



Managing to the Climate Problem: Science-Policy-Business

Kyoto, not Kyoto, what else?

Richard B. Rood
734-647-3530
rbrood@umich.edu

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Class News

- Some business
 - Nina Mendelson on March 30?
 - That's a Friday
 - Time:



Class News

- New experimental web site
 - <http://climateknowledge.org/class/aoss605/tiki-index.php>
- Lecture Road Map
 - Previous: Carbon Market
 - Today: Rood, Managing to the Climate Problem: Science-Policy-Business
 - 3/6: Rood, Sulfur Market as Model, Link to Next Set of Lectures
 - 3/8: Lemos, Winners and Losers
 - 3/13 & 3/15: McCormick and O'Neill, Public Health



Readings

- Basic information on the Kyoto Protocol
 - [Environmental Literacy Council](#)
 - [Kyoto Protocol](#)
- Beyond Kyoto
 - [International Climate Efforts Beyond 2012: Report of the Climate Dialogue at Pocantico](#)



Ideas and Things

- NEWS: Anyone hear or read any news they want to discuss – or come back to?
 - Australia incandescent bulbs.
 - Portugal wave energy – ocean 1000 homes/megawatt?



Projects

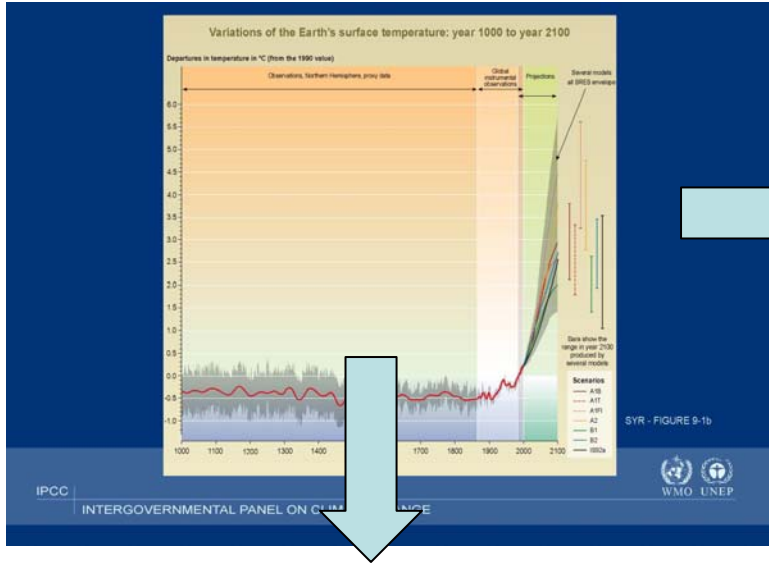


Outline

- Link from Climate Change to Response
- Mitigation and Adaptation
- Some Basic Management
- Policy in a Management Paradigm
- International and National Policy Attempts
- United Nations Framework Convention on Climate Change
- Kyoto Protocol
- Beyond 2012: Climate Dialogue at Pocantico
- Where do we sit today?



Predictions motivate action



Is there some sort of tipping point or abrupt change which will be catastrophic?

Is there some range of warming which we can tolerate, adapt to, perhaps be beneficial?

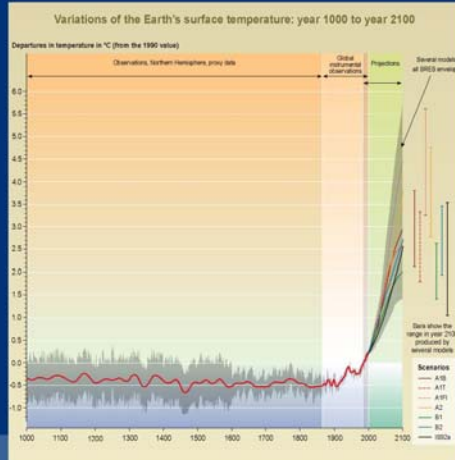
Are there feedbacks in the system which will cool the Earth – counter the warming?

Should we perhaps just push forward the problem is bigger than we are, it just costs too much, we don't know what we are doing anyway ...

How should we respond to the predictions?



Predictions motivate action



IPCC
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



How should we respond to the predictions?



