

Societal expectations

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The centre Sept 07





What are societal expectations?

- **Wash me but don't make me wet?**
- **Everywhere but not in my backyard?**
- **Let the market decide?**
- **Let the politicians sort it out?**
- **Everything to everyone all the time?**
- **Eventually the world will be a better place?**
- **The Murphy paradigm rules the world?**





Our expectations on CCS

- **Contribute substantively to stay below 2 degree**
 - **Permanence, seepage,**
- **Does not create additional problems elsewhere**
- **Science based**
- **Can get started rather soon and globally**
- **Brings big bang for the bucket**
- **Is part of a global/regional policy move to RES, efficiency - just next generation power stations**



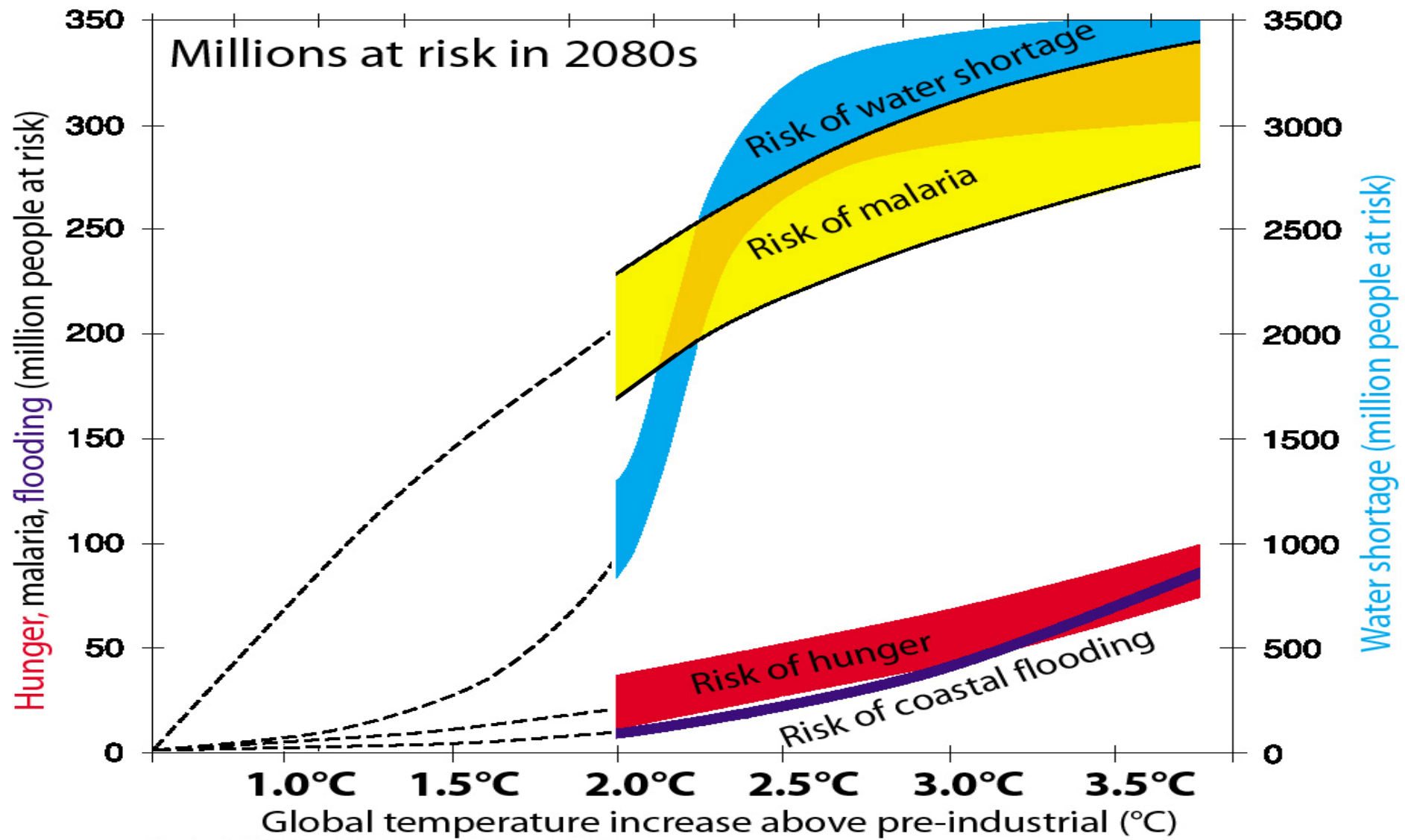


Question

Why this 2 degree mantra...why not staying well below 1.5 degree or 2.8 or even 4 degree?

