

Climate Change: How Ignoring Climate Change Will Cost the US Economy.



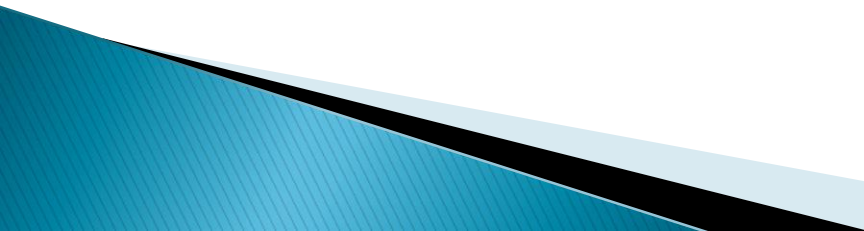
By Dr.Larisa Ray

Climate Change



The views expressed here are my own and do not necessarily reflect the views of the IRSC College, the faculty or the staff

Introduction

- ▶ There are millions of people all over the world taking action to fight climate change
 - ▶ Despite these efforts, many skeptics of climate change remain among decision-makers and the general public concerning the effect of human activities on climate. Some argue that the price of reducing carbon emissions is too high compared to the uncertain benefits and the limited effects of our actions on climate.
- 

What people think about climate change around the world

- ▶ This map, from [Sophie Yeo at Responding to Climate Change](#), rounds up surveys and polls from around the world since 2009 that look at views on climate change from abroad.
- ▶ For example, 83% of Americans think that US should make an effort to reduce global warming, even it comes with economic costs.
- ▶ 52% said that Congress should do more, and 46% thought that Obama needed to take stronger action. But as priority, global warming only came 11th out 13 national priority issues for President and Congress.

In U.S., Most Do Not See Climate Change as Serious Threat

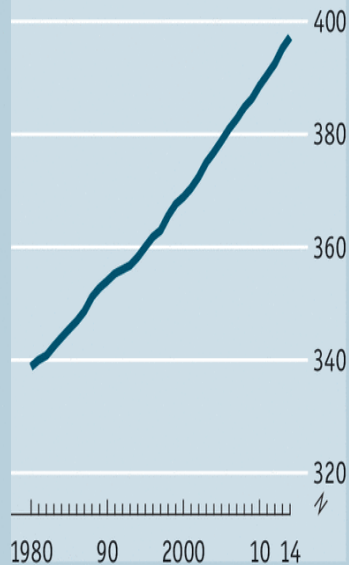
- ▶ It's fact that Americans are much more worried about economy or healthcare than climate change. However, "Americans' average concern about global warming may shift in the future, even if there is no obvious change in environmental conditions" ...
- ▶ <http://www.gallup.com/poll/167879/not-global-warming-serious-threat.aspx>

How Will Climate Change Affect the World?

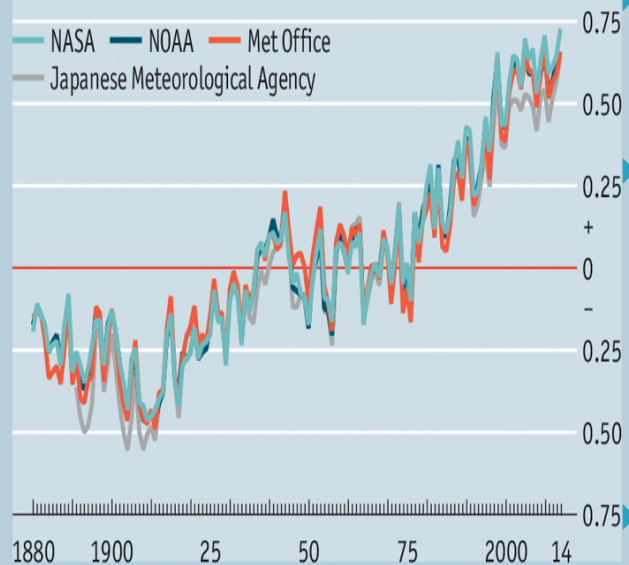
- ▶ Studies have estimated the world is already 0.75°C warmer than before the Industrial Revolution. July 2015 was the warmest month globally since records began. This summer 47,000 people went to hospital after unusually hot days in Japan, and more than 1,000 died in both Pakistan and India during heatwaves. By 2200, when the emissions of carbon dioxide are expected to peak, the cost could be 0.7% of global GDP.

