# CNAS Climate War Game

Balaton 2008
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http://blog.metasd.com/category/clout-climate-change/

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# Contributors

- Delivery
  - CNAS – Center for a New American Security
  - ORNL, Pew Climate, SI, others
- Participants
  - NGOs
  - Media
  - Military
  - Government

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# UN Secretary General's State of the Atmosphere Briefing

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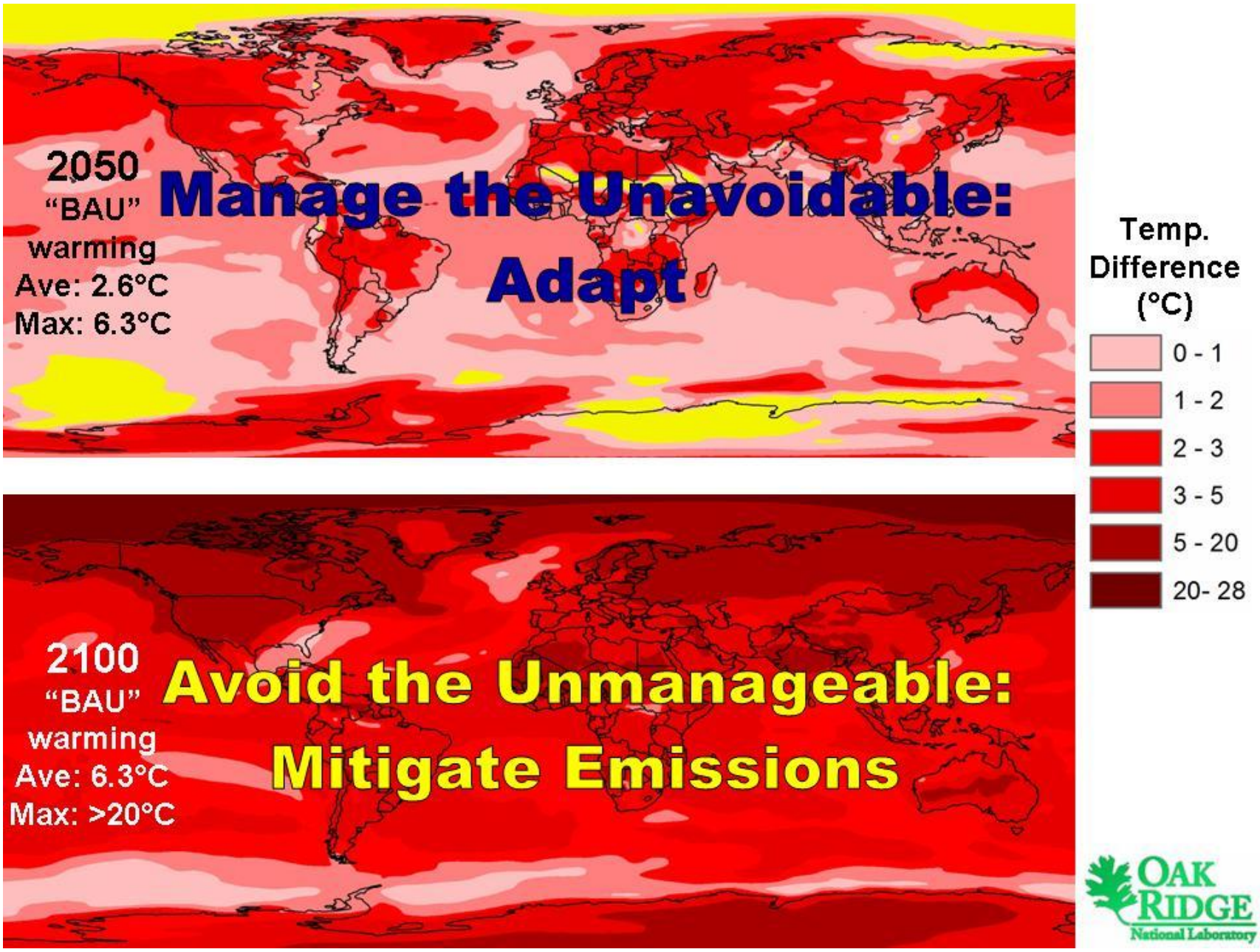
2050
"BAU"
warming
Ave: 2.6°C
Max: 6.3°C
Manage the Unavoidable:
Adapt
2100
"BAU"
warming
Ave: 6.3°C
Max: >20°C
Avoid the Unmanageable:
Mitigate Emissions
Temp.
Difference
(°C)
0 - 1
1 - 2
2 - 3
3 - 5
5 - 20
20- 28
OAK
RIDGE
National Laboratory

# Scenario

- 2015
- Copenhagen commitments were significant, but no one is meeting them
- Dual focus:
  - Get mitigation back on track
  - Deal with emerging impacts: refugees, water, adaptation aid

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# Our Hypothesis
(SI/Ventana)

- Decision makers don’t have an operational understanding of the “bathtub dynamics” of carbon accumulation and temperature change
- Even if they did, determining in real time whether national commitments add up to a meaningful global outcome requires a decision support tool

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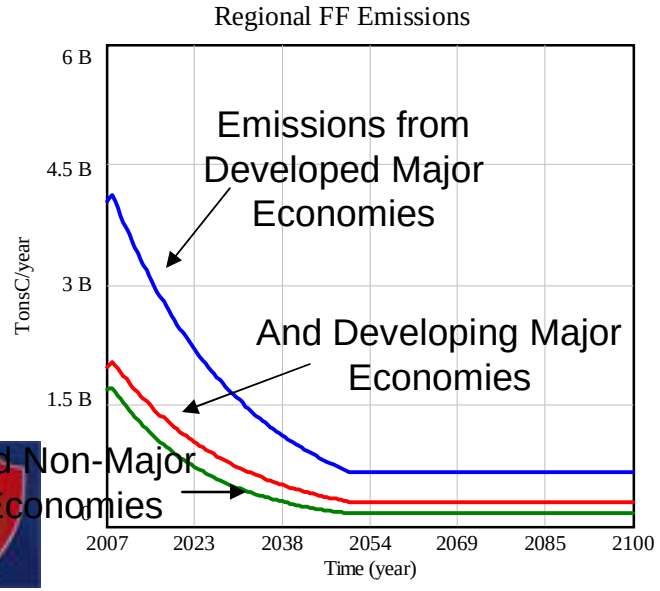
# Purpose of Simulator: Help Decision-makers Understand Dynamics of Climate Mitigation