What is the science base?





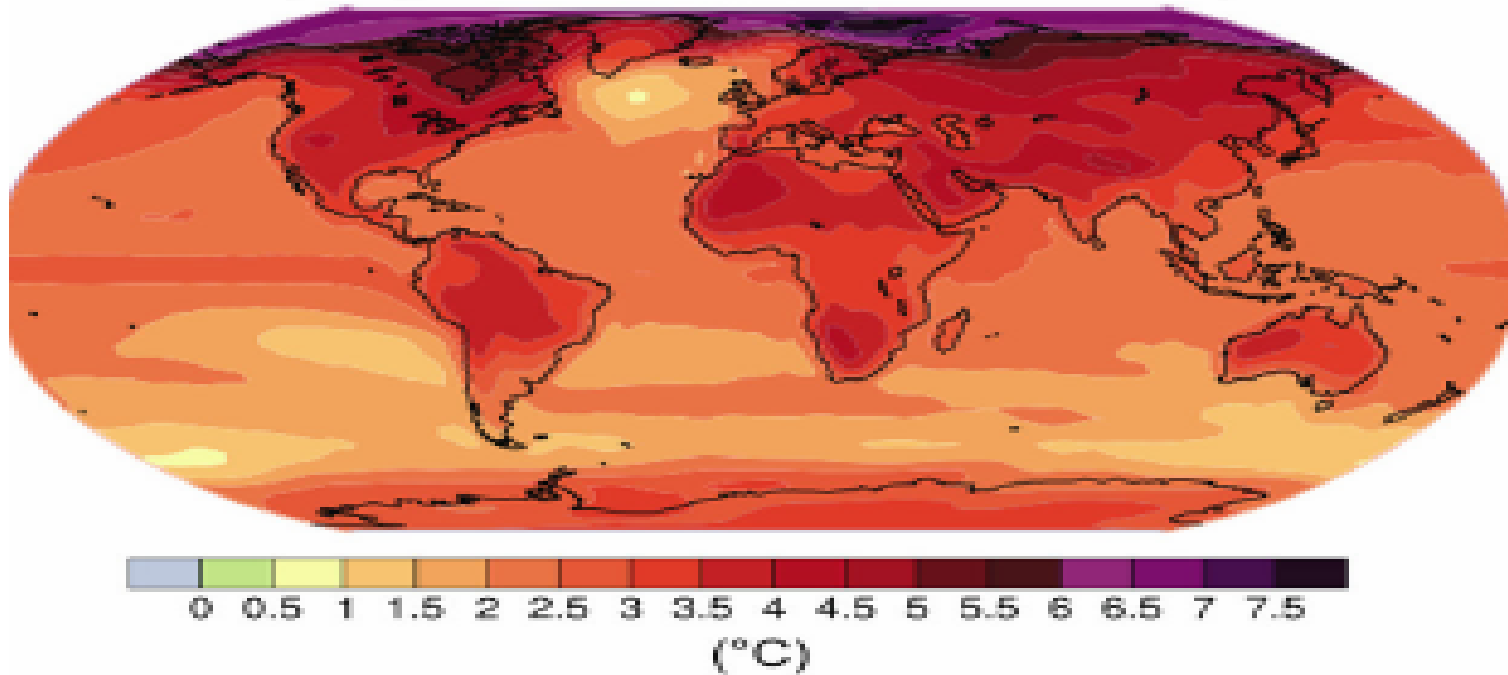
Source: Parry et al. (2001) "Millions at Risk" Glob. Env. Change. Graph adapted by M. Meinshausen
 Note: The original graph presented temperature levels above 1990, not above pre-industrial. Thus, a 0.6°C temperature difference has been added.
 Furthermore, the original graph presented temperature levels in 2080 for different CO₂ equivalence (I) stabilization scenarios.
 For a climate sensitivity of 2.5°C (as underlying the work of Parry et al.), the 2080 temperature level for the S550 CO₂eq emission path has been about 1.4°C above 1990 (2°C above pre-industrial).





