

# ATM S 111, Global Warming: Political Approaches

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Day 41: August 17, 2010

# This Week

- Today: political solutions (bills in Congress, Kyoto, etc.)
- Wednesday: grassroots efforts, maybe some discussion.
- Thursday: student presentations (10-15 min each) and class evaluations. Come support your classmates and give me feedback!
- Friday: no class. Final paper due – electronic submissions are fine.

# Economics and Politics

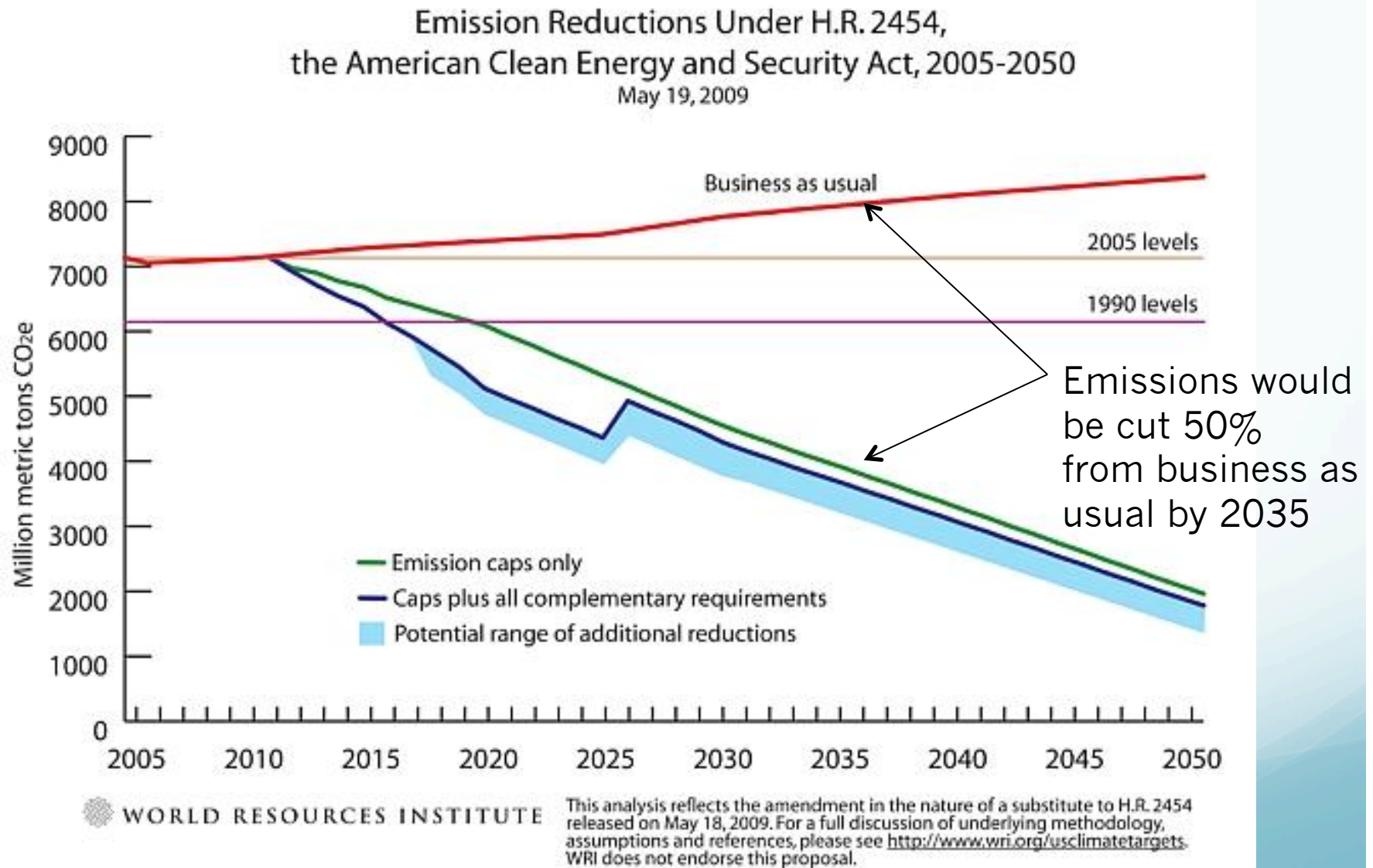
- Goal 1: to understand the bills in Congress & other possible solutions of the future in the US
  - Waxman-Markey bill (“American Clean Energy and Security Act”): **passed** the House last summer.
  - Kerry-Lieberman bill (“American Power Act”): **introduced** into the Senate.
- Goal 2: to understand international agreements about climate change
  - UNFCCC (1992)
  - Kyoto Protocol (1997)
  - Copenhagen Accord (2009)
  - And future possible agreements...