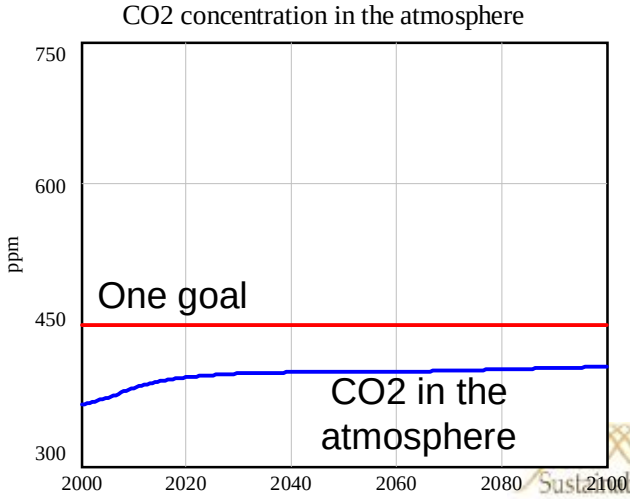
## Inputs

- Fossil fuel emissions by countries or “economy group”
- Land use emissions
- Additional sequestration from aforestation
- Other greenhouse gas emissions

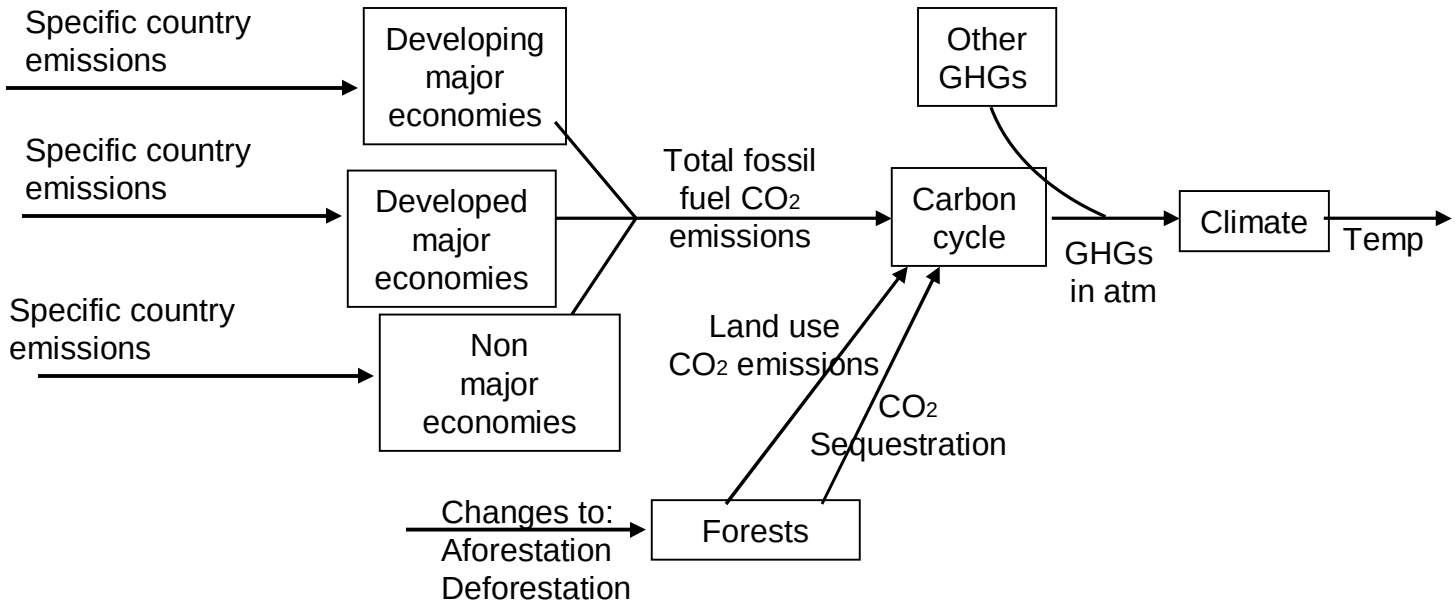
## Outputs

- $CO_2$ in the atmosphere
- Global temperature
- Total emissions
- Total removals to oceans, biomass etc.



# Model Structure

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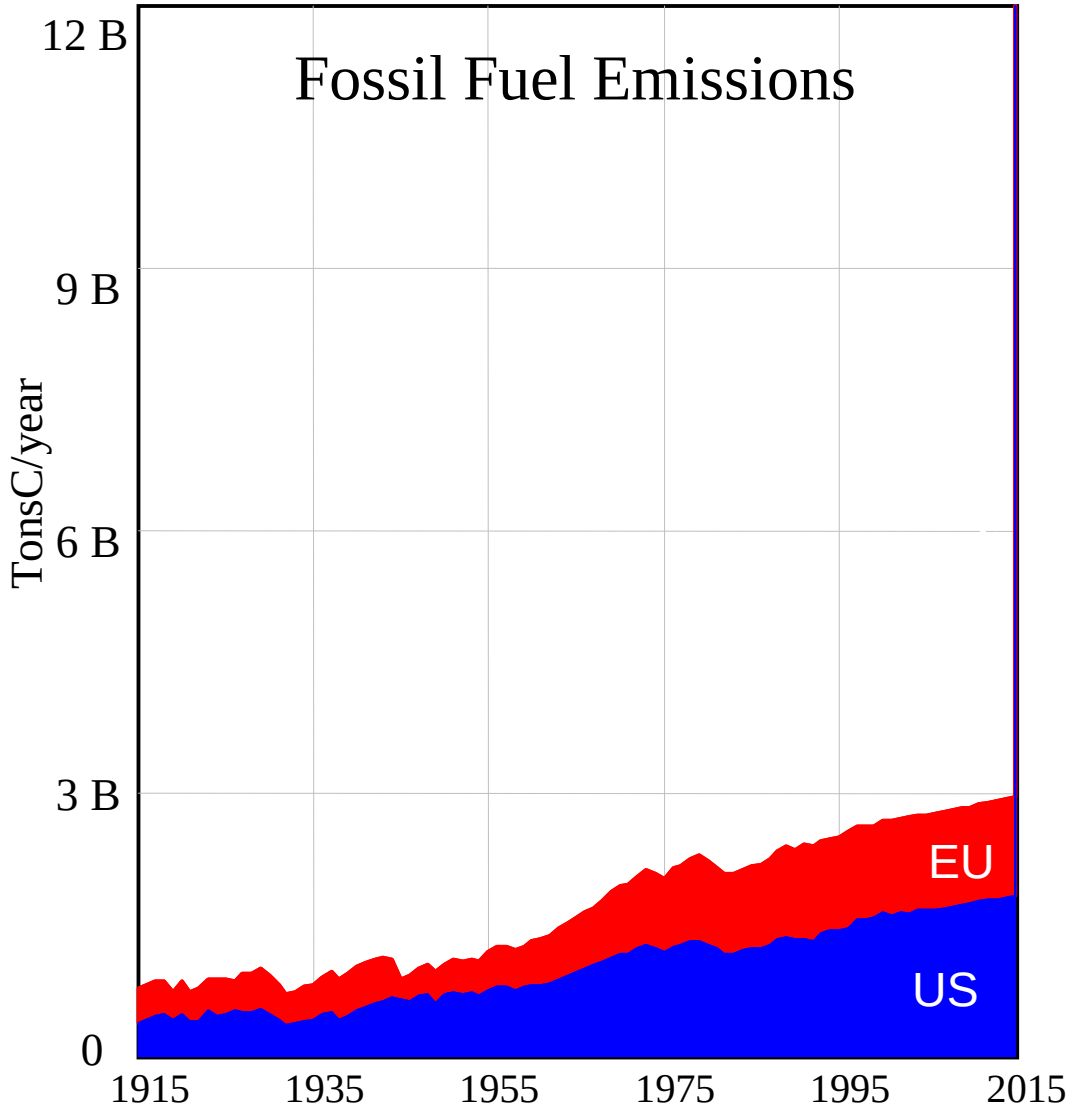
# US and EU: Steady Growth in Emissions




