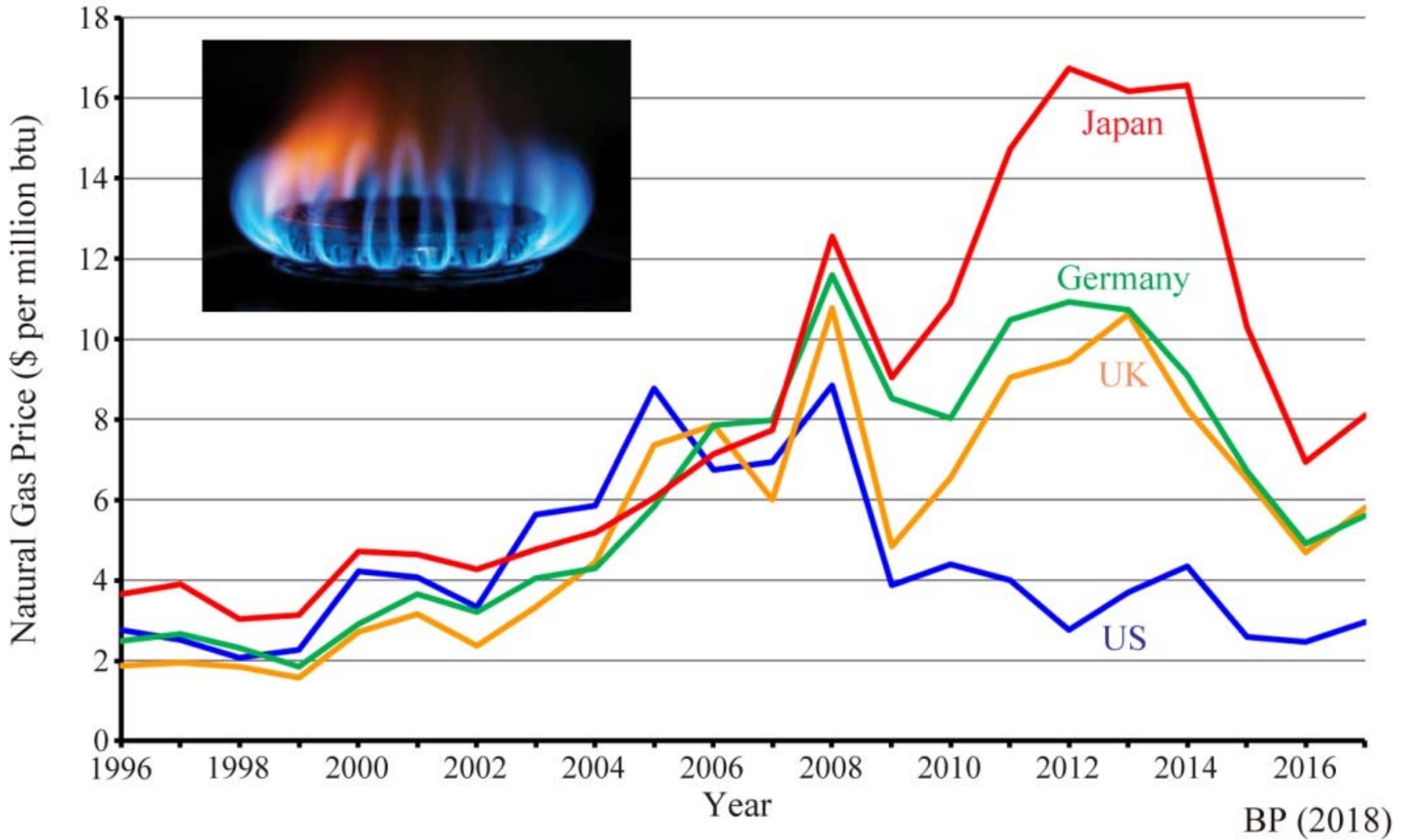
Asia Natural Gas Imports (2000-2017)



Energy Information Administration (2019)

Possible Competitive Advantage

World Natural Gas Prices 1996-2017



Takeaways—Climate Change Is Natural



Takeaways—Energy Not A Villain

- **No Evidence for Rising Pollution from Energy Use**
- **Energy Use is Not Destroying Earth's Climate**
 - CO₂ Not a Pollutant
- **Centuries of Low-Cost Oil and Gas Available**