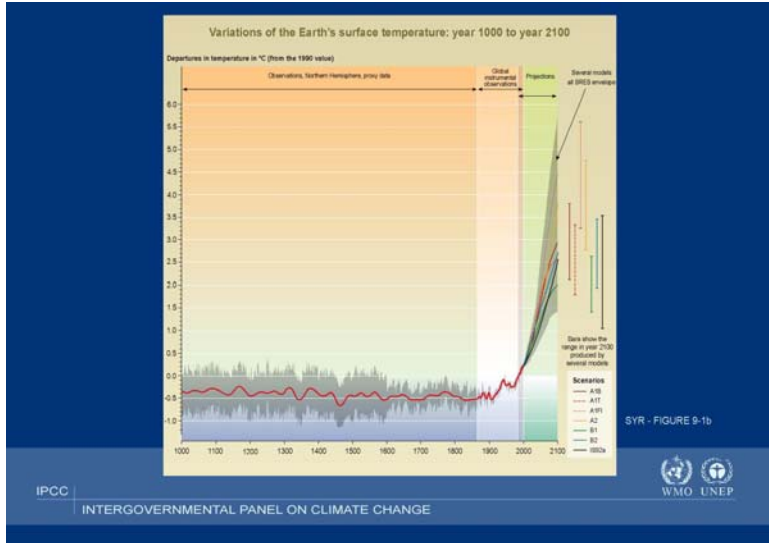
Must remember that the climate problem is currently entwined with energy sources, energy use.



**Energy use touches every part of society.
Societal success.
Standard of living.**



For example: At the individual level cheap energy might be the choice.



Impact on agriculture

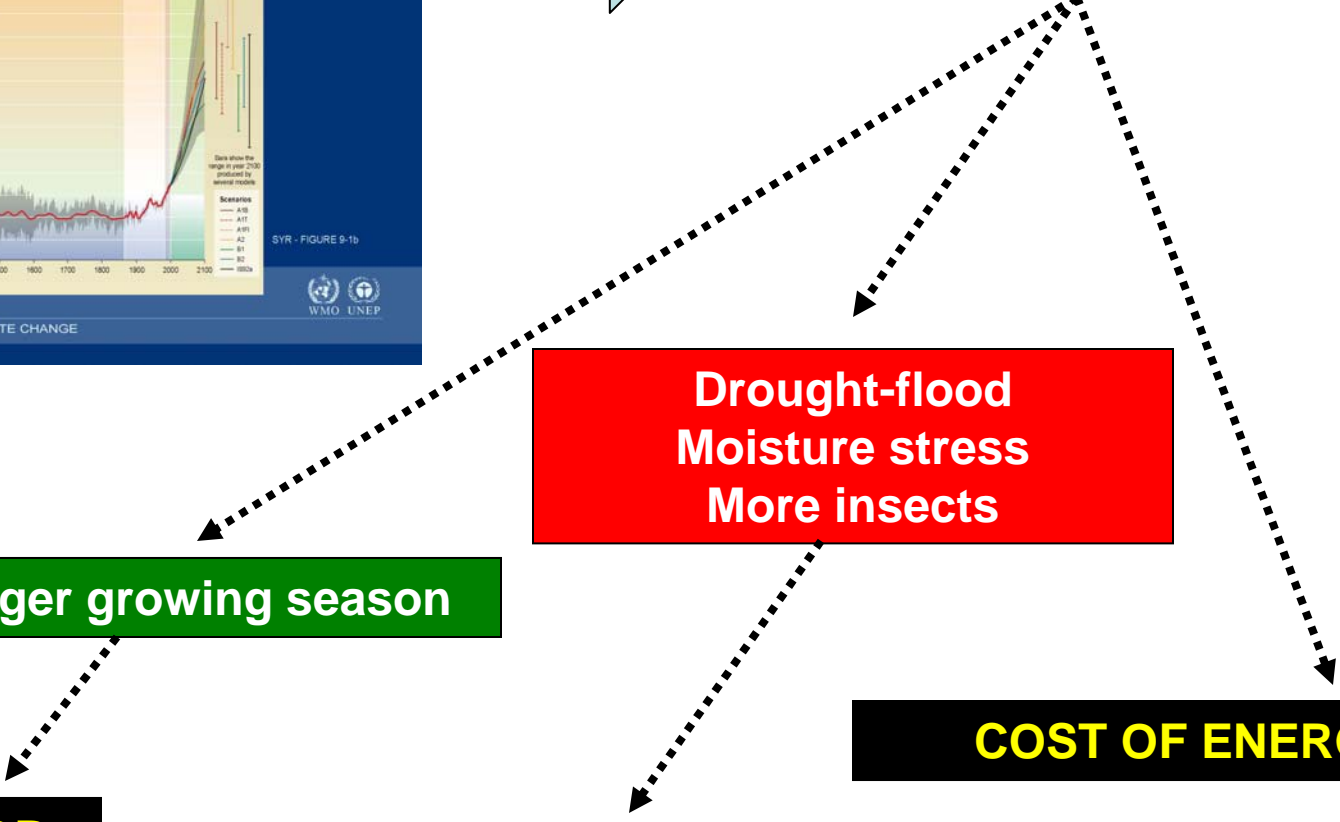
Drought-flood
Moisture stress
More insects