Source: CDIAC, WEO, Pangaea

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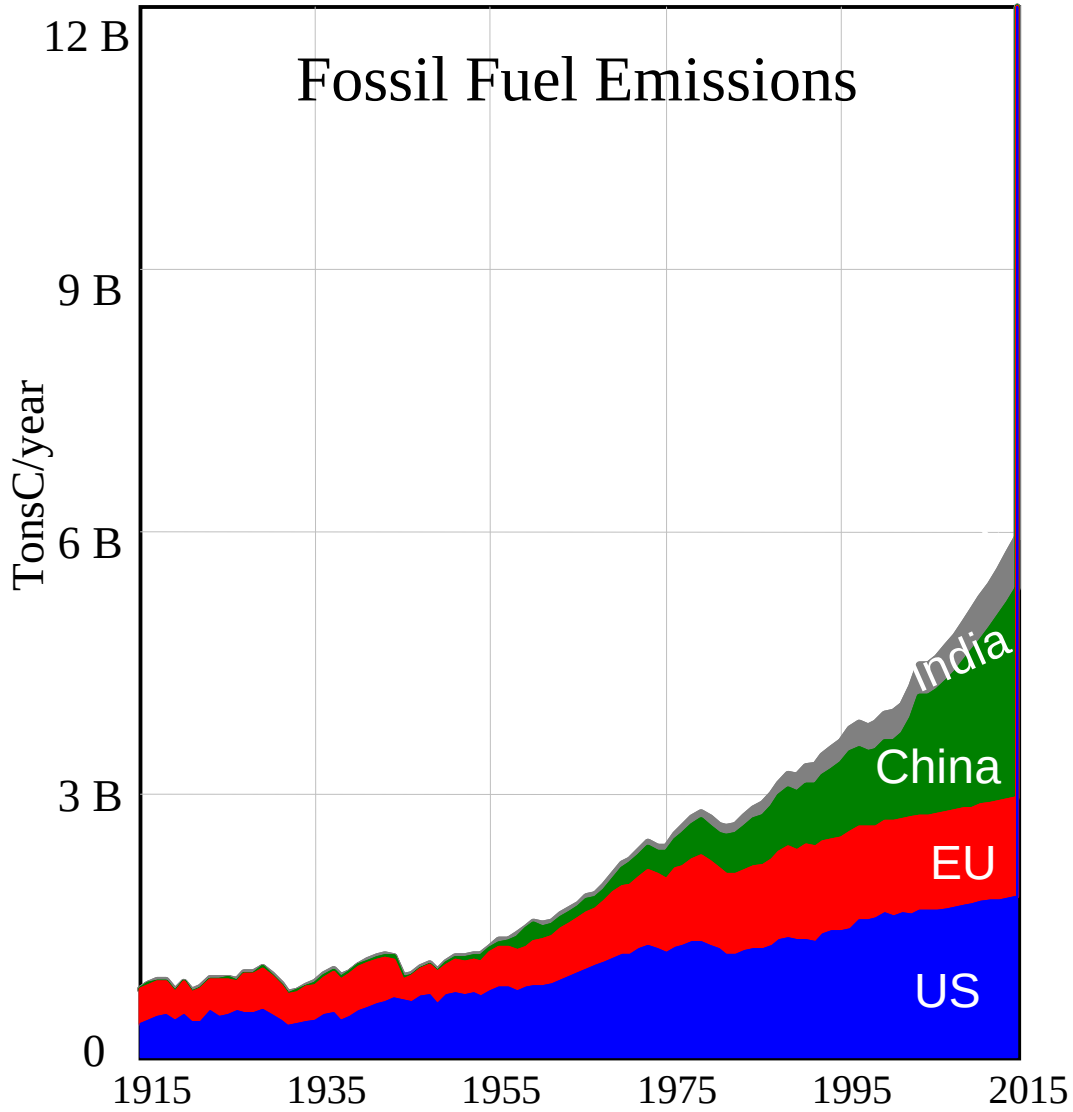
# China and India: Emissions Rising




