TOPIC #17

SOLUTIONS & CHOICES: Mitigation, Adaptation, Sustainable Systems, Technology & Other Choices

Class Notes pp 93-95

OK, so Global Warming & Climate Change are real . . .

What do we do about it???

ADAPTATION & MITIGATION

POLICIES & POSSIBLE ACTIONS TO SLOW GLOBAL WARMING . . .

Slide from the beginning of the semester stated:

In the balance between resources, population, & human impact on the environment, 3 options are possible:

- **SUSTAINABILITY**
  ensure that use of resources now won't preclude their use in future
- **TECHNOLOGICAL INNOVATIONS**
  "we can fix the problem"
- **NATURE / HANDS OFF**
  "let Nature take its course"

Addressing these options involves two approaches:

Question: ***To Adapt or Mitigate?***

adapt (def) to adjust oneself to different conditions, environment, etc

mitigate *(def) = to lessen in force, intensity or severity*

Answer: ***We need both!***

ADAPTATION (IPCC definition)

Initiatives and measures **to reduce the vulnerability** of natural and human systems against actual or expected *climate change effects.*

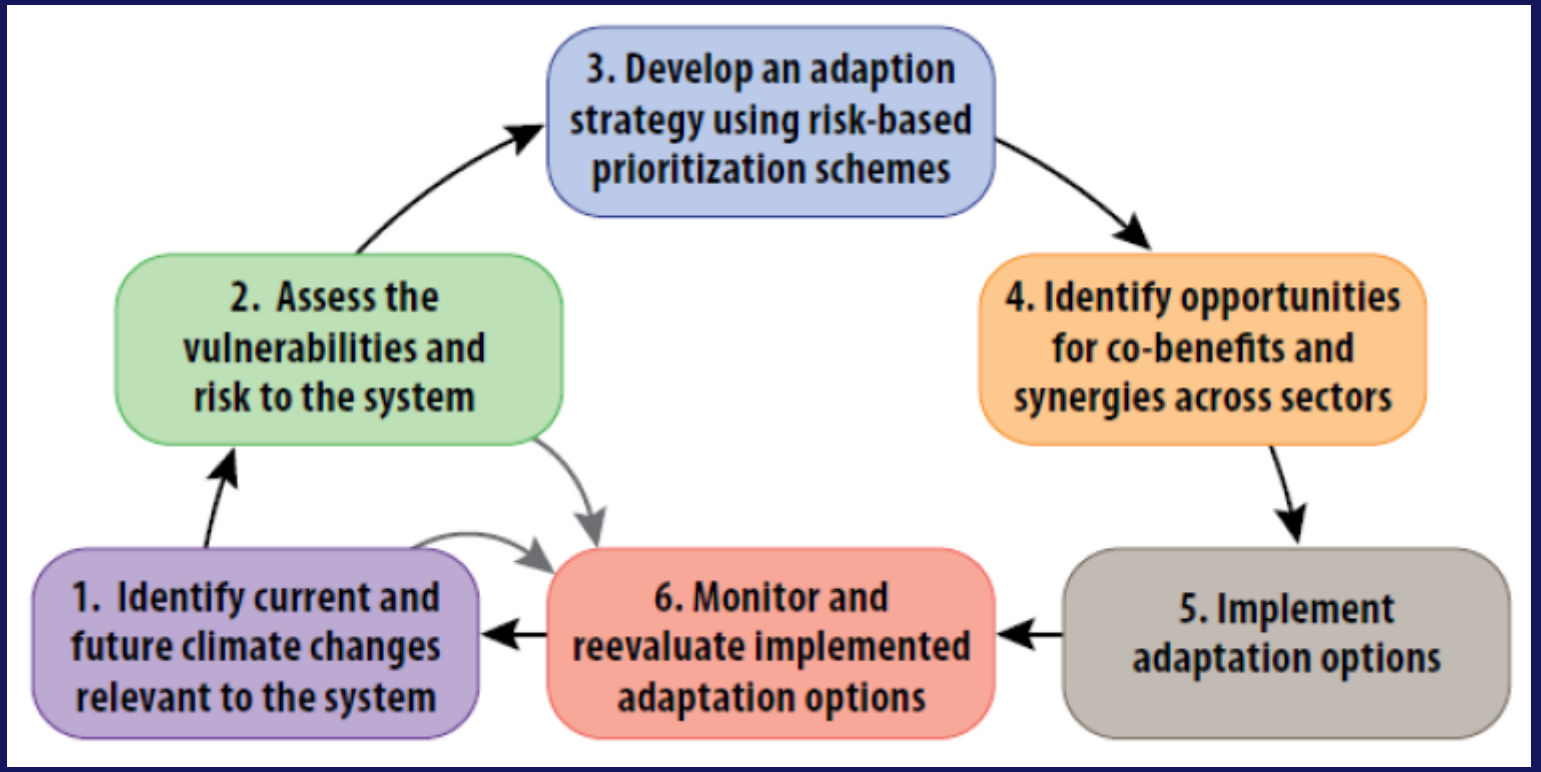
Various types of adaptation exist:

-- *Anticipatory:* *takes place before change is observed, (e.g., raising coastal dikes, levees)*

-- *Autonomous:* *not consciously responding to climatic issues but triggered by ecological changes in nature (e.g. shift to temperature-shock resistant plants, by the market (e.g. gas prices), or by concern for human welfare*
Public or Private enterprises

-- *Planned:* *deliberate policy decision; awareness of change & need for action to return to, maintain, or achieve a desired state (e.g. climate legislation)*

Adaptation planning is envisioned as a cyclical, iterative process incorporating these six steps:



Adaptation benefits

The avoided damage costs or the accrued benefits following the adoption and implementation of *adaptation measures.*

Adaptation costs

Costs of planning, preparing for, facilitating, and implementing *adaptation* measures, including transition costs.

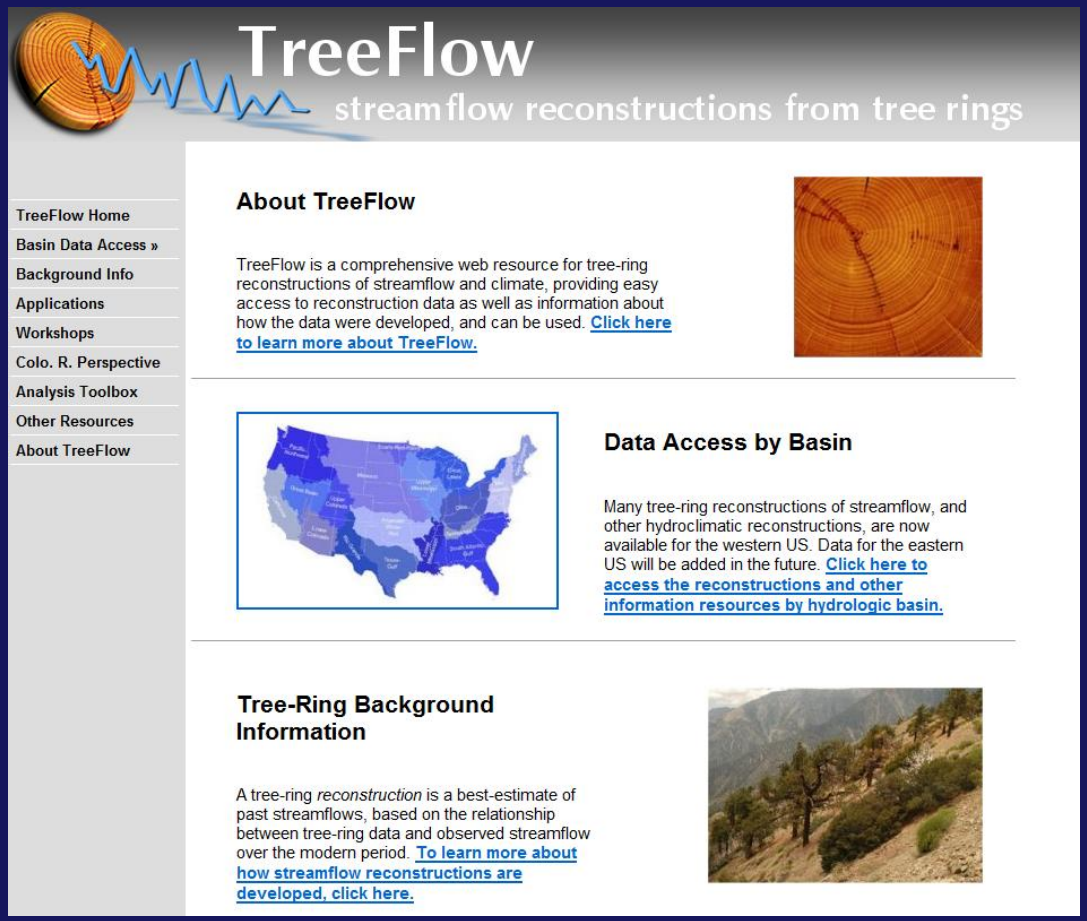
Adaptive capacity

The whole of **capabilities, resources and institutions** of a country or *region* to implement effective *adaptation measures.*

ADAPTIVE MANAGEMENT IN ACTION:

http://treeflow.info/

Water Managers,
Drought &
Climate Change



MITIGATION (IPCC definition)

An *anthropogenic* intervention to reduce the anthropogenic forcing of the *climate system*

Includes strategies / policies to:

a) Reduce *greenhouse gas* SOURCES and EMISSIONS

b) Enhance *greenhouse gas* SINKS

Includes: Technological change and substitution that REDUCE resource inputs and emissions per unit of output

REDUCE: fossil fuels ➔ renewable energy

ENHANCE: re-forestation, forest preservation

Mitigative Capacity

This is a country's ability to reduce *anthropogenic greenhouse gas emissions* or to enhance natural *sinks*

--ABILITY *refers to skills, competencies,* fitness and proficiencies that a country has attained and depends on technology, institutions, wealth, equity, *infrastructure and information.*

Mitigative capacity is rooted in a country's sustainable development path.

Going on at this very moment . . . .