Longer growing season

COST OF ENERGY

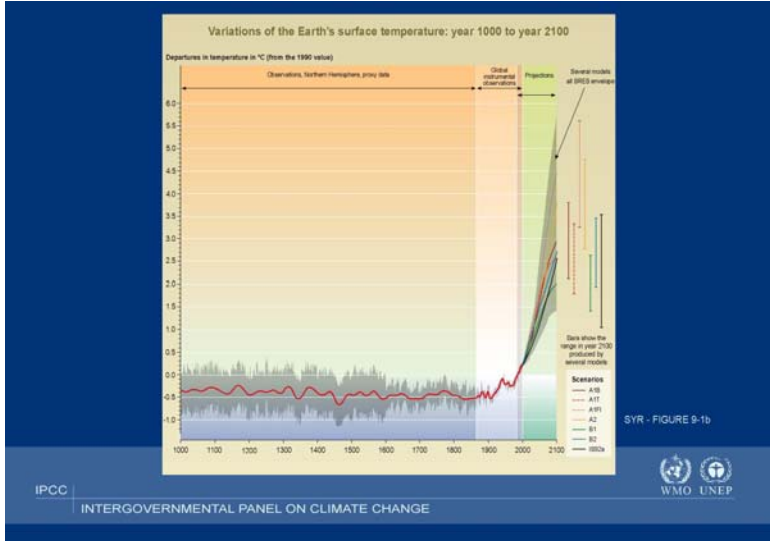
DOUBLE CROP

COST OF WATER / INSECTICIDE





For example: Or whole sector might change its focus because there is money to be made in energy



Impact on agriculture

ENERGY PRODUCTION

FOOD PRODUCTION

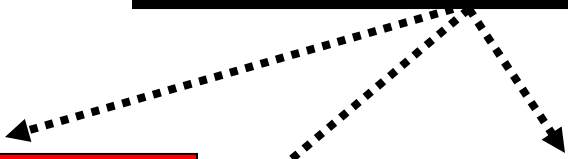
ENERGY SECURITY

FOOD SECURITY

NATIONAL SECURITY

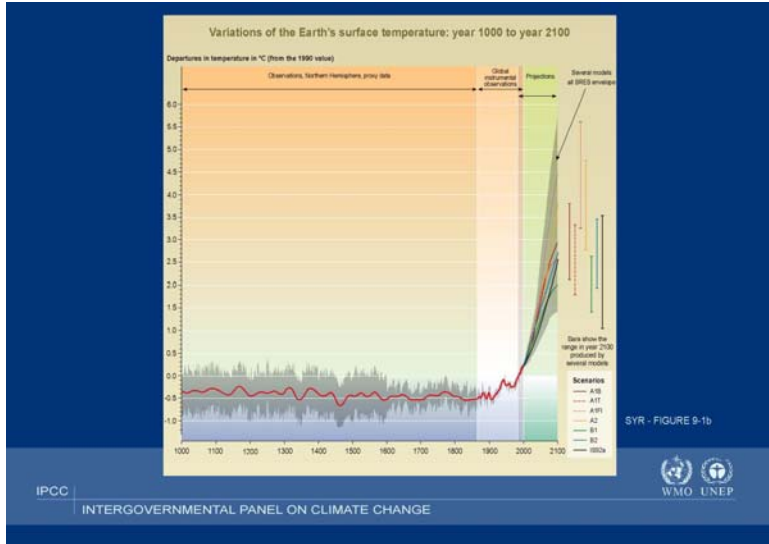
NATIONAL SECURITY

GLOBAL TRADE

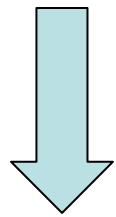




Predictions motivate action



How should we respond to the predictions?