# The Bills

| Waxman-Markey (House)                                                                                                                             | Kerry-Liebermann (Senate)                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Cap and trade</b> for utility, industry, and petroleum sectors.                                                                                | <b>Cap and trade</b> for utilities & industry, with a linked refinery cap            |
| Emissions targets:<br><b>17% below</b> 2005 by 2030<br><b>80% below</b> 2005 by 2050                                                              | Emissions targets:<br><b>17% below</b> 2005 by 2030<br><b>80% below</b> 2005 by 2050 |
| <b>\$100 billion</b> for investments in:<br>Renewable energy & nuclear power,<br>clean transportation & biofuels,<br>advanced coal, & smart grid. | <b>\$70B</b> for similar investments                                                 |
| <b>15% renewable energy</b> by 2030, &<br>greatly improved <b>efficiency</b> (of<br>buildings, appliances, etc)                                   | Support for these programs at the<br><b>state level</b>                              |

We'll discuss the details more later...

# The Cap Would Reduce U.S. Emissions



# Cap and Trade

A cap (or limit) is set on the amount of a pollutant

Polluters are **given** or **auctioned** pollution allowances

The total allowances cannot exceed the cap

Polluters may **trade** allowances

- Buyer pays to pollute

- Seller receives reward for reducing emissions

# Carbon Tax

Emitting carbon incurs a **price** charged as a tax

Somewhat similar economic consequences as cap and trade

**Monitoring, assessment and accountability** are key to program success for both the tax **and** cap & trade

# Allocations vs. Auctions in Federal Cap and Trade Legislation

- Both the House and the Senate bills are cap & trade
- Key issue: are emissions allowances given away for **free** (*allocations*) or **auctioned**?
  - Senate bill:
    - Starts w/ 75% free
      - Formulas for allocations for different sectors
    - 100% auctioned by 2035
    - What happens to the proceeds?
      - Rebate checks & energy bill discounts given directly to us (to help offset presumed increased energy costs): 75% of the auction income by 2026



# Other Aspects of Kerry-Lieberman Bill

- Claim: goal is to keep CO<sub>2</sub> under **450 ppm**
  - This would require global action of course...
- Cap: **17% reduction** by **2030**, **80%** by **2050**
  - This is CO<sub>2</sub> equivalent (7 GHGs are regulated)
- Existing **state level** cap & trade programs would be **shut down**
  - But participating states get a **bonus** (more free allocations) for having these

# More Controversial Aspects

- **Offshore drilling** is in the bill
  - But neighboring states have veto power on projects near their shores
  - Projects that happen give a percentage of revenue for coastal conservation projects
- “Clean coal” & carbon sequestration research is in
- **Offset credits** can be purchased in limited quantities for reduction projects in US or developing countries
  - Offsets are difficult to accurately measure or validate.
  - International offsets seems to be a relatively small part of the bill but something to watch

# Will Kerry-Lieberman Pass?

- Very uncertain whether this will pass
  - Vote counts right now suggest *no* but many are on the fence
  - Obama is strongly behind it & has said he'll push it through
- Definitely not happening this summer.