Source: CDIAC, WEO, Pangaea

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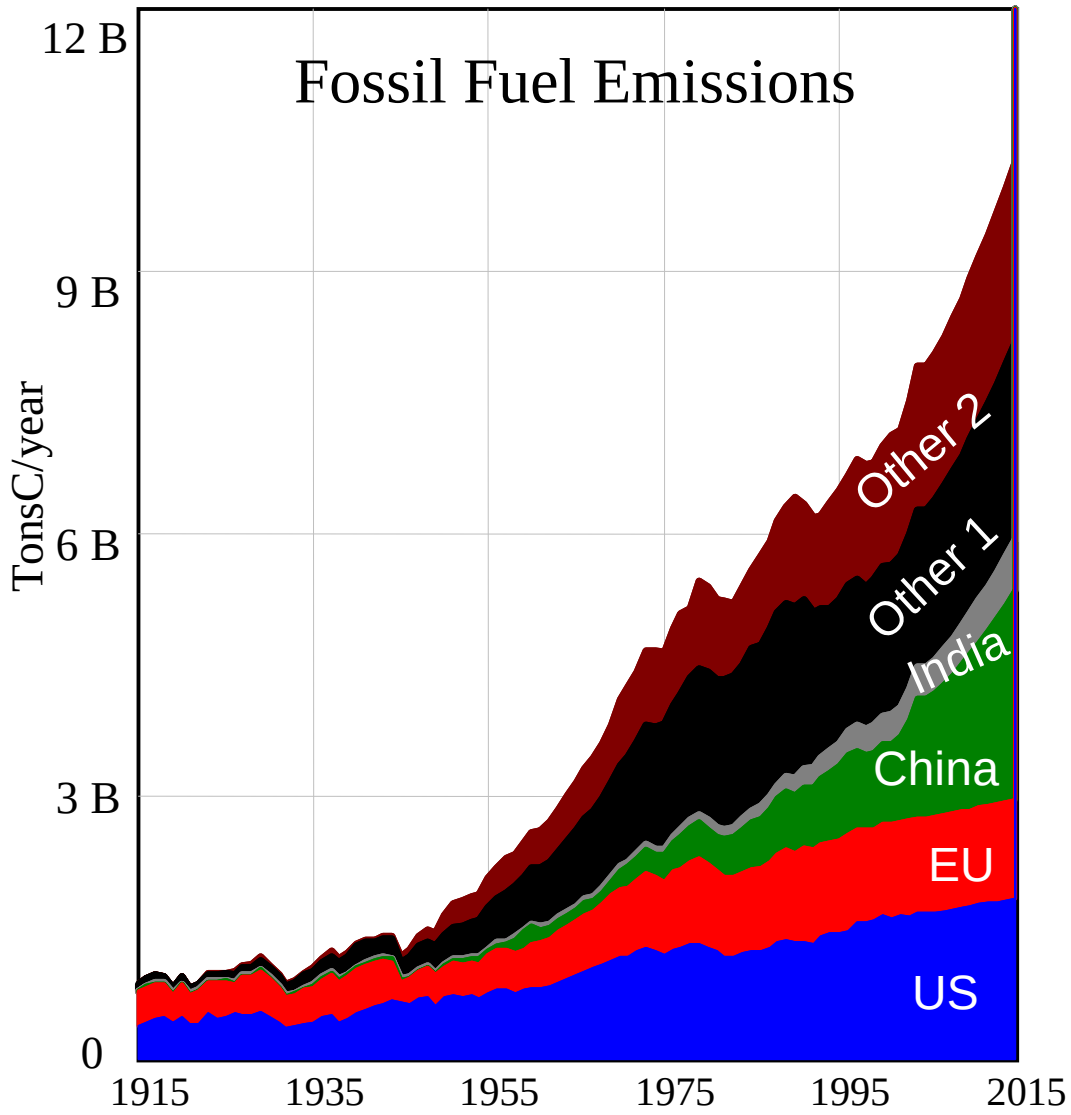
# Rest of World Emissions Rising




Source: CDIAC, WEO, Pangaea

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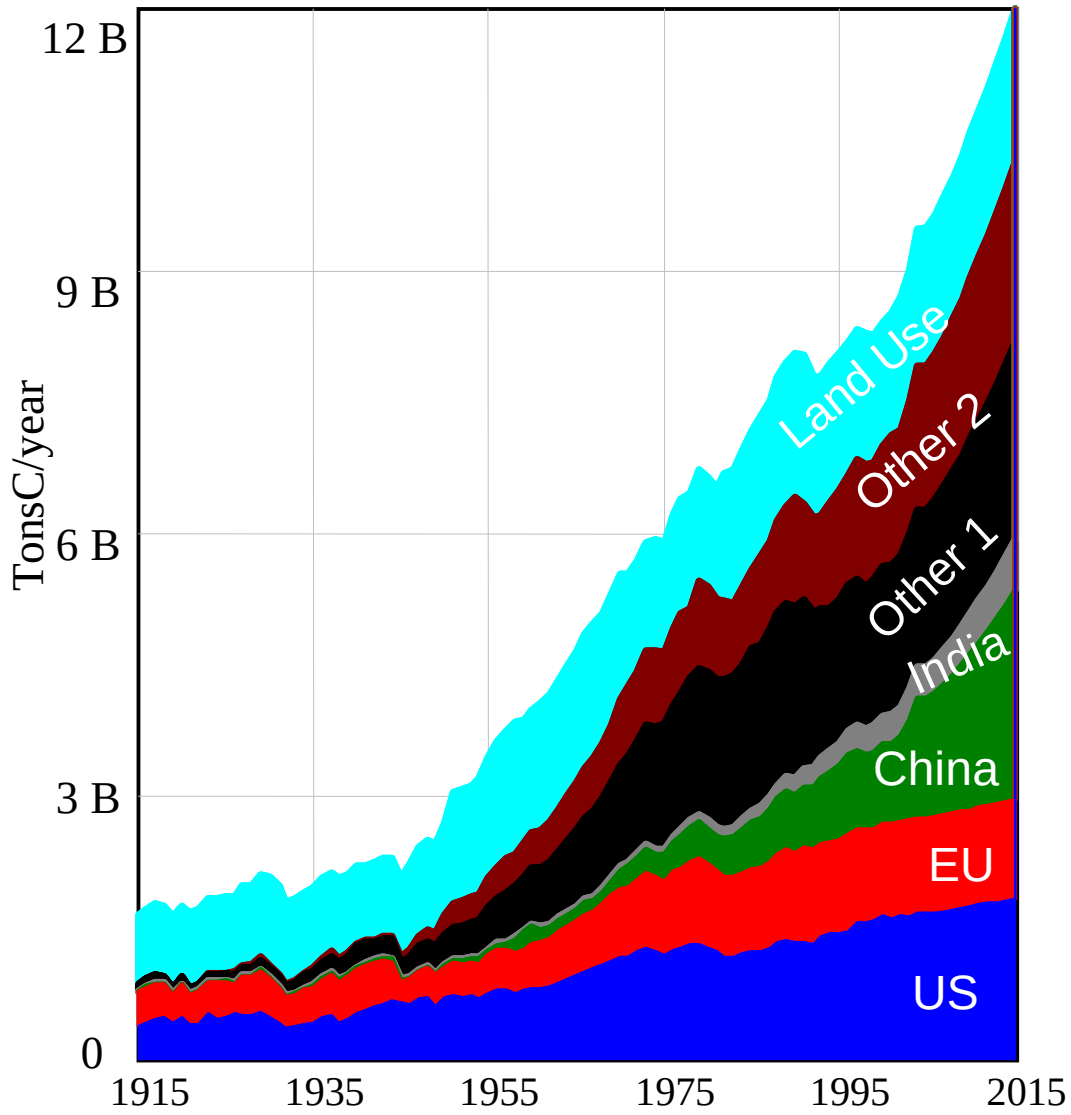
# Emissions from Global Deforestation