Spot the hiatus

Atmospheric concentration of CO_2
Global, annual average, parts per million

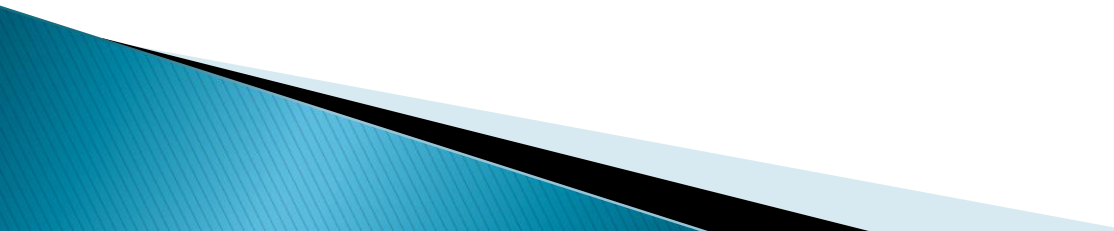


Global air-surface temperature
Deviation from average, $^{\circ}\text{C}$

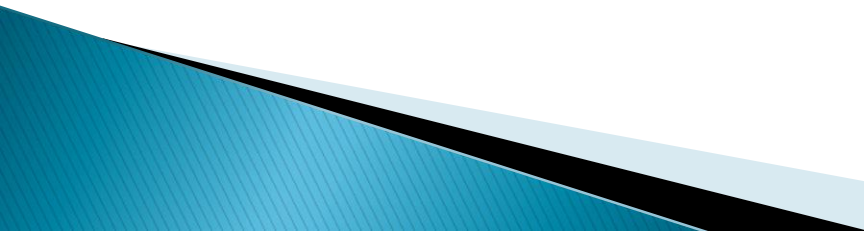


Sources: National agencies

Which Countries Will Be Affected The Most From Climate Change?

- ▶ All countries will be affected.
 - ▶ The poorest countries will suffer earliest and most, even though they have contributed least to the causes of climate change.
 - ▶ The costs of extreme weather, including floods, droughts and storms, are already rising, including rich countries.
- 

Is climate change an inevitable consequence of economic growth?

- ▶ Some economists believe that economic growth necessarily involves a degradation of environmental quality (Cole, 1997).
 - ▶ As an economy develops, however, people with higher incomes have increased concern for climate change.
 - ▶ This idea is depicted by the Environmental Kuznets Curve (EKC), which shows an inverted-U relationship, or bow curve, existing between environmental degradation and GDP or income per capita.
- 

Who was Simon Kuznets?

- ▶ The EKC is named for Simon Kuznets (Russian American economist, winner of the third Nobel Memorial Prize in Economic Sciences in 1971) who hypothesized that income inequality first rises and then falls as economic development proceeds.

Who was Simon Kuznets?

Simon Kuznets, winner of the third Nobel Memorial Prize in Economic Sciences in 1971, helped transform the field of economics into an empirically-based social science. Born in Pinsk, Russia, in 1901, Kuznets briefly served in Ukraine's labor statistics office before emigrating to the United States at age 21. He received a PhD from Columbia University, where he met his lifelong mentor Wesley Clair Mitchell, founder of the National Bureau of Economic Research.

It was at the NBER that Kuznets developed his pioneering work in measuring national income and its components. In 1945 he wrote *Income from Independent Professional Practice* with the University of Chicago's Milton Friedman, which was pivotal in demonstrating that human capital investments can explain differences in average earnings by professionals.