The United Nations Climate Change Conference

in Cancún Mexico

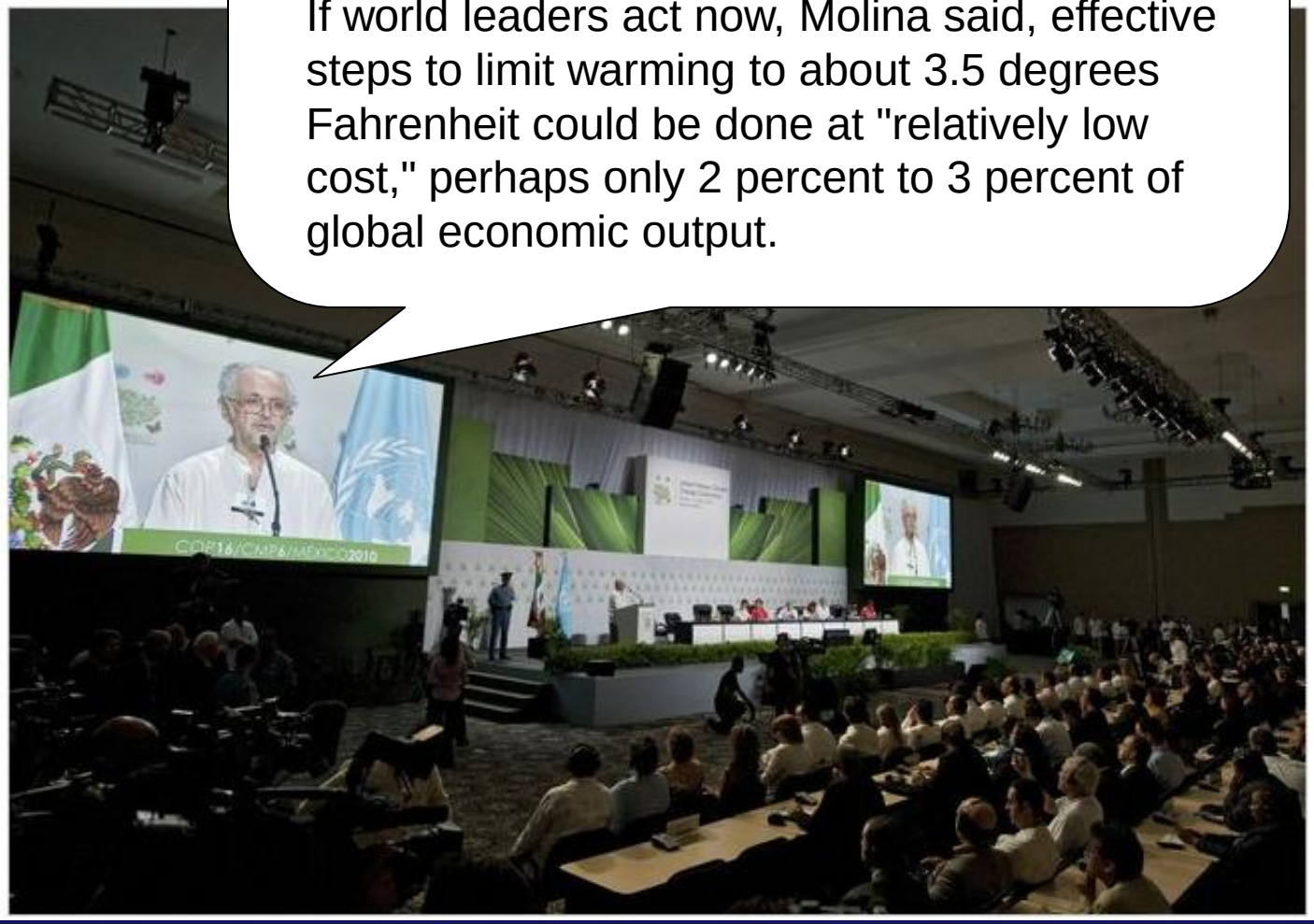
Mario Molina ➔

Winner of 1995 Nobel Prize in Chemistry