Corporate Policy: **Sensibly Green**

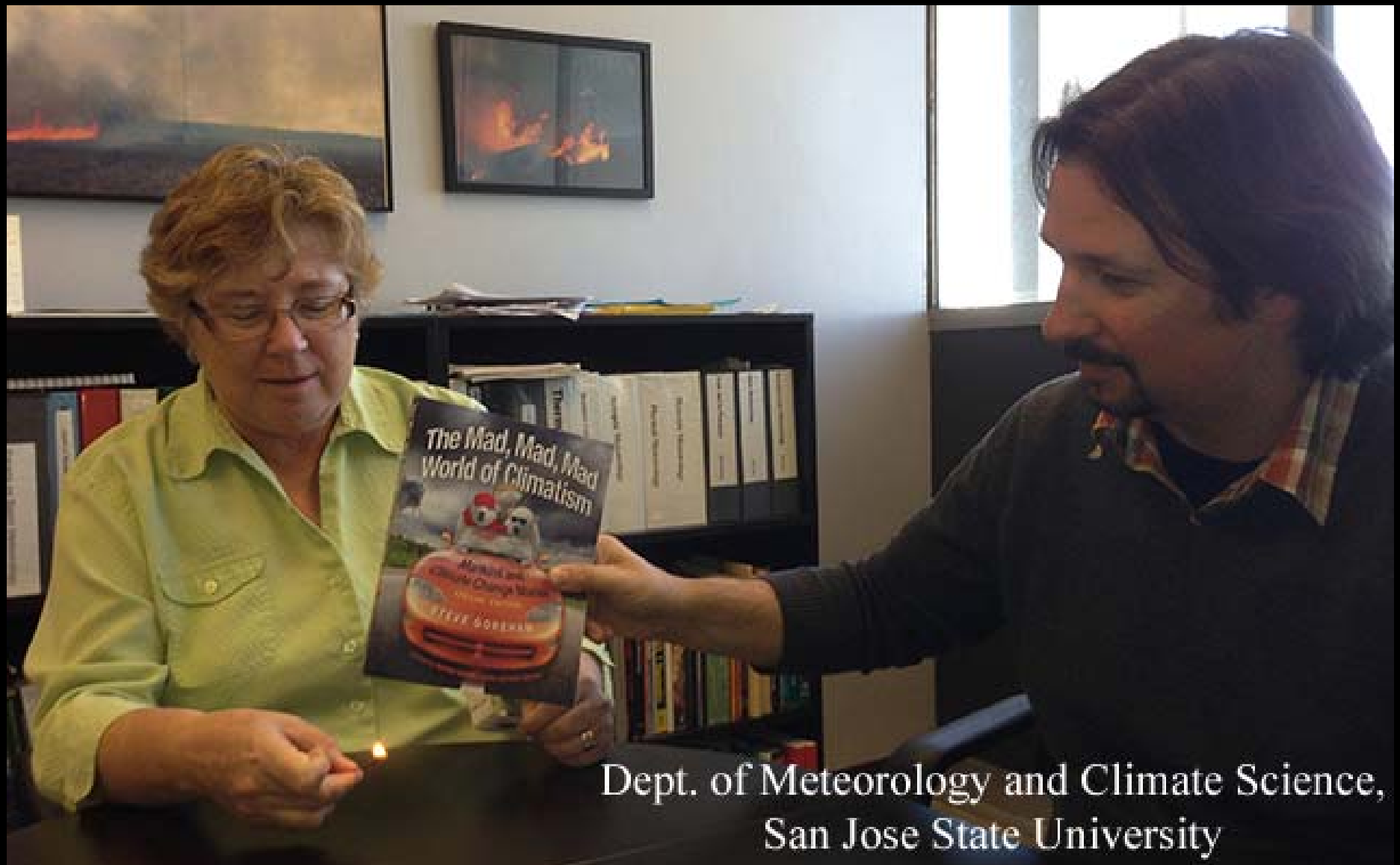
1. **Comply with Environmental Regulations**
2. **Meet Expectations of Key Stakeholders**
3. **Conserve Energy Like Any Other Resource**
4. **Reduce Emissions of Real Air and Water Pollutants**
5. **Restore the Land after Drilling or Mining**

**Forget Green Energy,
Carbon Credits, and
Counting Emissions,
Unless Required by Law**



Three More Things to Do

1. Educate Yourself— Challenge the “Consensus”



Dept. of Meteorology and Climate Science,
San Jose State University

2. Educate Your Company

ENERGY AND SUSTAINABILITY: *A MINORITY REPORT*

Steve Goreham

- Energy fact and fiction
- False foundations of sustainable development
- Three trends driving global energy
- Coming upheaval in energy and climate regulation
- Elements of a sensible corporate environmental policy

Program: Up to a half day of interactive presentation, customized for your company and industry

For: Corporate executives, policy committees, boards of directors



Steve Goreham

3. Sponsor a College Debate



University of Northern Iowa, June 19, 2014

Steve Goreham

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www.stevegoreham.com