# Regional Greenhouse Gas Initiative (RGGI)

- **RGGI**: Cap & trade program already happening in the US
  - Goal: reduce emissions by 10% by 2018
  - States sell carbon allowances during quarterly **auctions**
  - Proceeds **invested** in energy **efficiency** projects and **renewable** energy



# Regional Greenhouse Gas Initiative (RGGI) A Cap and Trade Example

Permit auctions have generated over **half a billion dollars** in less than two years of operation

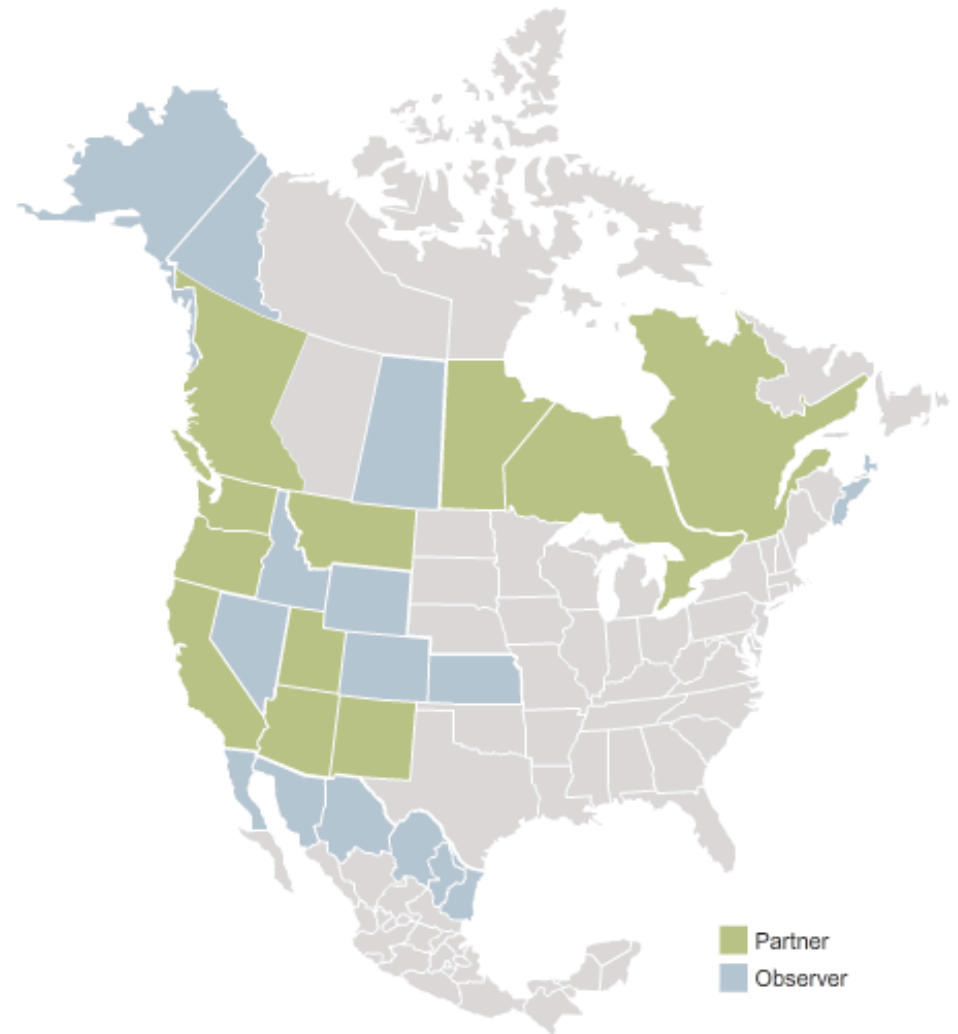
The states can reinvest the money into alternative energy technology, job creation, etc.