for his studies of the ozone layer

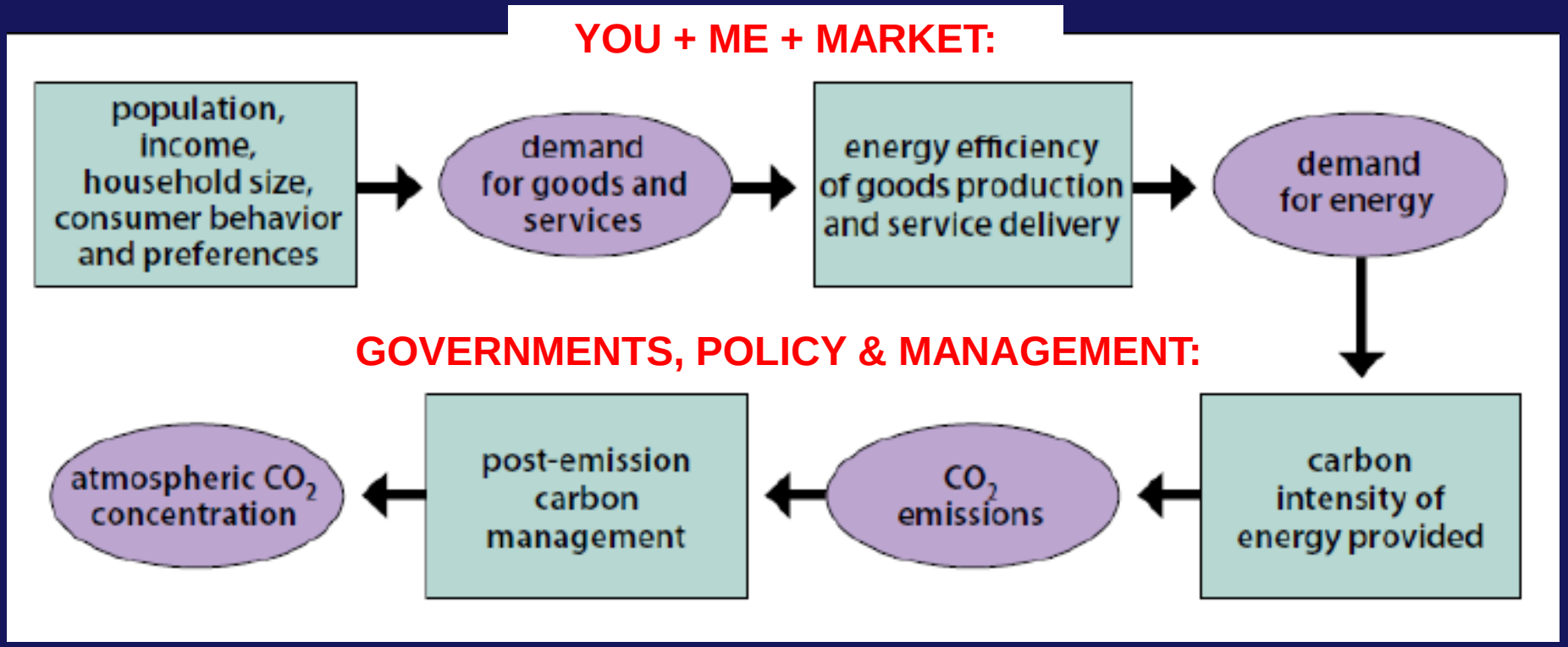
"To postpone action . . . would mean astronomical costs for future generations."