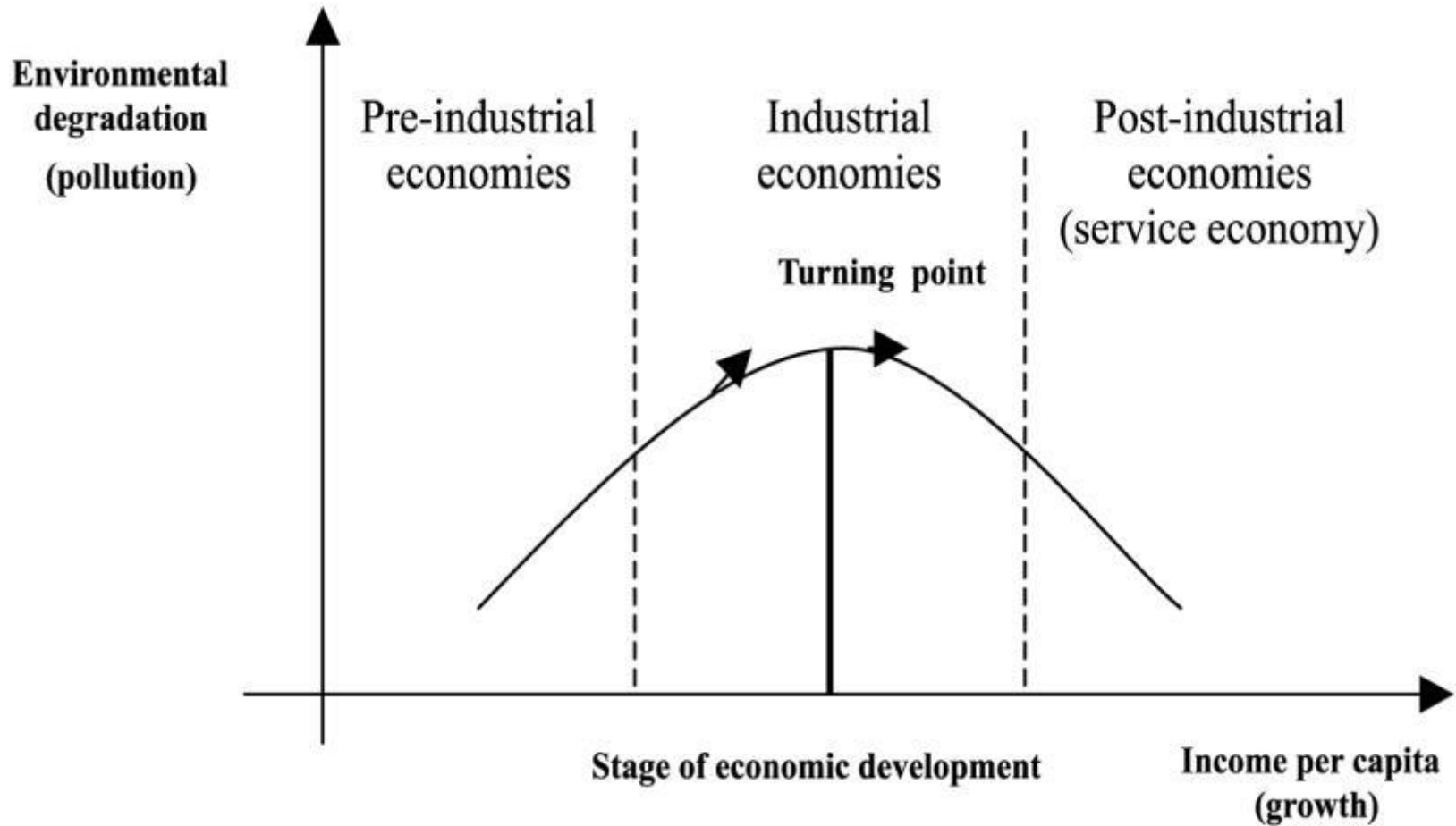
Kuznets went on to teach at the University of Pennsylvania, Johns Hopkins, and Harvard. Chicago Booth Professor **Robert W. Fogel** was one of his students.