Global warming is very unevenly distributed over the globe

Surface warming pattern
(A1B, 2090-2099 relative to 1980-1999)





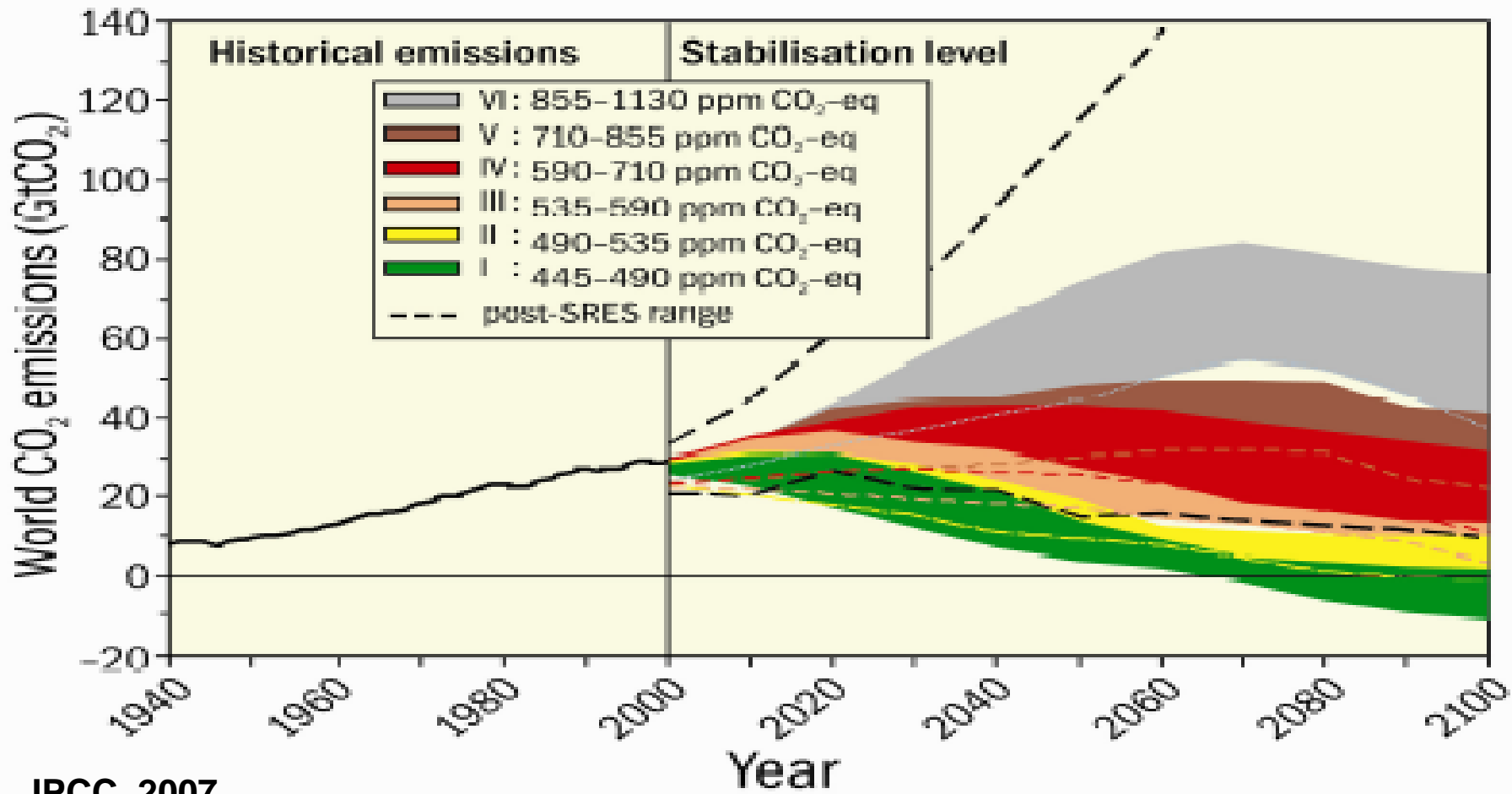
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Too late is too late!