David Littell, commissioner of the Maine Department of Environmental Protection and chair of RGGI's board of directors. **"The investments we are seeing in renewable energy, in energy infrastructure, appear to be the largest wave of capital investment in the state's history."**

# Western Climate Initiative

- A similar program (involving WA, OR, & 9 other member states/Canadian provinces) will start in Jan 2012
- Also a cap & trade with goals to reduce emissions by 15% by 2020





Members agree to reduce their emissions at least 1% per year

Membership is **voluntary** but **legally-binding**

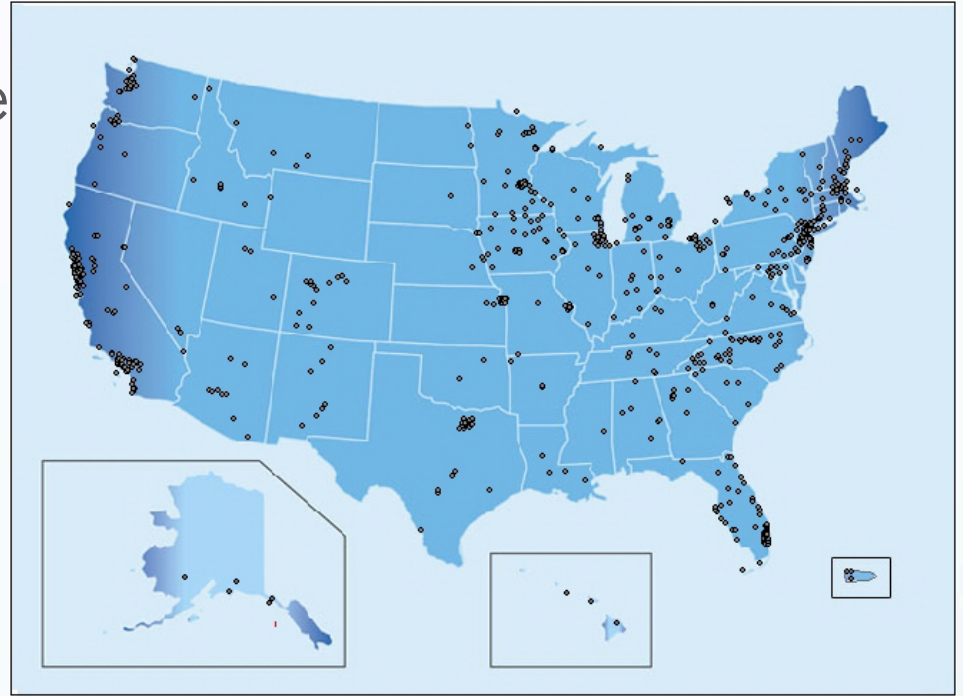
If a member is going to miss the target, they can purchase **allowances** through the exchange, or “**offsets**” for greenhouse gas reduction projects

Members include: Ford Motor Co, New Belgium Brewing Co, **Puget Sound Energy, King County**, City of Portland, States of NM & IL, & many others

# Mayors' Climate Protection Agreement

Over 1000 mayors have signed

Started in Seattle



## Commitment to

**Strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns;**



# Next: International Agreements

- First, what sets emissions on a global scale?
- Then, summary of the agreements that have happened so far
  - UNFCCC
  - Kyoto
  - Copenhagen

# Managing Climate Change: Current International Agreements

UNCED United Nations Conference on the Environment and Development “[Earth Summit](#)” in Rio de Janeiro, Brazil, June 1992

Resulted in a treaty known as the UN [Framework Convention on Climate Change](#), UNFCCC

Annual meetings called “Conference of the Parties” COP

Kyoto Protocol was negotiated at COPs in 1997/2001

Copenhagen was COP 15

# "The Earth Summit" 1992, Rio de Janeiro

Rio Declaration on *Environment* and *Development*

Representatives of 160 nations met to discuss:

- resources needed for development, and
- long-term protection of the environment.

Rio Declaration of UNFCCC lists 27 lofty core principles.

Signed by all 160 nations, including the United States.

Ratified by the United States Senate giving the force of law within this country.

**Rio Declaration 1992:**

## **Precautionary Principle**

"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

## **Rio Declaration 1992:**

### **Principle of Equity**

"The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."

"All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development..."

**Rio Declaration 1992:**

## **Common but Differentiated Responsibilities**

“The parties agreed that:

- 1) the largest share of historical and current global emissions of greenhouse gases originated in developed countries
- 2) per capita emissions in developing countries are still relatively low
- 3) the share of global emissions originating in developing countries will grow to meet social and development needs.”