Source: CDIAC, WEO, Pangaea

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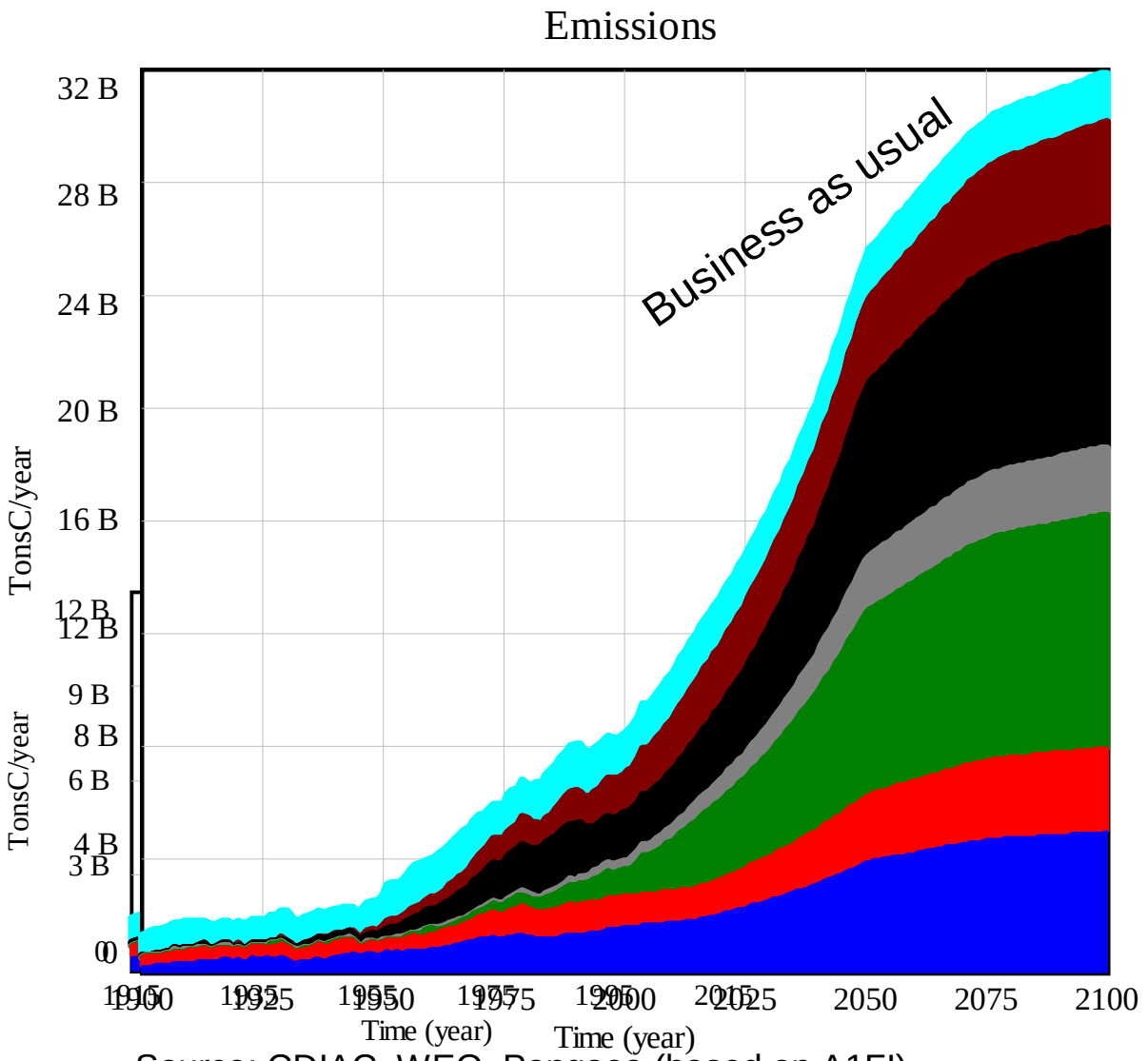
# Emissions Trends to 2100




Source: CDIAC, WEO, Pangaea (based on A1FI)