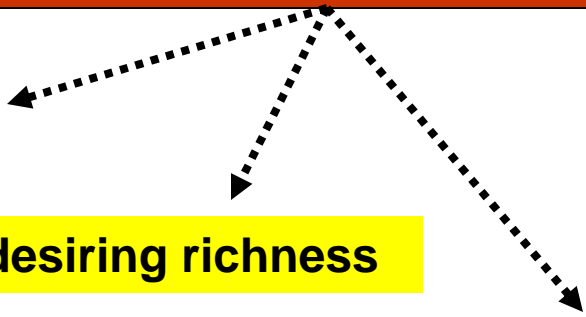
How we respond depends very much on the current capabilities of the society or nation

Rich, technologically advanced

Resource rich, desiring richness

Ethics // Equality // Liability

Poor, low technologically





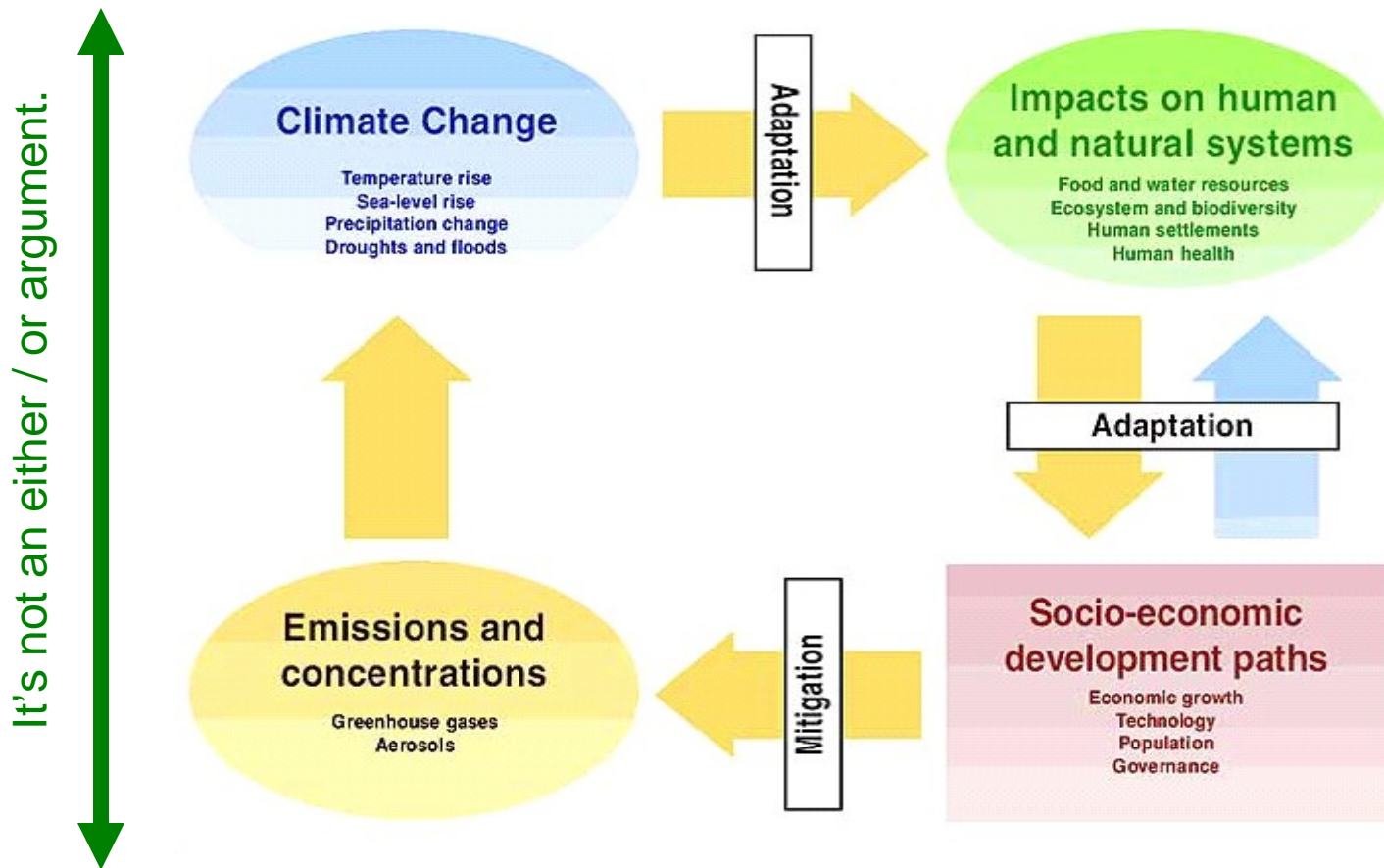
Some definitions

- **Mitigation:** The notion of limiting or controlling emissions of greenhouse gases so that the total accumulation is limited.
- **Adaptation:** The notion of making changes in the way we do things to adapt to changes in climate.
- **Resilience:** The ability to adapt.
- **Geo-engineering:** The notion that we can manage the balance of total energy of the atmosphere, ocean, ice, and land to yield a stable climate in the presence of changing greenhouse gases.



Science, Mitigation, Adaptation Framework

Adaptation is responding to changes that might occur from added CO₂



Mitigation is controlling the amount of CO₂ we put in the atmosphere.



Thinking about ADAPTATION

- Adaptation: What people might do to reduce harm of climate change, or make themselves best able to take advantage of climate change.
 - Autonomous that people do by themselves
 - Can be encouraged by public policy
 - Command and control tell you to do it
 - Incentives
 - Subsidies
 - Can be anticipatory or reactive
- Adaptation is local; it is self help.
- Adaptation has short time constants - at least compared to mitigation → Hence people see the need to pay for it.