—Vanessa Sumo

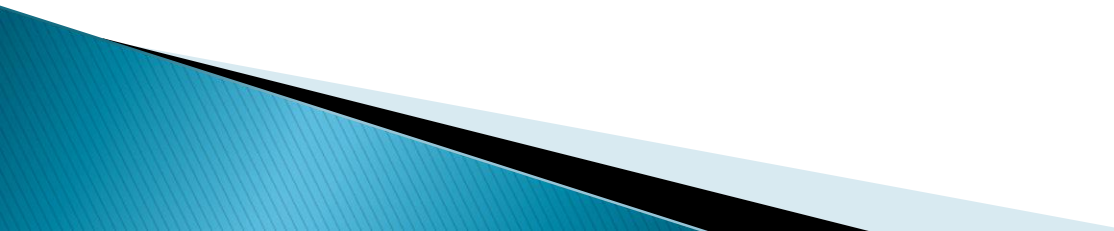


Photo: AFP/Getty Images

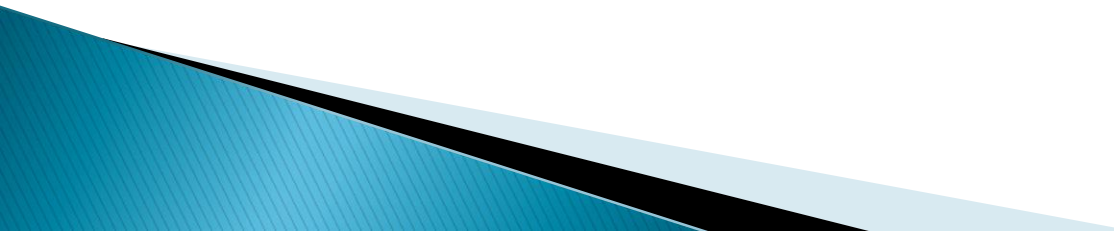
Environmental Kuznets Curve (EKC)



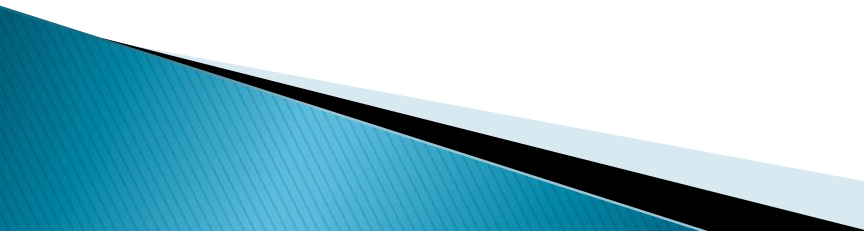
Environmental Kuznets Curve (EKC)

- ▶ The shape shows that at low levels of development, when income per capita is low, environmental degradation is also low. However, an increase in income per capita is paralleled by increasing environmental degradation until a turning point is reached
 - ▶ Beyond this point, as development and income per capita increase, environmental degradation decreases and environmental quality actually increases.
- 

How Can We Use EKC Analysis for Studying Climate Change?

- ▶ By using this EKC analysis, countries could determine the stages of development and policies needed.
 - ▶ Developing countries could use the information from the EKC to determine when to implement and end a policy.
- 

How Do Economists Explain The EKC?