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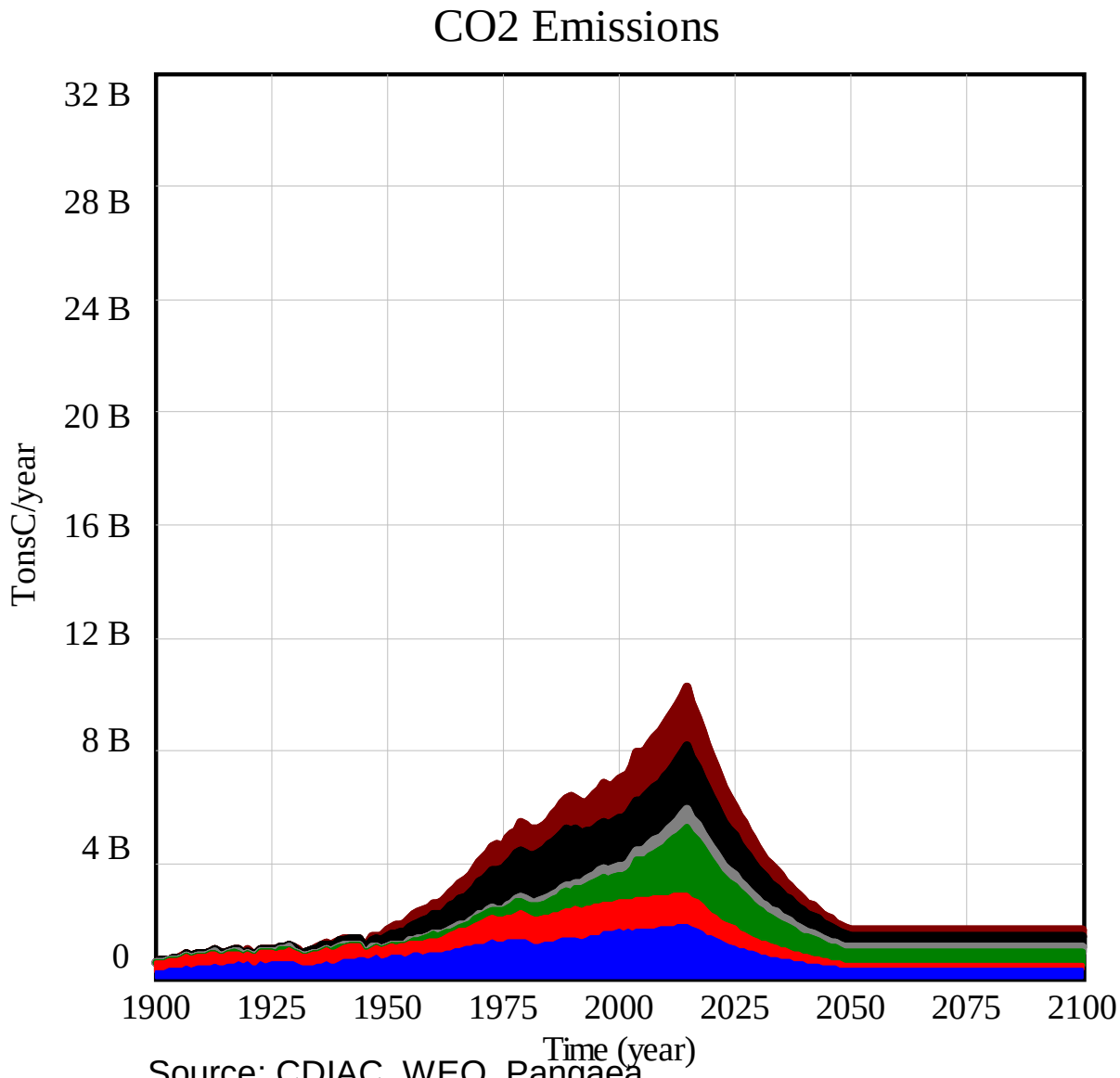
# 80% Reduction by Nation




Source: CDIAC, WEO, Pangaea

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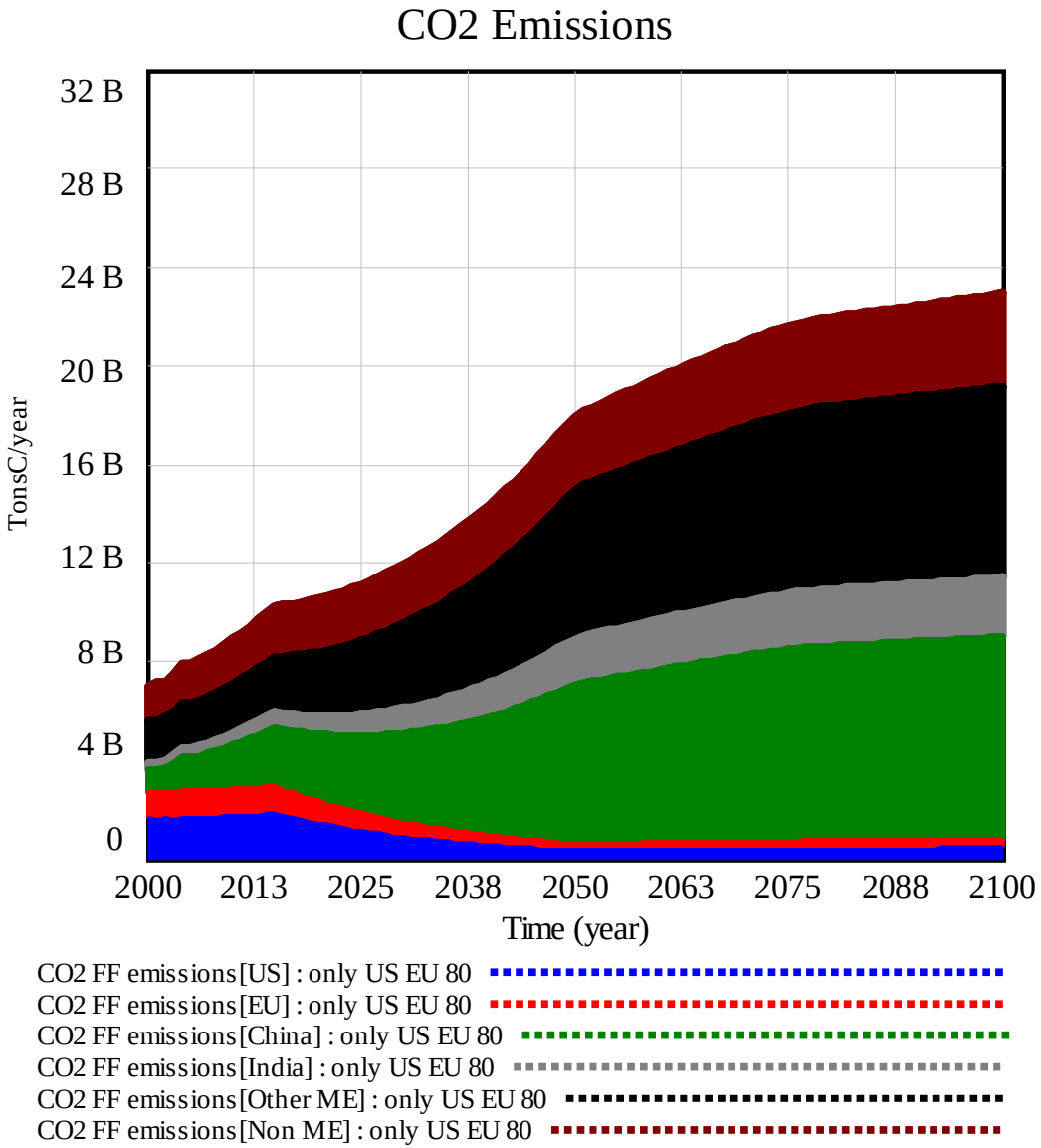
# What if Only the US and EU Act? ("only US EU 80")