- Some amount of autonomous-reactive adaptation will take place.
 - [Moving villages in Alaska](#)



Thinking about MITIGATION

- Mitigation: Things we do to reduce greenhouse gases
 - Reduce emissions
 - Increase sinks
- Mitigation is for the global good
- Mitigation has slow time constants
- Mitigation is anticipatory policy
- This is the “second” environmental problem we have faced with a global flavor.
 - Ozone is the first one. Is this a good model?



About Ozone

- Ozone was predicted to decrease incrementally because, primarily, of catalytic destruction by chlorine released from destruction of chloroflourocarbons.
 - Many of the same types of arguments for and against regulation.
 - Montreal protocol was developed
- The world mobilized to save ozone in the mid-1980s
 - Ozone hole (abrupt surprise!)
 - Smoking gun cause and effect linking chlorine to ozone destruction
 - Public health
 - Profitable alternatives to chloroflourcarbons
 - Business benefit
- Are all of these ingredients needed?



About the Global Good

- from the world of business ...
 - [Corporate Strategies for Climate Change](#)
Andrew Hoffman, Pew, 2006
- Global good without benefit to the bottom line profit is a poor motivator.
 - Coupled with benefit to the bottom line great motivator



About the Global Good

- from the world of faith ...
 - [Faith Community](#)
- Global good from a perspective that might be independent of the bottom line profit