"We can't wait another decade."

If world leaders act now, Molina said, effective steps to limit warming to about 3.5 degrees Fahrenheit could be done at "relatively low cost," perhaps only 2 percent to 3 percent of global economic output.



THE CHAIN OF FACTORS THAT DETERMINE HOW MUCH CO2 ACCUMULATES IN THE ATMOSPHERE



Green boxes represent factors that can potentially be **INFLUENCED** to affect the **OUTCOMES** (in the purple circles)

The New York Times

November 27, 2010

On Global Warming, Start Small

By BRUCE USHER

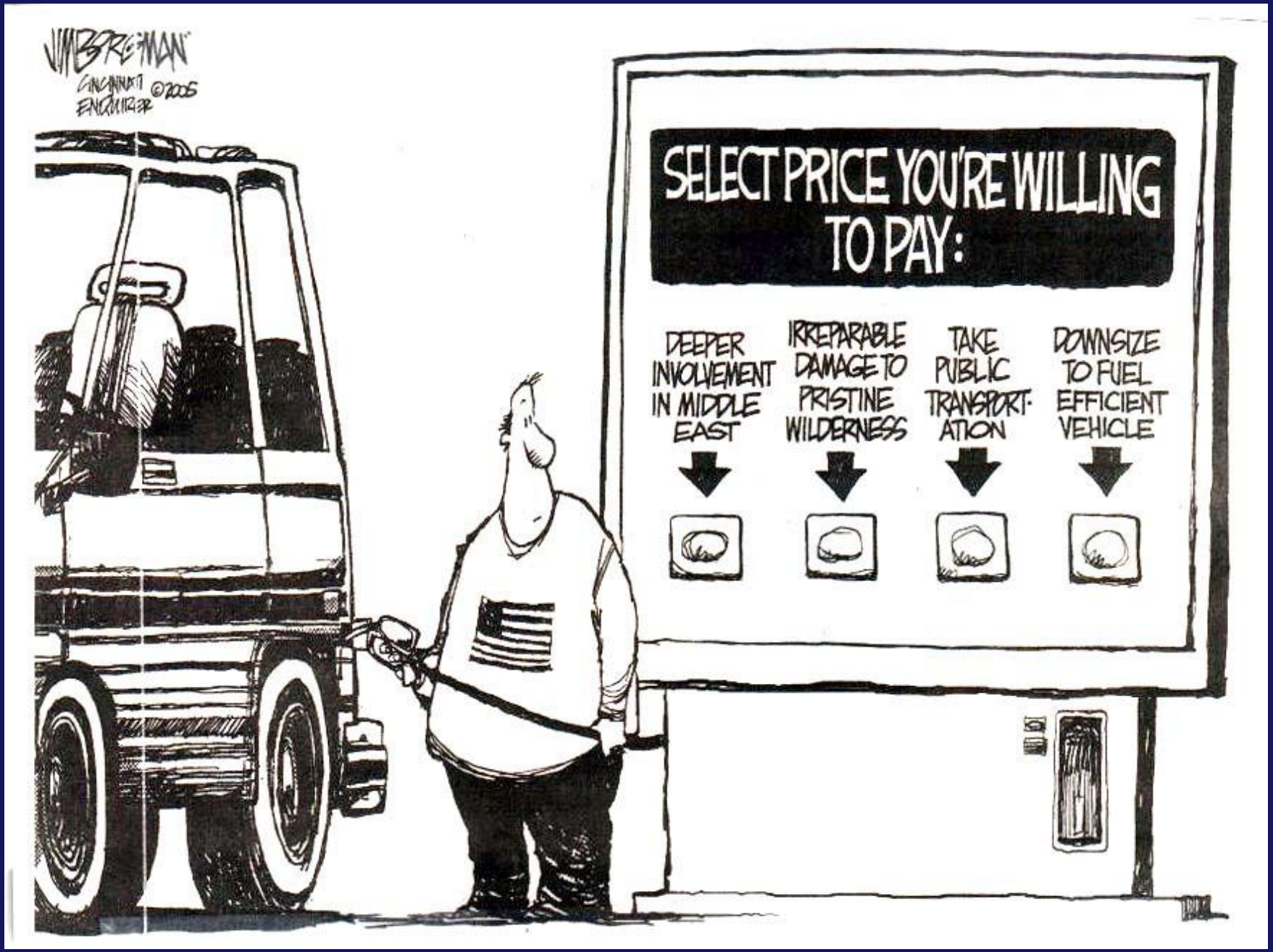
THE conference on climate change that begins tomorrow in Cancún, Mexico, will be the 13th such annual meeting since 1997, when the Kyoto Protocol, the first and only international agreement to place a cap on emissions of greenhouse gases, was written. This year there will be no such treaty. Why not? Excuses will abound, but finger-pointing misses the crux of the matter, which is that climate change is the most complicated and challenging problem mankind has ever faced.