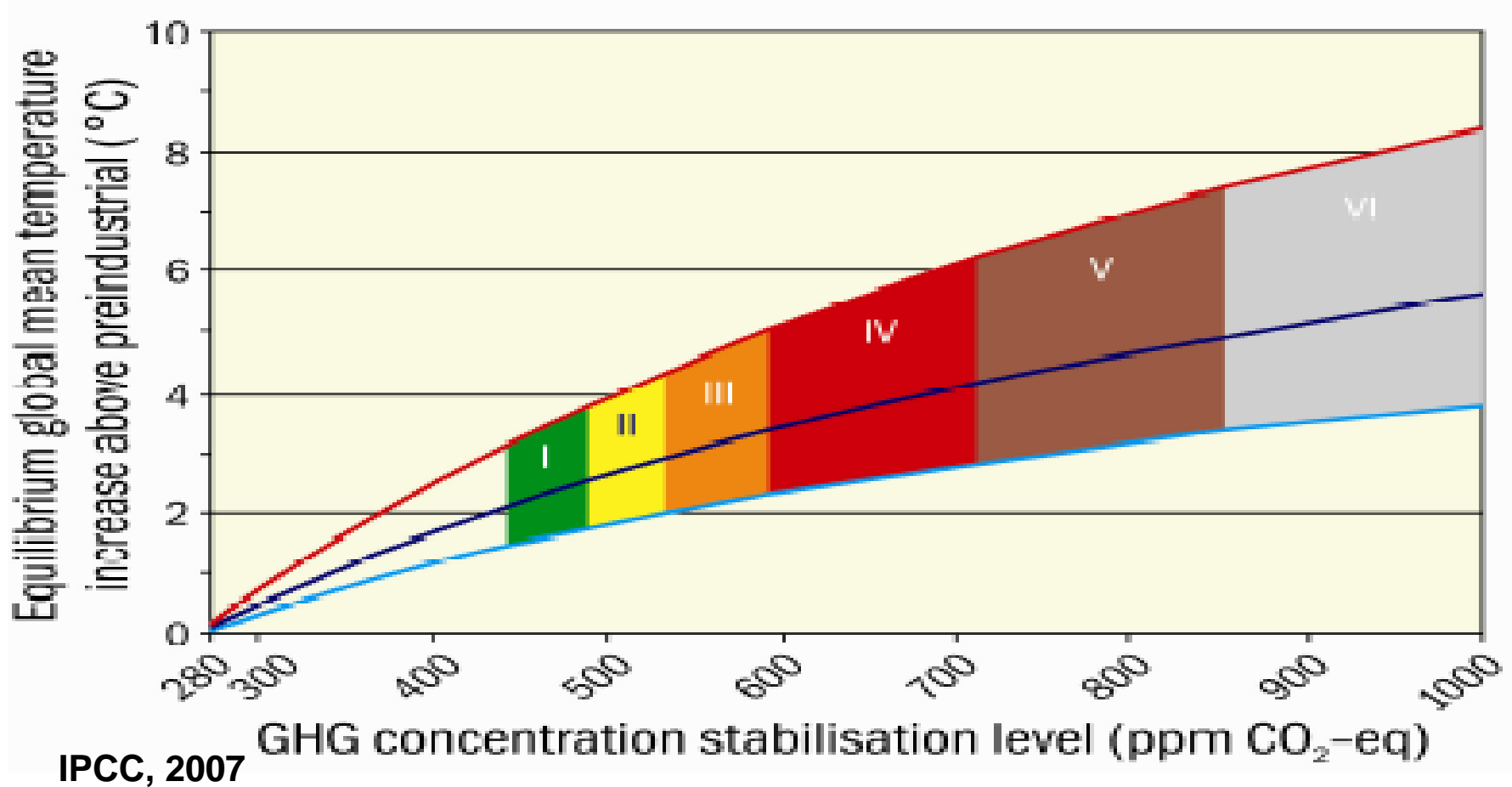


Low atmospheric concentration requires net zero emissions world by 2070





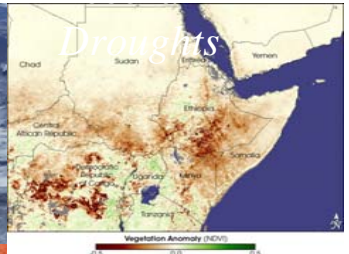
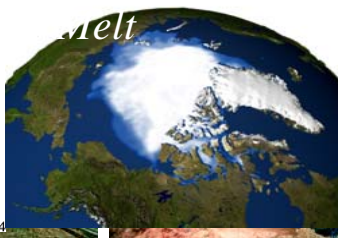
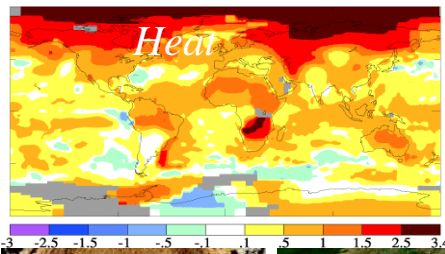
Low concentration scenarios have decent chance to deliver on <2 degree