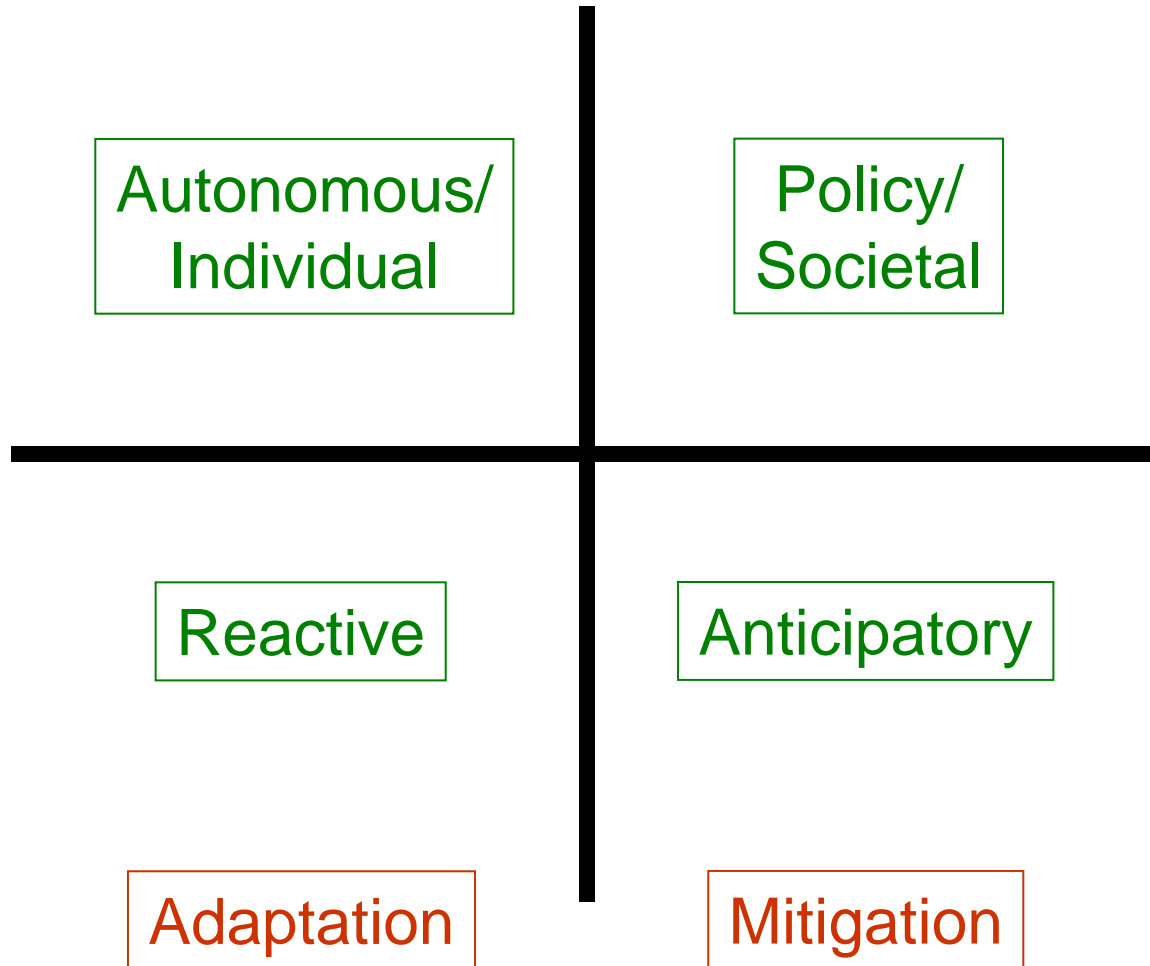


Some Mitigation-Adaptation considerations

- Those who are rich and technologically advanced generally favor adaptation; they feel they can handle it
 - Plus, technology will continue to make fossil fuel cheap, but with great(er) release of CO₂
- Those who are poor and less technologically advanced generally advocate mitigation and sharing of adaptation technology
- Emission scenarios don't matter for the next 50 years.
- There are a lot of arguments, based on economics, that lead towards adaptation
 - Mitigation always looks expensive, perhaps economically risky, on the time scale of 50 years.
 - Adaptation looks easier because we will know more
 - This will remain true as long as the consequences seem incremental and modest
 - The Innovators Dilemma, evolution vs revolution?



Responses to the Climate Change Problem





Some Basic Management Tenets

WHERE
WE ARE
NOW

WHERE
WE ARE
GOING

WE WILL GET DESIRED RESULT AS A
BENEFIT OF WHERE WE ARE GOING.

THIS APPROACH INCREASES RISK OF
NOT GETTING THE DESIRED RESULT,
BECAUSE THE "COST" OF DESIRED
RESULT IS NEVER INTEGRATED INTO
THE PROCESS

DESIRED
RESULT



TRYING TO BE CLEAR

WHERE
WE ARE
NOW

ENERGY
SECURITY

WE WILL GET REDUCED CARBON FROM QUEST
FOR ENERGY SECURITY – ENERGY POLICY.

CARBON REDUCTION DOES NOT
AUTOMATICALLY FOLLOW FROM SOLVING
THE ENERGY PROBLEM. CARBON
REDUCTION ALSO NEEDS TO BE A
REQUIREMENT → NEED CARBON POLICY

CARBON
REDUCTION



Basic Management

- If there is a goal which you must meet, then you need to manage towards that goal.
 - If the goal is critical to success,
 - If the goal must be met on some schedule,
 - then this raises the level of management that is needed.