"Rather than wait for international diplomacy to reduce greenhouse gas emissions, America should build on the efforts that many states are making to develop cleaner sources of energy."

biomass.

These state-level efforts are already having national impact. Last year, renewable energy accounted for more than half of all the new power generation plants nationwide. Another 40 percent was from natural gas, which emits only half as much carbon dioxide as coal.

http://www.nytimes.com/2010/11/28/opinion/28usher.html?_r=1&emc=eta1


JIM BORGMAN
CINCINNATI ENQUIRER ©2005
SELECT PRICE YOU'RE WILLING TO PAY:
DEEPER INVOLVEMENT IN MIDDLE EAST
IRREPARABLE DAMAGE TO PRISTINE WILDERNESS
TAKE PUBLIC TRANSPORT-ATION
DOWNSIZE TO FUEL EFFICIENT VEHICLE

Various Strategies for REDUCING GHG EMISSIONS:

Energy Conservation

Switch to Alternative Energy Sources

- Nuclear
- Wind & Tidal
- Geothermal
- Biomass-based fuels
- Solar
- Other innovative technologies!!!

POLICY ADOPTIONS & OTHER ADAPTATION / MITIGATION SOLUTIONS:

1. CO_2 tax (gas-guzzler tax)
2. Cap & Trade (and related market solutions)
3. Imposition of direct governmental regulations (e.g. CAFE / Combined Automobile Fleet Emissions)
4. International agreements to impose restrictions on CO_2 emissions from fossil fuel burning (e.g. updated Kyoto Protocol – being addressed THIS WEEK in Cancun)
5. Halting tropical deforestation / encouraging reforestation
6. Drastic changes in lifestyle

Which one are you most willing to accept?

1. Gas-guzzler tax
2. Direct government regulations - carbon tax
3. Direct government regulations with market mechanism, i.e. "cap and trade"
4. Kyoto-like international agreement
5. Stop tropical deforestation / more reforestation
6. Drastic lifestyle changes
7. None of the above
8. A combination of the above . … other??

For a follow up . . .
See Class Notes pp 142- 143

Here's the source:

http://www.grist.org/article/cap-and-trade-through-musical-chairs/

And ANOTHER perspective from the creator of THE STORY OF STUFF:

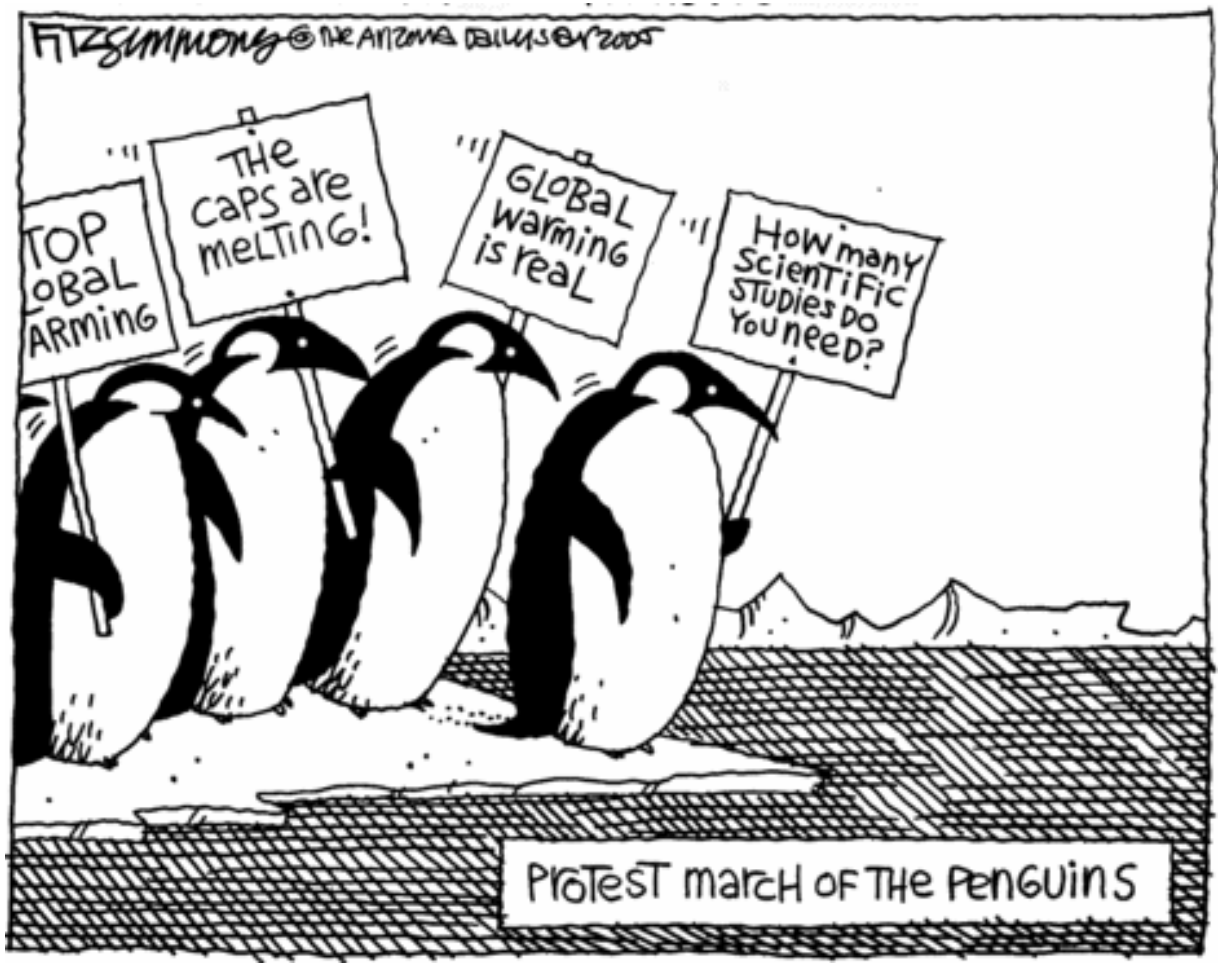
http://storyofstuff.com/capandtrade/

WITH CRITIQUES . . . of course!
http://www.grist.org/article/cataloguing-the-errors-in-the-story-of-cap-and-trade/

http://www.grist.org/article/2009-12-01-annie-leonard-misses-the-mark-her-new-video-story-cap-and-trade/

THESE ISSUES ARE NOT WITHOUT CONTROVERSY!!

G-5 GLOBAL WARMING CHALLENGES GROUP ACTIVITY



Directions for G-5 ACTIVITY

The envelope contains 12 quotes.

As a GROUP – SELECT 3 of the QUOTES, pair up, and write a response to the CHALLENGE.

Substantiate your response by referring to specific items (and pages in CLASS NOTES as needed).

IF YOU AGREE with the CHALLENGE, support your reasons for your agreement in the same way . . . .

DON’T FORGET TO SIGN UP FOR YOU DEBATE ROLE!!!

GO CATS!!!!!