# UNFCCC, treaty from Rio 1992

"The ultimate objective of this Convention... is to achieve... stabilization of greenhouse gas concentrations in the atmosphere at a level that would **prevent dangerous anthropogenic interference with the climate system.**"

behavior is *encouraged*, nothing binding

- Signed by the U.S. President, Summer, 1992.
- Ratified by the required 2/3 of the U.S. Senate, Fall, 1992.

# Kyoto Protocol, 1997 RG, p.290-5

A treaty with *mandatory* emissions reductions

Goal: To prevent dangerous anthropogenic interference with the climate system

Annex 1 Countries: Developed nations that agreed to take the lead in reducing GHG emissions.

Emission Targets: Reduce emissions by 5.2% on average from 1990 emissions to be achieved by 2012  
EU -8%, US -7%, Japan -6%, Russia 0%, Australia +8%, ...

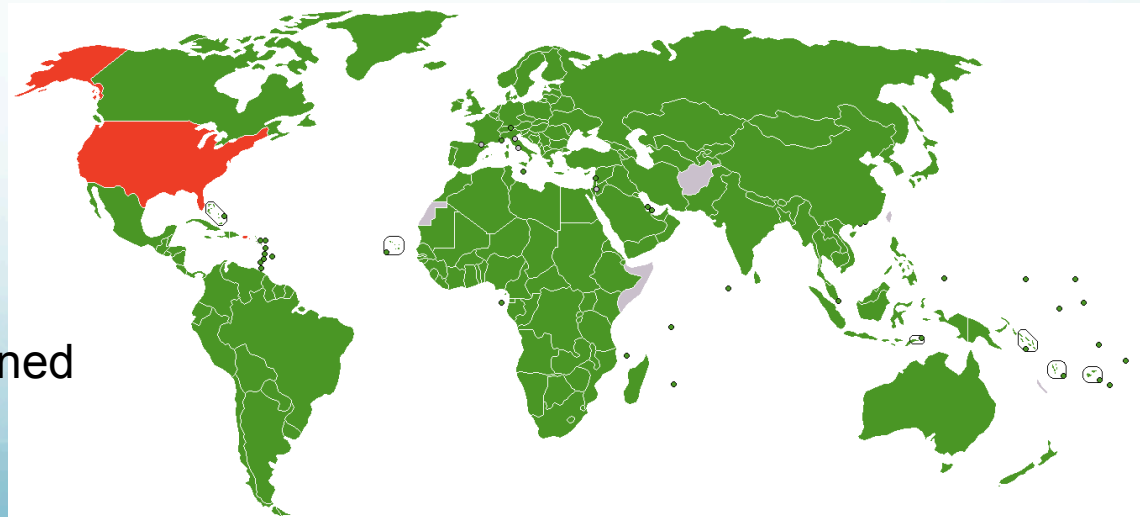
Complementary actions to promote sustainable development, share technology, ease economic impacts



# Kyoto Protocol, 1997

- Signed by the U.S. President Clinton in 1997
- never submitted to the Senate for ratification (therefore, never became U.S. law)
- U.S. President Bush officially withdrew in 2005
- Came into effect later in 2005, after Russia signed
- Australia signed in 2007.

Green countries signed  
Grey are undecided



# Kyoto Mechanisms

## Joint Implementation:

Allows developed countries to collaborate in projects that reduce emissions or increase "sinks". (A way of sharing the credit.)

## Clean Development Mechanism:

Allows developed countries to get credit for providing aid for projects that reduce emissions in developing countries. (This aids the goal of technology transfer, essential to long-term reductions by the entire world.)

## Emissions Trading:

Allows developed countries to purchase credits from other developed countries. Creates a market in "carbon credits".