The context and urgency

- To stay below 2 degrees C:
 - **Global** GHG emissions (+3%/a 2005) have to peak and decline in next 10 to 15 years
 - **Global** GHG emissions have to be reduced **by 80%** below 1990 levels by 2050 -
 - By 2050, this translates into **~100% GHG reductions for industrialised countries incl EU**
 - By 2050, this translates into **~60%GHG reductions for developing countries compared to today**





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Climate Solutions

**WWF's
Vision
for
2050**





WWF's Climate solutions choices - weighted wedges

Industrial Energy Efficiency & Conservation
Efficient Buildings
Efficient vehicles
Reduced use of vehicles
Aviation and shipping efficiency
Re-powering Hydro

Benefits >> Disbenefits

Sustainable Biomass
Wind power
Solar PV
Solar Thermal power
Solar Thermal Heat
Small Hydro
Geothermal (heat and power)
Tidal, Wave & Ocean Technologies
Hydrogen from Renewables
Large Hydro (existing plus sustainable)
CCS
Natural Gas Displacing Coal

Benefits > Disbenefits

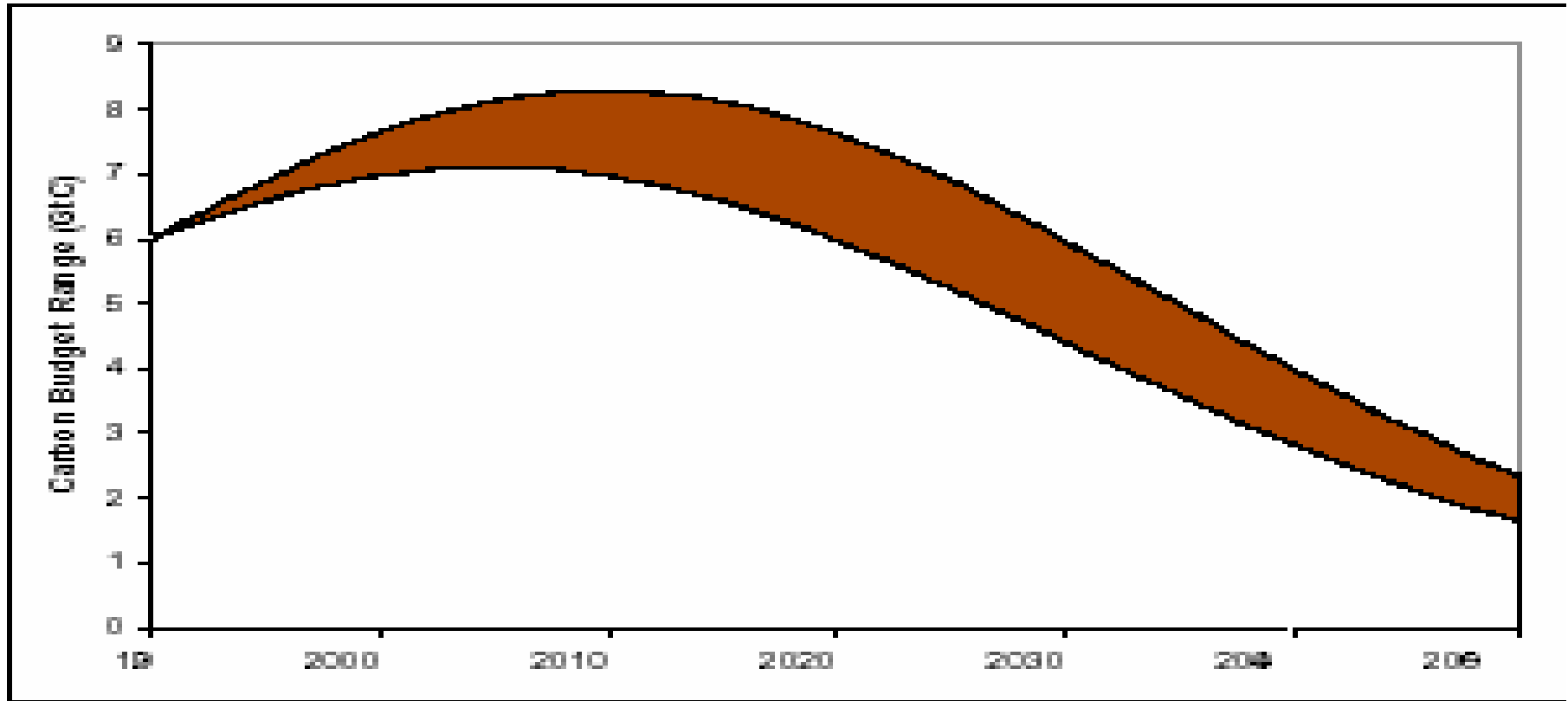
Unsustainable Biomass
Unsustainable Hydro
Nuclear