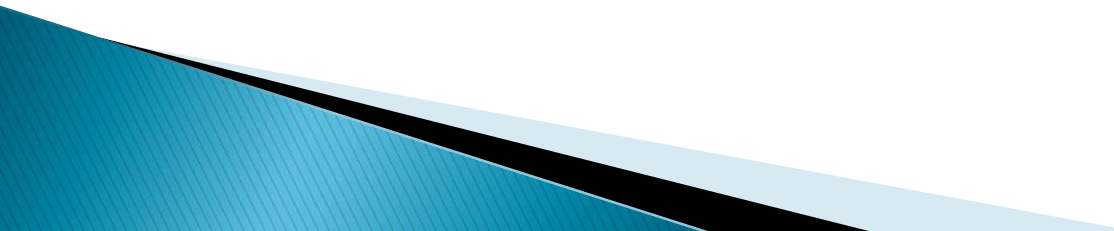
- ▶ One of many existing theories is based on scale, technological, and composition effects.
 - ▶ The scale effect says that economic growth coincides with increased output, which requires more inputs and produces more waste and emissions.
 - ▶ The technological effect consists the idea that increased research and development leads to the invention of cleaner technology.
 - ▶ The composition effect refers to changes in economic structure as a response to changes in income. (Grossman and Krueger, 1991).
- 

What is the Kyoto Protocol (KP)?



- ▶ The protocol was developed under the [UNFCCC](#) – the United Nations Framework Convention on Climate Change.
- ▶ The Kyoto Protocol was an agreement negotiated by many countries in December 1997 and came into force with Russia's ratification on February 16, 2005.
- ▶ The goals of Kyoto were to see participants collectively reducing emissions of greenhouse gases by 5.2% below the emission levels of 1990 by 2012.

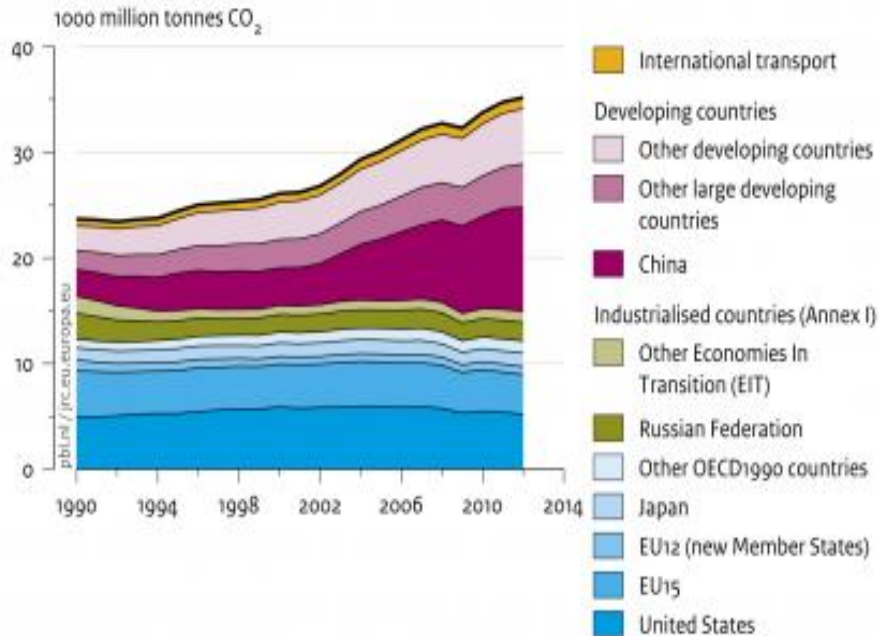
The Kyoto Protocol—success or failure?

- ▶ India and China, which have ratified the KP, are not obligated to reduce greenhouse gas production at the moment as they are developing countries
 - ▶ As a result of this loophole, the West has effectively outsourced much of its carbon emissions to China and India.
 - ▶ Carbon dioxide levels in the atmosphere are rising with no sign of slowing.
 - ▶ Global temperatures are continuing to rise too.
- 

Global CO₂ Emissions

- ▶ The six largest emitting countries are: China (29%), the United States (15%), the European Union (EU28) (11%), India (6%), the Russian Federation (5%) and Japan (4%)