Developing countries have no mandatory requirements. If they reduce emissions anyway, they may sell credit

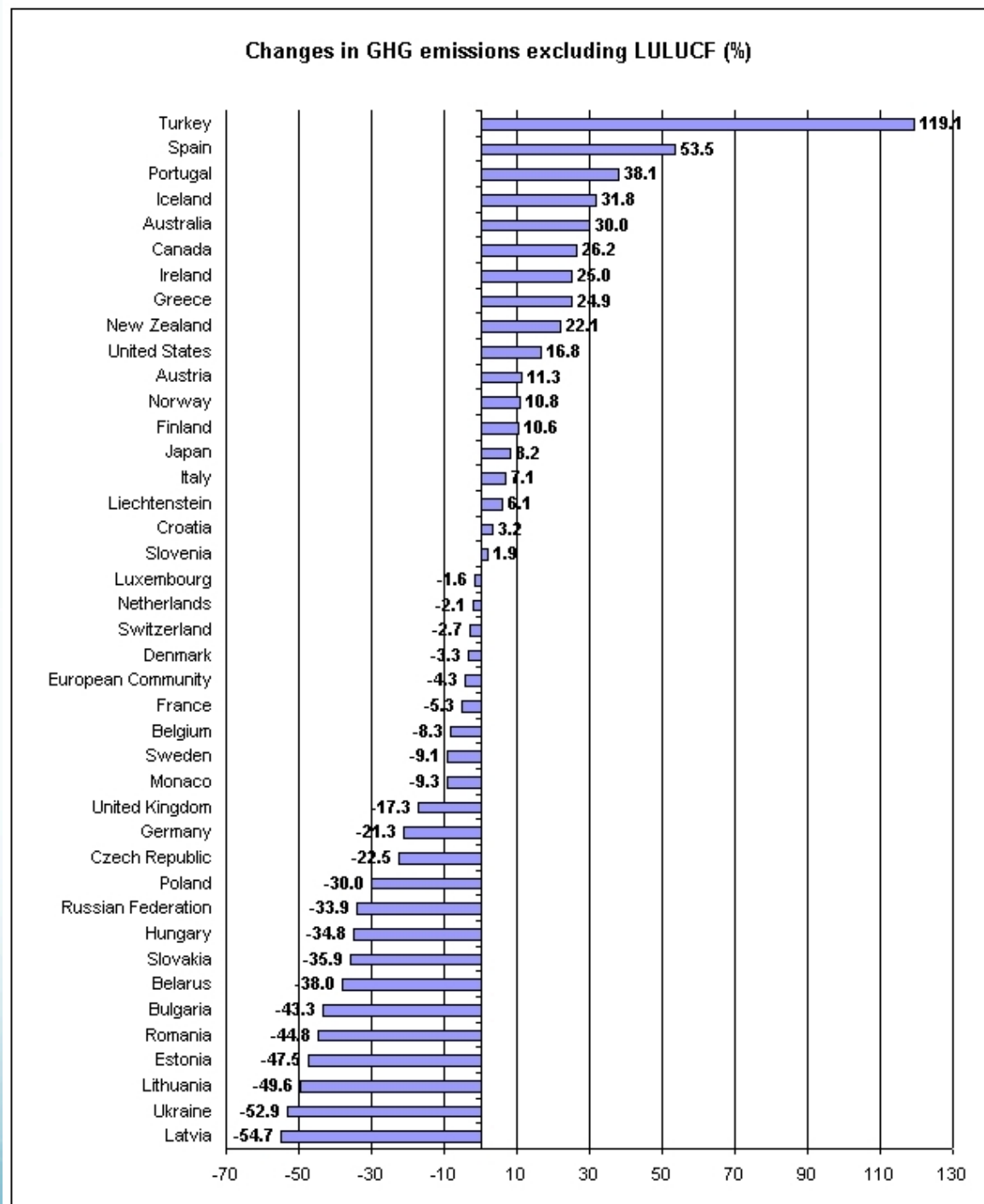
# Is Kyoto Working?