US and EU reduction

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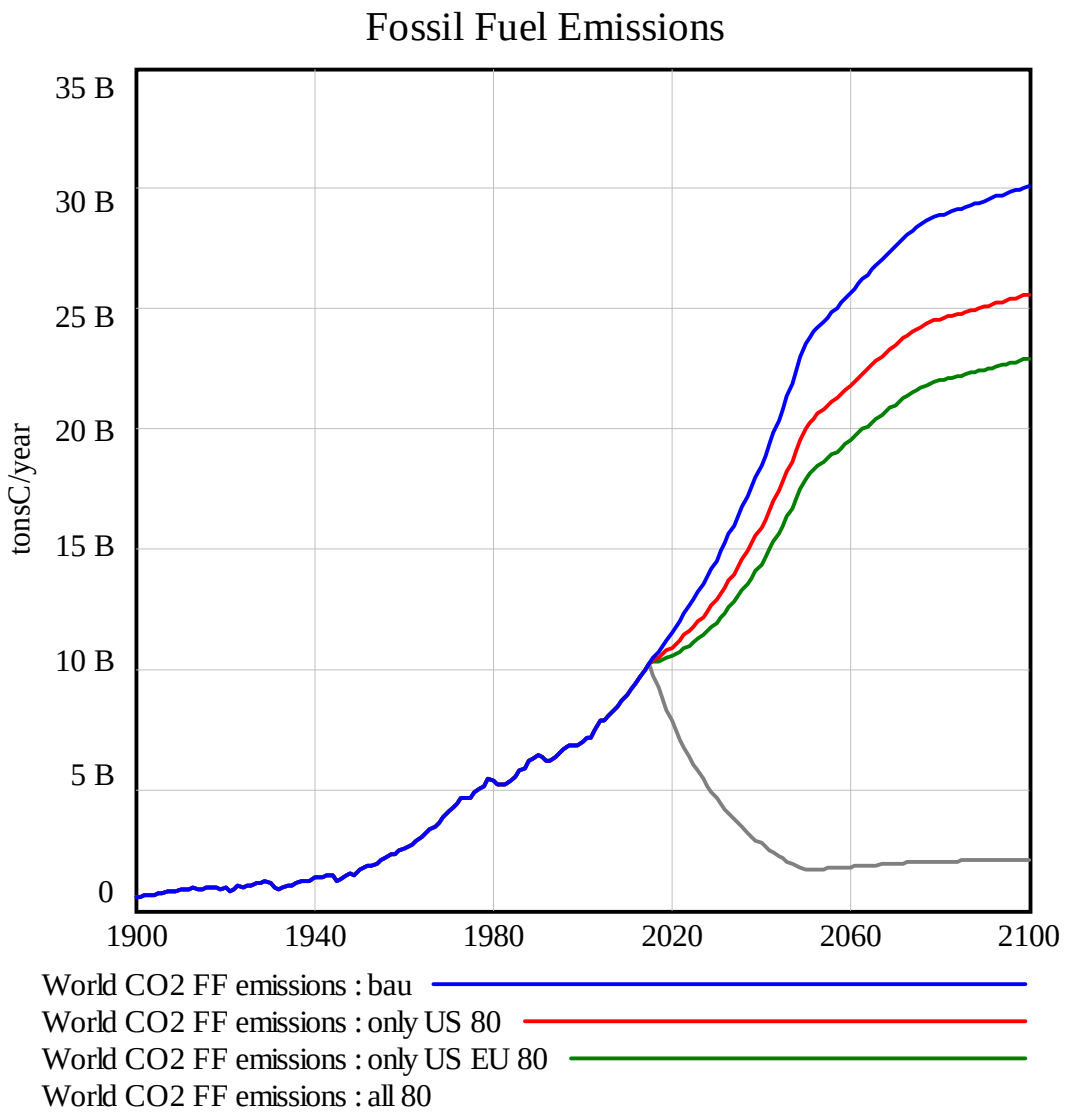
# Total Fossil Fuel Emissions Would be Less than BAU, But Much More than the Goal

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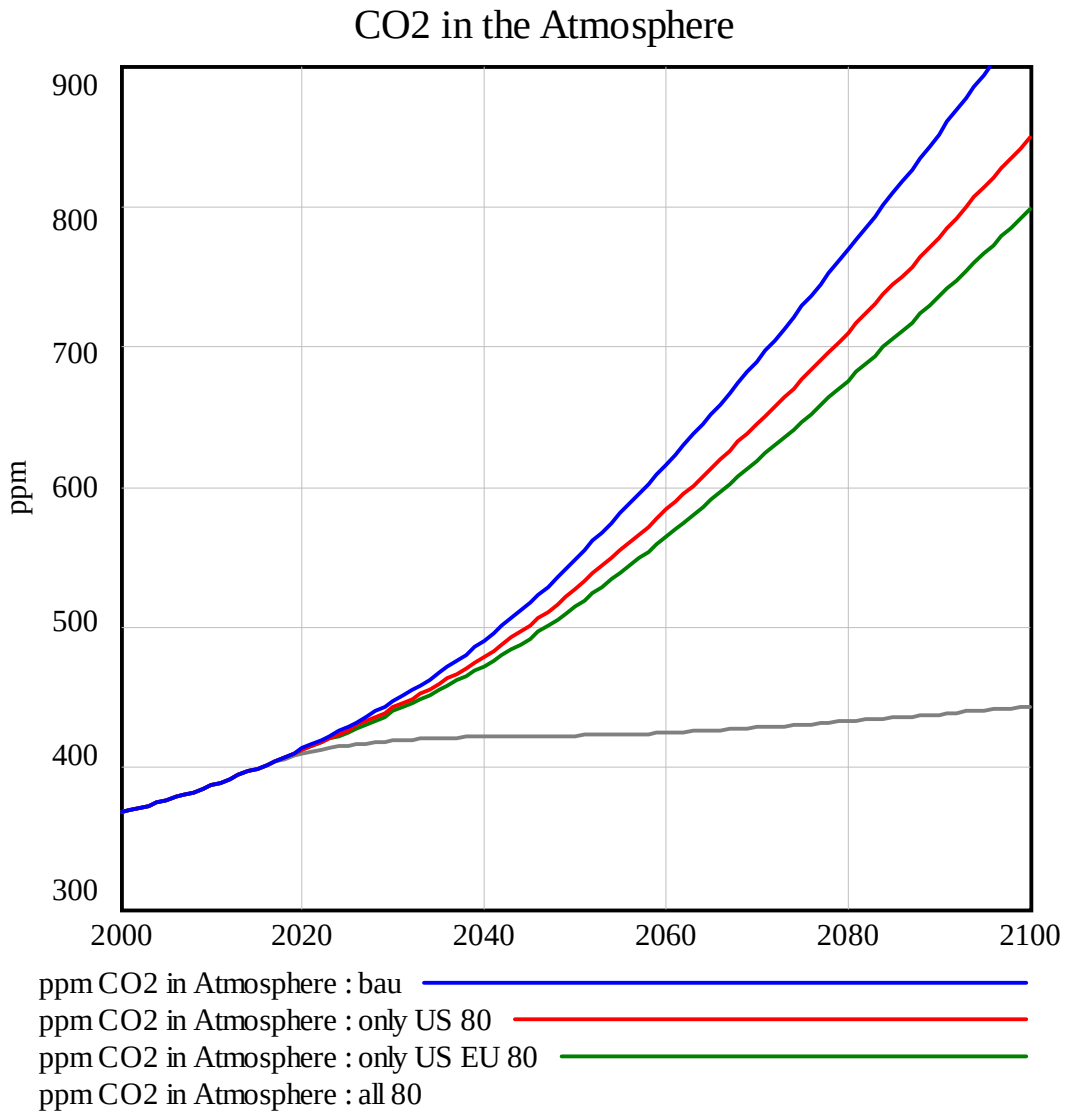
# CO2 Levels Would Grow at a Slower Rate But Not Stabilize