Global CO₂ emissions per region from fossil-fuel use and cement production



Source: EDGAR 4.2FT2010 (JRC/PBL, 2012); BP, 2013; NBS China, 2013; USGS, 2013; WSA, 2013; NOAA, 2012

www.pbl.nl

Concentrations of CO₂ greenhouse gas

Global monthly mean CO₂

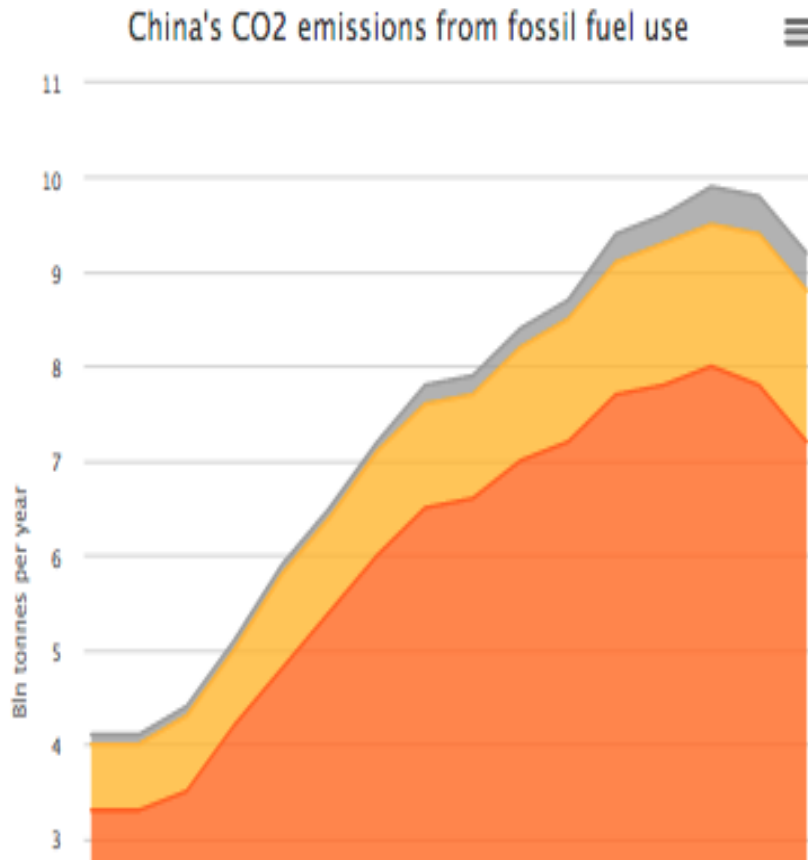
Parts per million

Monthly mean values | Values after correction for the average seasonal cycle



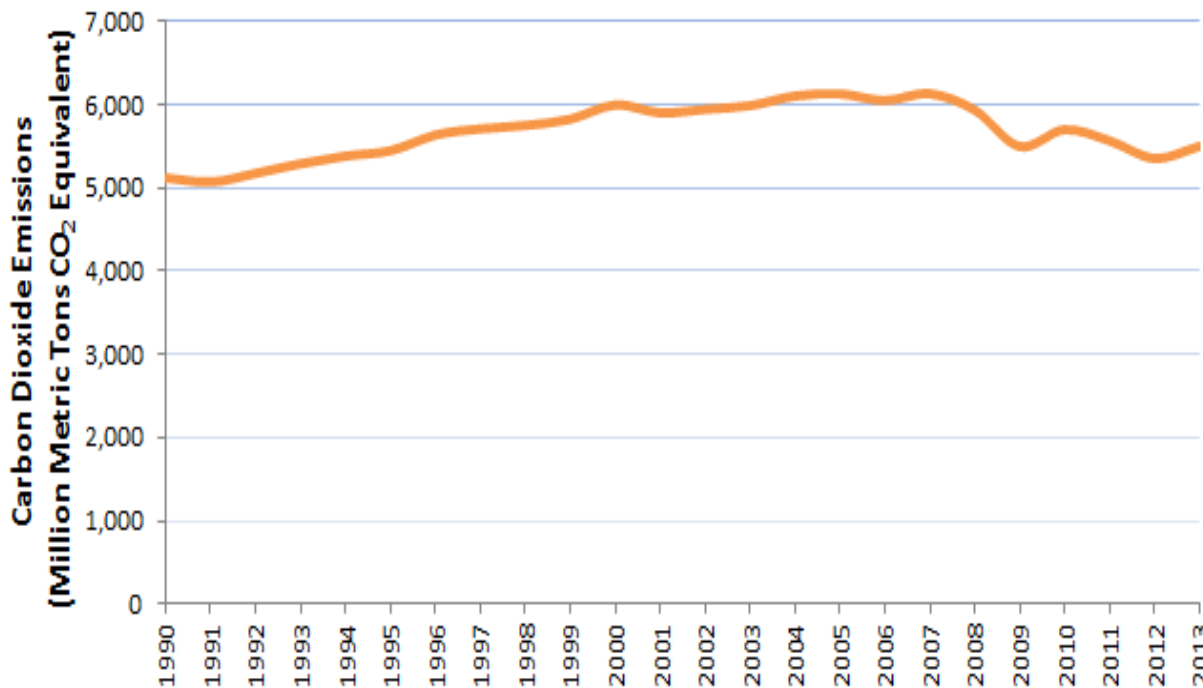
▶ Concentrations of CO₂ greenhouse gas in the atmosphere reached record global average in March 2015