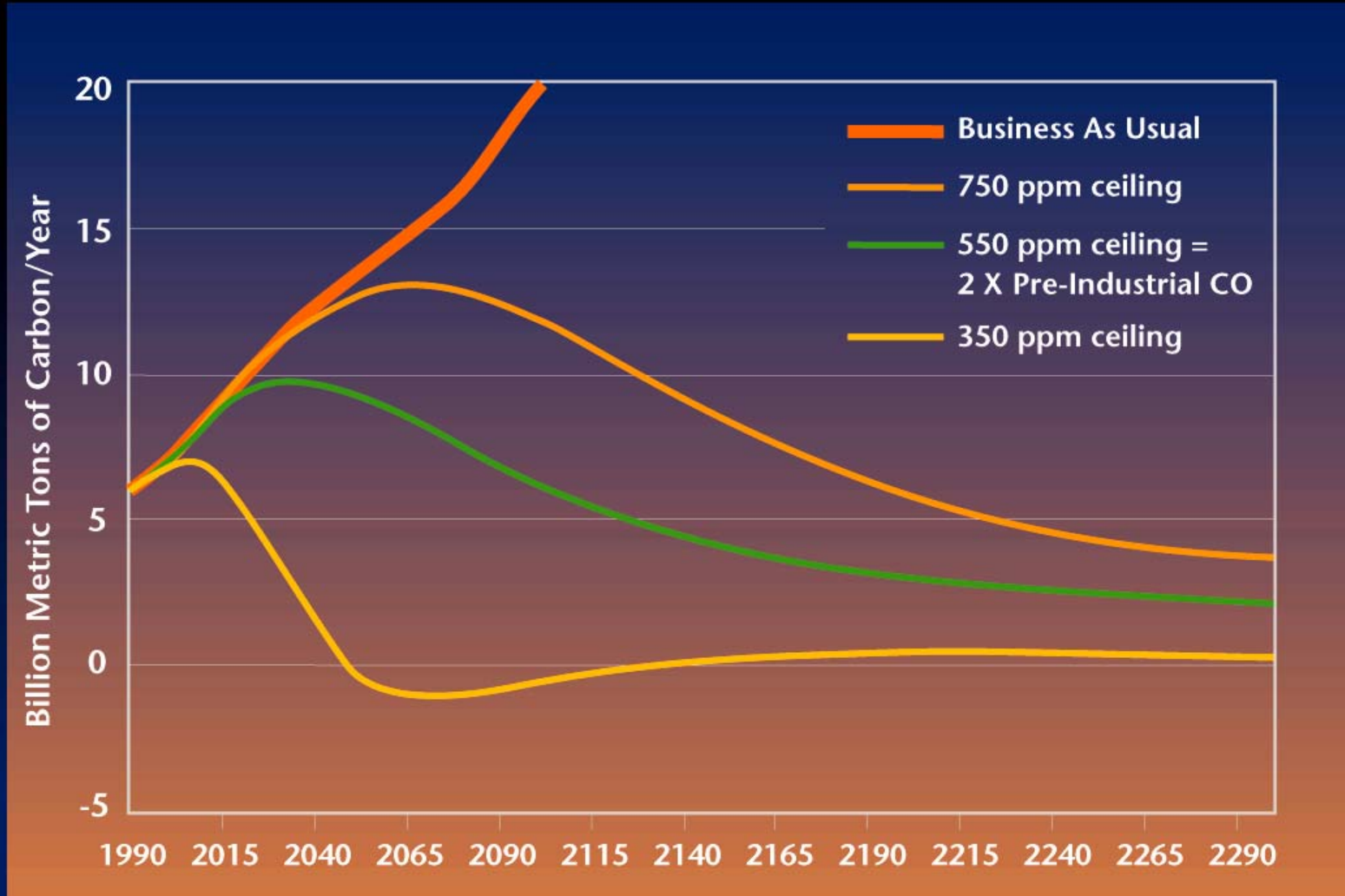


NEED CARBON POLICY

- We need a carbon policy which is integrated with energy policy.
 - Some alternative energy sources don't do a whole much for reducing carbon dioxide in atmosphere.
 - Coal is viewed as our easy energy security
 - Without sequestration (carbon removal), coal makes the problem worse.
- Concern: Quest for energy security-national security, demand for cheap energy will reduce priority we give to reduction of carbon dioxide in the atmosphere.

Basic constraint on carbon policy

Atmospheric Stabilization Emissions Paths





Basic constraint on carbon policy

Stabilizing concentrations Means Action Now ...

Ceiling (ppmv)	350	450	550	650	750
Start Date	Too late	2007	2013	2018	2023
Max Emission	6.0	8.0	9.7	11.4	12.5
Max Year	2005	2011	2033	2049	2062

1950 – 1.8 tons // 1990 – 5.8 tons // 2000 – 6.5 tons



TO BE CONTINUED