2007 relative to 1990

Positive means  
emissions rose

<http://unfccc.int>

LULUCF is land use



# Is Kvoto Working?

| Country  | Change in greenhouse gas Emissions (1990–2007) including LULUCF  | EU Assigned Objective for 2012  | Treaty Obligation 2008–2012  |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Denmark                                                                                   | -5.6%                                                                                                                                             | -20%                                                                                                               | -11%                                                                                                            |
| Germany                                                                                   | -20.8%                                                                                                                                            | -21%                                                                                                               | -8%                                                                                                             |
| Canada                                                                                    | +46.7%                                                                                                                                            | n/a                                                                                                                | -6%                                                                                                             |
| Australia                                                                                 | +82.0%                                                                                                                                            | n/a                                                                                                                | +8%                                                                                                             |
| Spain                                                                                     | +55.3%                                                                                                                                            | +15%                                                                                                               | -8%                                                                                                             |
| Norway                                                                                    | -22.0%                                                                                                                                            | n/a                                                                                                                | +1%                                                                                                             |
| New Zealand                                                                               | +18.3%                                                                                                                                            | n/a                                                                                                                | 0%                                                                                                              |
| France                                                                                    | -11.8%                                                                                                                                            | 0%                                                                                                                 | -8%                                                                                                             |
| Greece                                                                                    | +25.2%                                                                                                                                            | +25%                                                                                                               | -8%                                                                                                             |
| Ireland                                                                                   | +22.6%                                                                                                                                            | +13%                                                                                                               | -8%                                                                                                             |
| Japan                                                                                     | +8.2%                                                                                                                                             | n/a                                                                                                                | -6%                                                                                                             |
| United Kingdom                                                                            | -17.8%                                                                                                                                            | -12.5%                                                                                                             | -8%                                                                                                             |
| Portugal                                                                                  | +30.8%                                                                                                                                            | +27%                                                                                                               | -8%                                                                                                             |
| EU                                                                                        | -5.6%                                                                                                                                             | n/a                                                                                                                | -8%                                                                                                             |

[http://en.wikipedia.org/wiki/Kyoto\\_Protocol](http://en.wikipedia.org/wiki/Kyoto_Protocol)

# Change in Emissions 1992-2007

| Country            | Change in greenhouse gas Emissions (1992-2007) |
|--------------------|------------------------------------------------|
| India              | +103%                                          |
| China              | +150%                                          |
| United States      | +20%                                           |
| Russian Federation | -20%                                           |
| Japan              | +11%                                           |
| Worldwide Total    | +38%                                           |

US pledge on Kyoto (not ratified) was 5.2% reduction below 1990 emissions by 2012

# What are the penalties for noncompliance?

The Enforcement Branch may

Raise the reduction requirement in the second commitment period (which doesn't exist) by 30%

and/or

Suspend the right to emissions trade

Ends in 2012. What next?

## Copenhagen Accord December 2009

Like Kyoto, it's an agreement of the members of the UNFCCC. However, it's an *unbinding* statement of intent, negotiated by US, China, Brazil, India, and South Africa; other countries "took note".

### Key points

- Aim to keep temperatures from rising more than 2 deg Celsius (3.6 deg F) above preindustrial levels.
- Developing nations will report every two years on their voluntary actions to reduce emissions, richer nations can "commit."
- Richer nations will finance up to \$30 billion from 2010-12 for poorer nations' projects to mitigate and adapt to climate change.
- Set a "goal" of mobilizing \$100 billion-a-year by 2020 for further developing world adaptation and mitigation purposes.

# Copenhagen Accord Commitment by the U.S.

## APPENDIX I

| Annex I Parties          | <i>Quantified economy-wide emissions targets for 2020</i>                                                                                                                                           |           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                          | Emissions reduction in 2020                                                                                                                                                                         | Base year |
| United States of America | In the range of 17%, in conformity with anticipated U.S. energy and climate legislation, recognizing that the final target will be reported to the Secretariat in light of enacted legislation. [1] | 2005      |

<http://unfccc.int/home/items/5264.php> for commitments by 55 countries (representing 78% of global emissions).



European Union committed to up to a 30% reduction relative to 1990 if other nations follow suit

China has pledged to reduce its emissions **growth** – not make absolute cuts – by up to 45% from 2005 levels by 2020.

India also pledged to reduce emissions **growth** by up to 25% from 2005 levels by 2020.

# Summary

- We're a long way from implementing the sort of policy needed to make the climate “wedges” discussed yesterday.
- If the US committed to the emissions reductions in the (nonbinding) Copenhagen Accord, it'd be a good start.