Benefits < Disbenefits



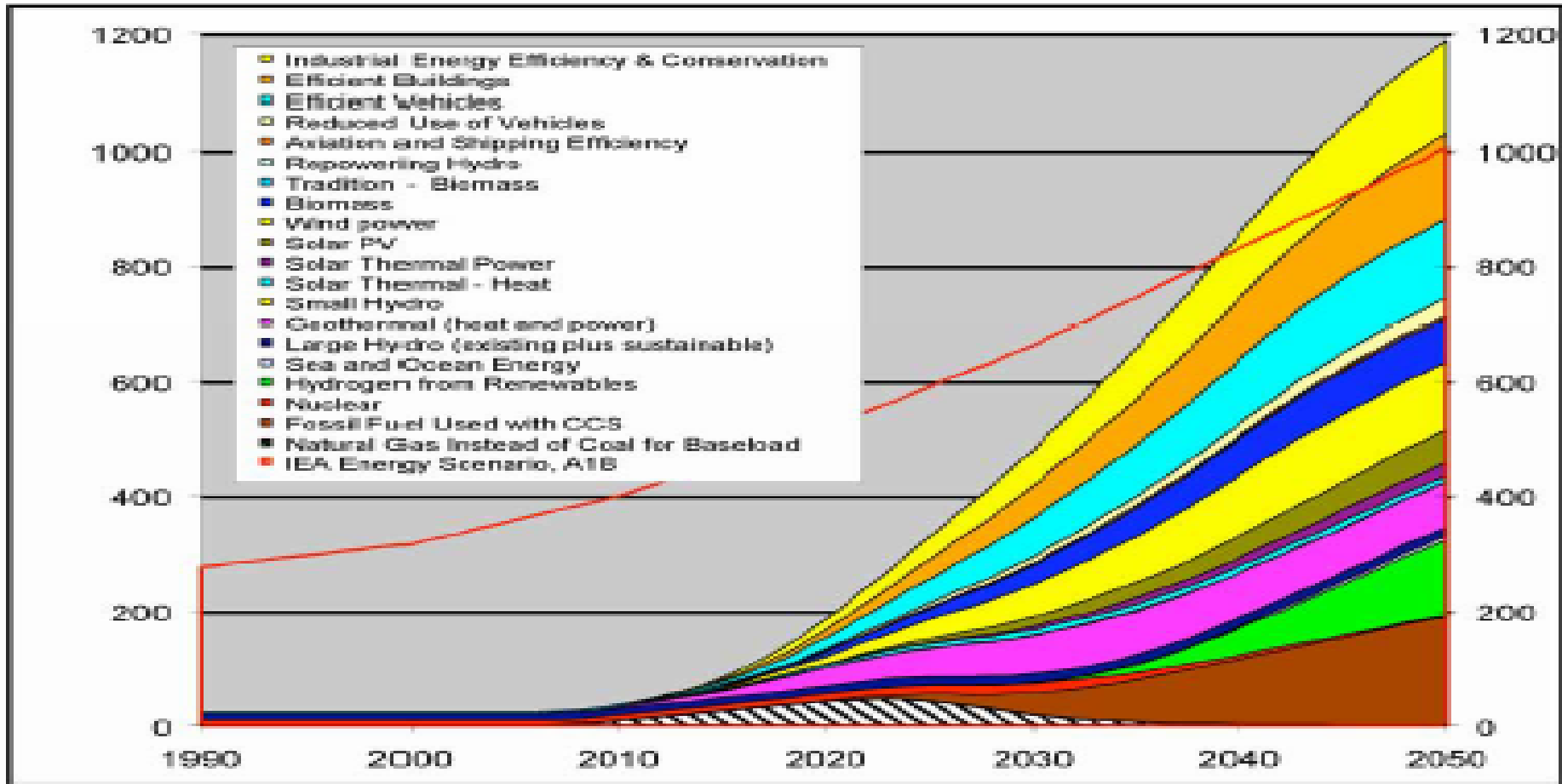


The energy solutions-based carbon range: 400 - 500 GtC between 2000 and 2200 - or max 2.5 GtC/y globally