China's CO2 emissions



- ▶ China's CO2 emissions continued to increase by about 6% per year.
- ▶ Chinese carbon emissions may have fallen 5% in the first four months of 2015.

Carbon dioxide (CO₂) emissions in the United States



Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2013.

▶ Carbon dioxide (CO₂) emissions in the United States increased by about 7% between 1990 and 2013.

▶ Going forward, CO₂ emissions in the United States are projected to grow by about 1.5% between 2005 and 2020

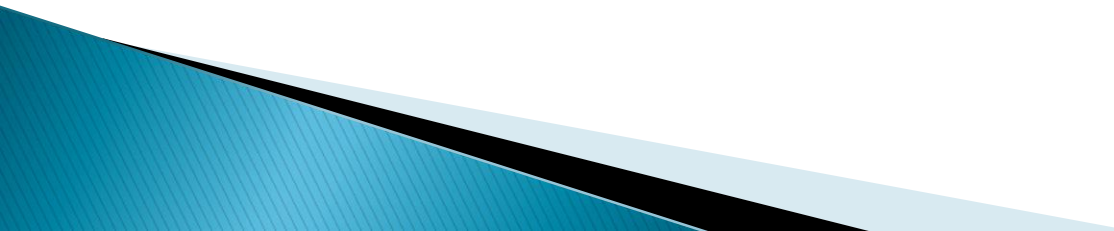
The Kyoto Protocol was broken.

- ▶ In December 2012, 144 countries agreed to extend the expiring Kyoto Protocol after climate negotiations broke down and no one could come to an agreement to replace the 1990s climate treaty.
- ▶ Only eleven of the 144 countries have formally recognized the extension of Kyoto, [according to the publication Responding to Climate Change \(RTCC\)](#).


What Can Replace Kyoto Protocol?

- ▶ This December 2015 the governments of more than 190 nations will gather in Paris to discuss a possible new global agreement on climate change, aimed at reducing global greenhouse gas emissions and thus avoiding the threat of dangerous climate change.

Is the Paris agreement settled?

- ▶ Not at all
 - ▶ Poorer countries want the rich world to provide them with financial help that will enable them to invest in clean technology to cut their greenhouse gas emissions
 - ▶ But those governments will not provide such funding from the public purse. They want international development banks, such as the World Bank, to play a role, and they want most of the funding to come from the private sector.
- 

Conclusions

- ▶ It is no longer possible to prevent the climate change that will take place over the next two to three decades, but it is still possible to protect our societies and economies from its impacts.
 - ▶ The world's population is set to rise to 10 billion by 2050 from 7 billion today.
 - ▶ We may experience increases in average temperature of between 4 and 10 degrees Fahrenheit over the next 100 years.
 - ▶ Central estimates of the annual costs of adaptation to climate change is around 1% of global GDP.
- 

Conclusions

- ▶ The Environmental Kuznets Curve (EKC) could be a great explanation why Kyoto Protocol is broken and why international agreement on emissions reduction is still possible, but has so many obstacles.
- ▶ “If nations can meet and agree on the goals on economic development, on social and environmental issues, and do so in a spirit of cooperation, it will be a huge achievement.”
- ▶ <http://www.theguardian.com/environment/2015/jun/02/everything-you-need-to-know-about-the-paris-climate-summit-and-un-talks>

Questions?