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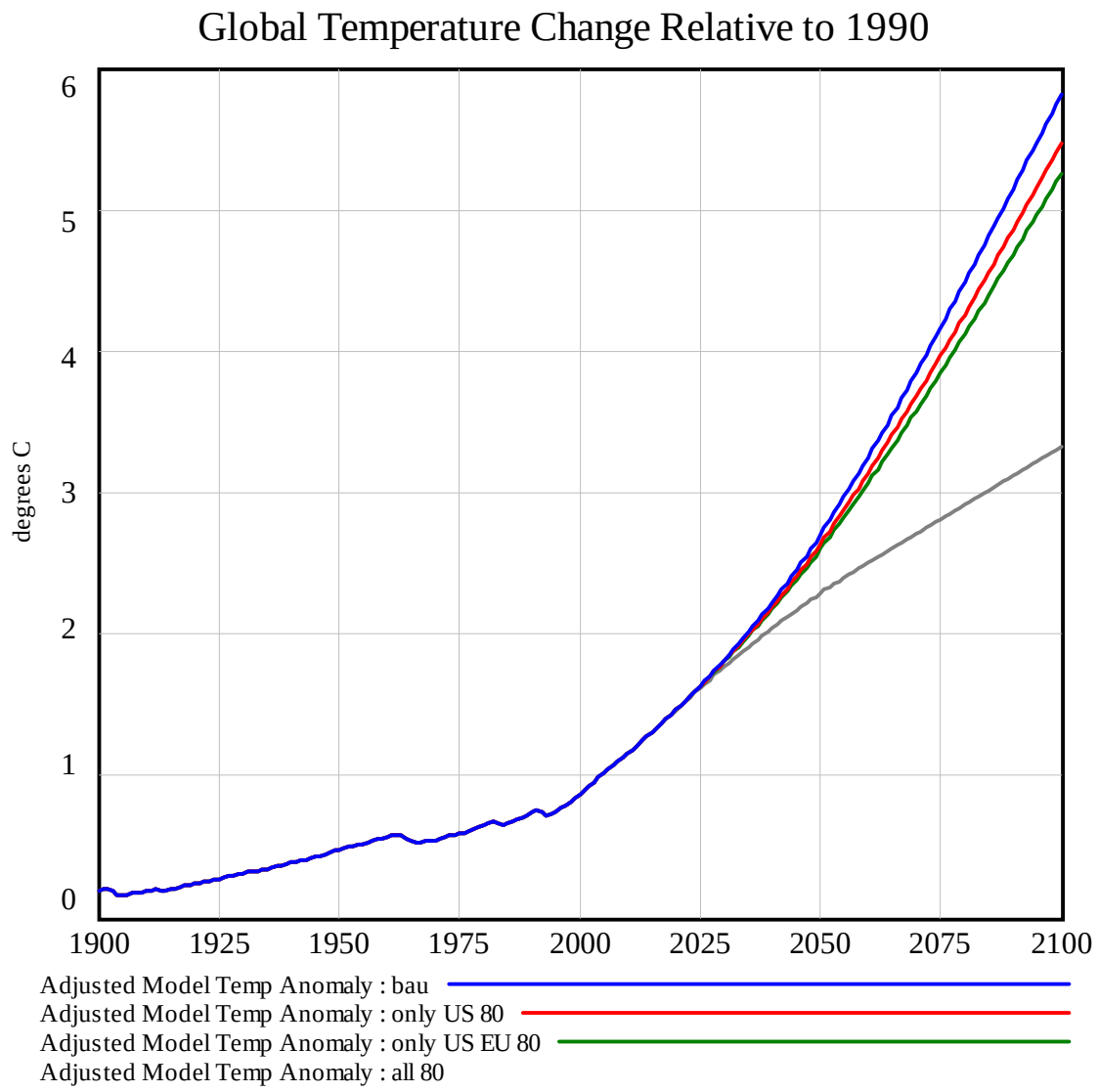
# Temperature Would Differ Little from BAU

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# Observations

- Useful components
  - Data
  - Baseline generation
  - Target experimentation
- Challenges
  - Too many possible commitment permutations to anticipate with an interface
  - Need representation of uncertainty

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# Observations II

- Players took the game very seriously
- Stark contrast between opening positions and stabilization needs
- Difficulty talking about 2050 targets
- Large appetite for information (e.g., cost curves) that doesn't exist
- "Grow to help the poor" not questioned
- Hard to connect adaptation to responsibility

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# Observations III

- Equity considerations are used as a lever, but generally the conversation is practical more than ethical
- No non-climate limits; BAU growth engine works
- Possibility of cobenefits or negative-cost mitigation not considered
- Participants tend to rely on technology; no Plan B

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# Conclusion?

- Decision support around the impact of commitments is definitely useful; unclear who's the best target user (negotiator or NGO)
- Uncertainty is critical
- Is there an alternative to commitments that would be more robust?
- Is there an analog to "bathtub dynamics" that makes equity implications of decisions transparent?

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# Part II

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# How We Got Involved

- Drew/Tom build simple carbon cycle/temperature model
- Model provides scenarios for Climate Bathtub Simulator
- Drew meets Jay Gulledge, chief scientist at Pew Climate
- CNAS invites SI/Ventana to participate in wargame
- Lori/Drew/Tom retarget model at war game interface needs
- Oak Ridge National Lab vettes science
- Use model to produce briefing materials and mid-game assessment

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