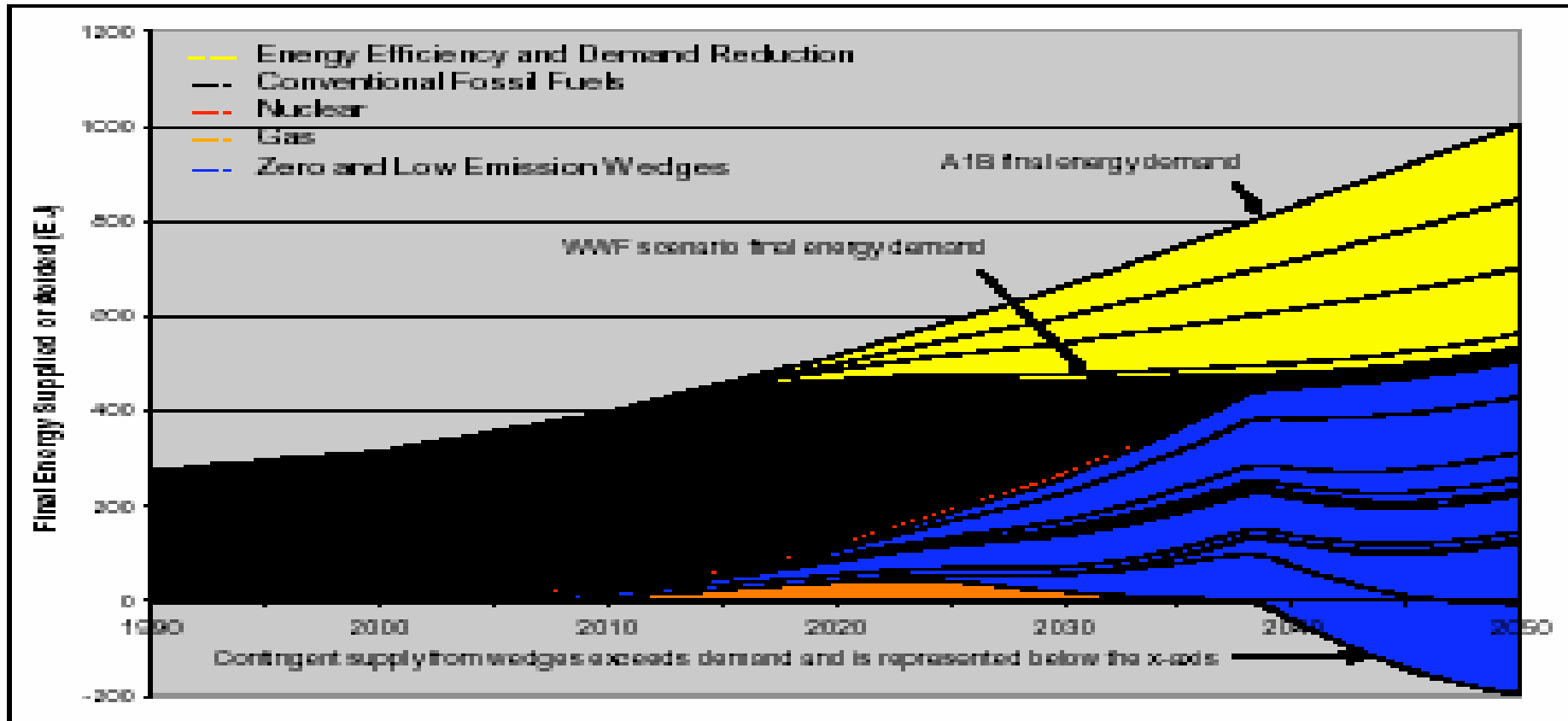


Our climate solution wedges til 2050



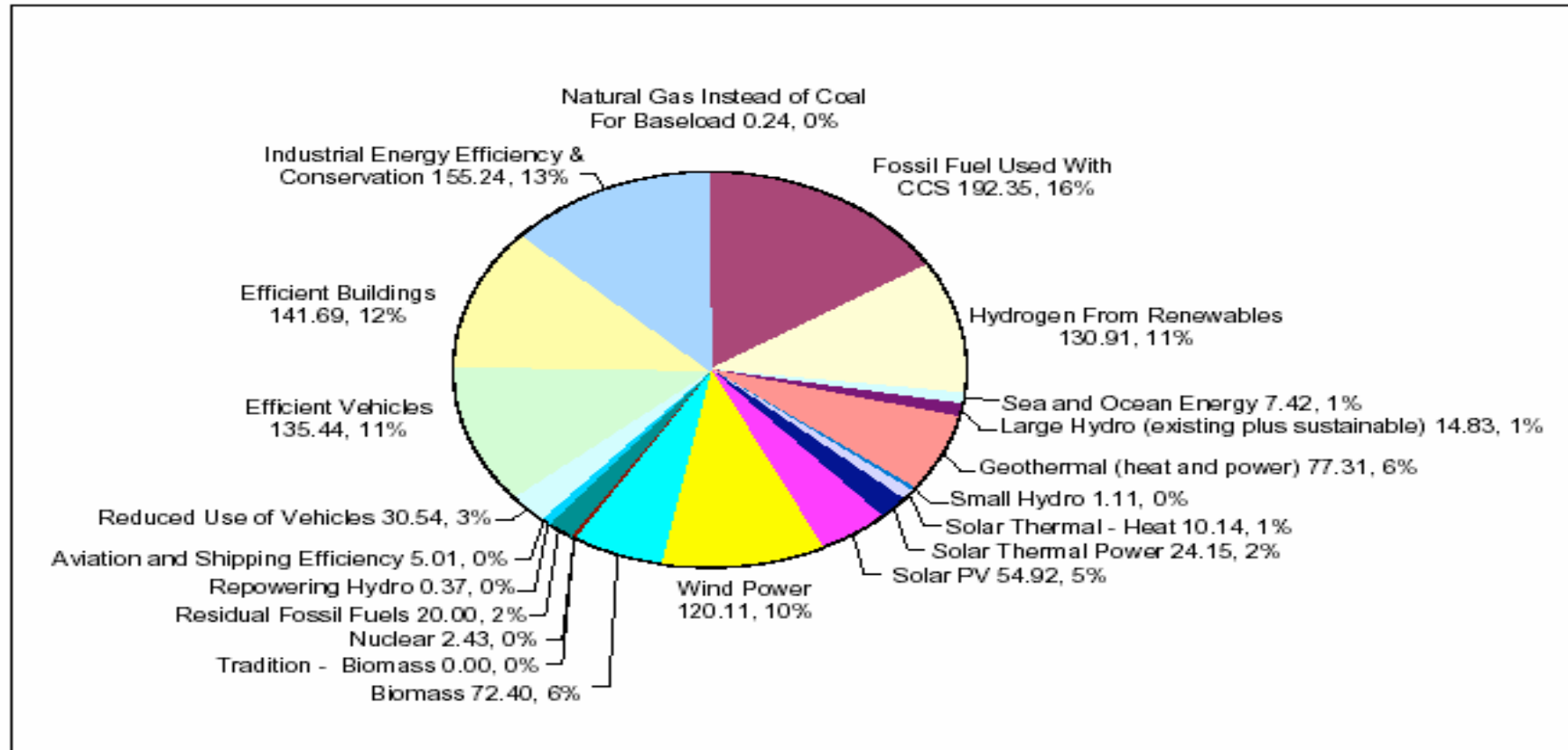


Solution wedges: 40% efficiency, 40% renewables, 16% CCS