Sources:

- ▶ Recommendations on climate change mitigation
- ▶ <http://www.sciencedaily.com/releases/2014/04/140417124155.htm>
- ▶ Florida leads nation in property at risk from climate change
- ▶ <http://www.miamiherald.com/news/local/environment/article29029159.html>
- ▶ Forget “bans” on talking about climate.
- ▶ <http://www.washingtonpost.com/news/energy-environment/wp/2015/03/31/the-unlikely-group-of-republicans-who-are-preparing-florida-for-climate-change/>

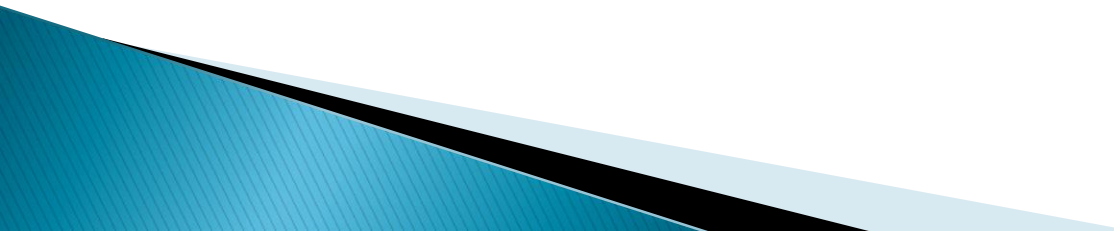
Sources:

- ▶ **No More Arctic Drilling Attempts For Shell**
- ▶ <http://thinkprogress.org/climate/2015/09/28/3706196/shell-pulls-out-of-arctic/>
- ▶ **What is the Kyoto Protocol? By Michael Bloch**
- ▶ <http://www.carbonify.com/articles/kyoto-protocol.htm>

Sources:

- ▶ Economic Impacts of Climate Change on Florida: Estimates from Two Studies¹
- ▶ http://edis.ifas.ufl.edu/LyraEDISServlet?command=getImageDetail&image_soid=FIGURE1&document_soid=FE787&document_version=12033
- ▶ At climate talks in Paris later this year, negotiators should ponder the damage already done
- ▶ <http://www.economist.com/news/international/21669885-climate-talks-paris-later-year-negotiators-should-ponder-damage-already?zid=313&ah=fe2aac0b11adef572d67aed9273b6e55>

Sources:

- ▶ Big Gap between What Scientists Say and Americans Think about Climate Change
 - ▶ <http://www.scientificamerican.com/article/big-gap-between-what-scientists-say-and-americans-think-about-climate-change/>
 - ▶ The US Economic Impacts of Climate Change and the Costs of Inaction
 - ▶ <http://cier.umd.edu/documents/US%20Economic%20Impacts%20of%20Climate%20Change%20and%20the%20Costs%20of%20Inaction.pdf>
- 

Sources:

- ▶ Robert Rubin: How ignoring climate change could sink the U.S. economy
- ▶ https://www.washingtonpost.com/opinions/robert-rubin-how-ignoring-climate-change-could-sink-the-us-economy/2014/07/24/b7b4c00c-0df6-11e4-8341-b8072b1e7348_story.html
- ▶ Robert Trigaux: Impact of climate change on Florida economy could be huge
- ▶ <http://www.tampabay.com/news/business/impact-of-climate-change-on-florida-economy-could-be-huge/2178761>