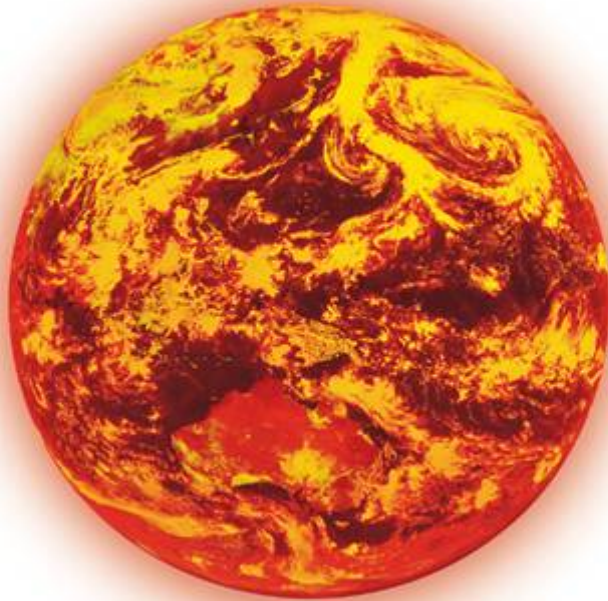


Technologies contributions to final energy consumption by 2050





to cool it.



“We need to generate the excitement embodied in a new industrial revolution”

