

“How much technological change,  
R&D is enough ?”

N. Nakicenovic

Massimo Tavoni

Princeton Environmental Institute

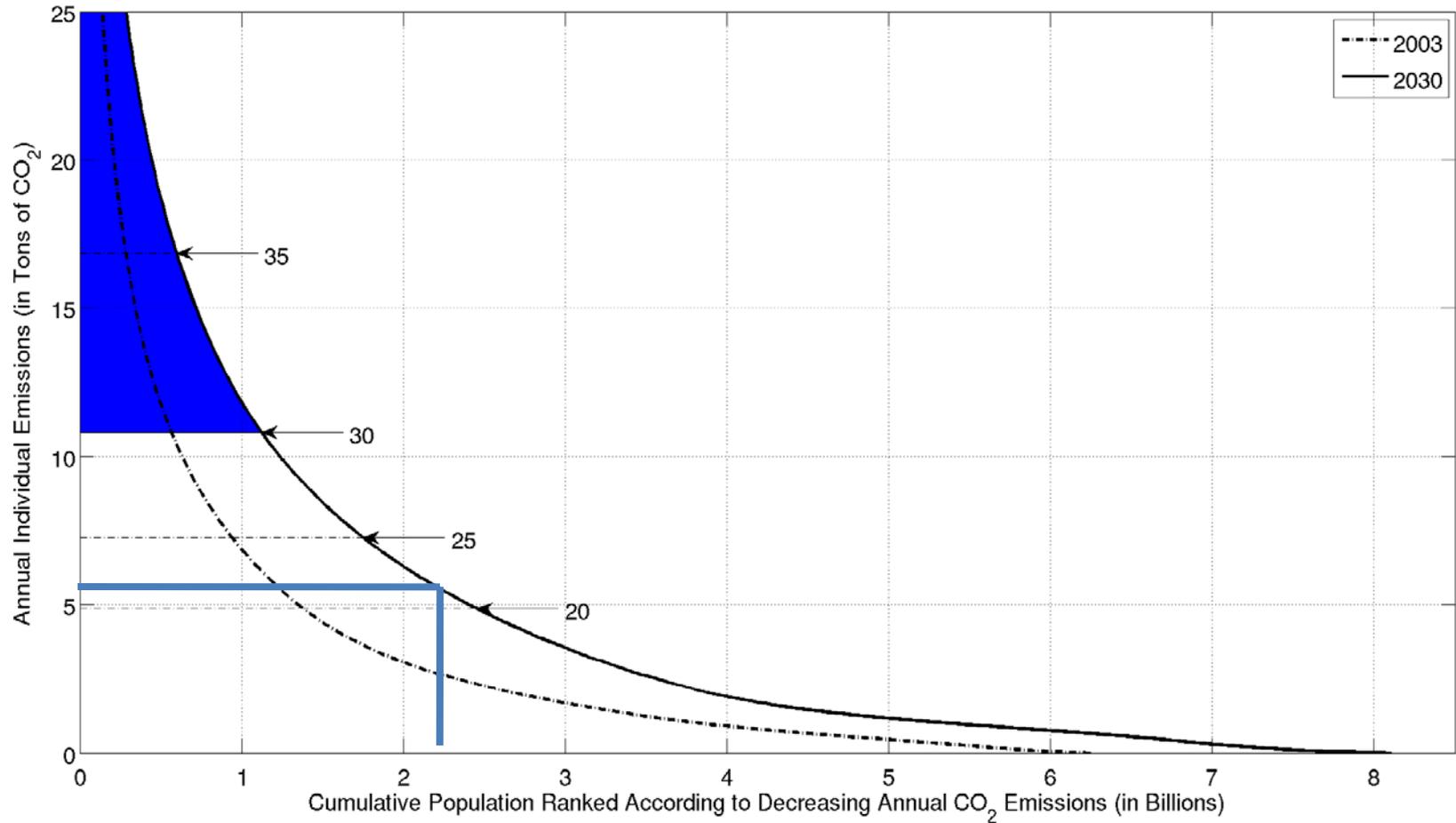
FEEM

## Poverty alleviation/climate mitigation

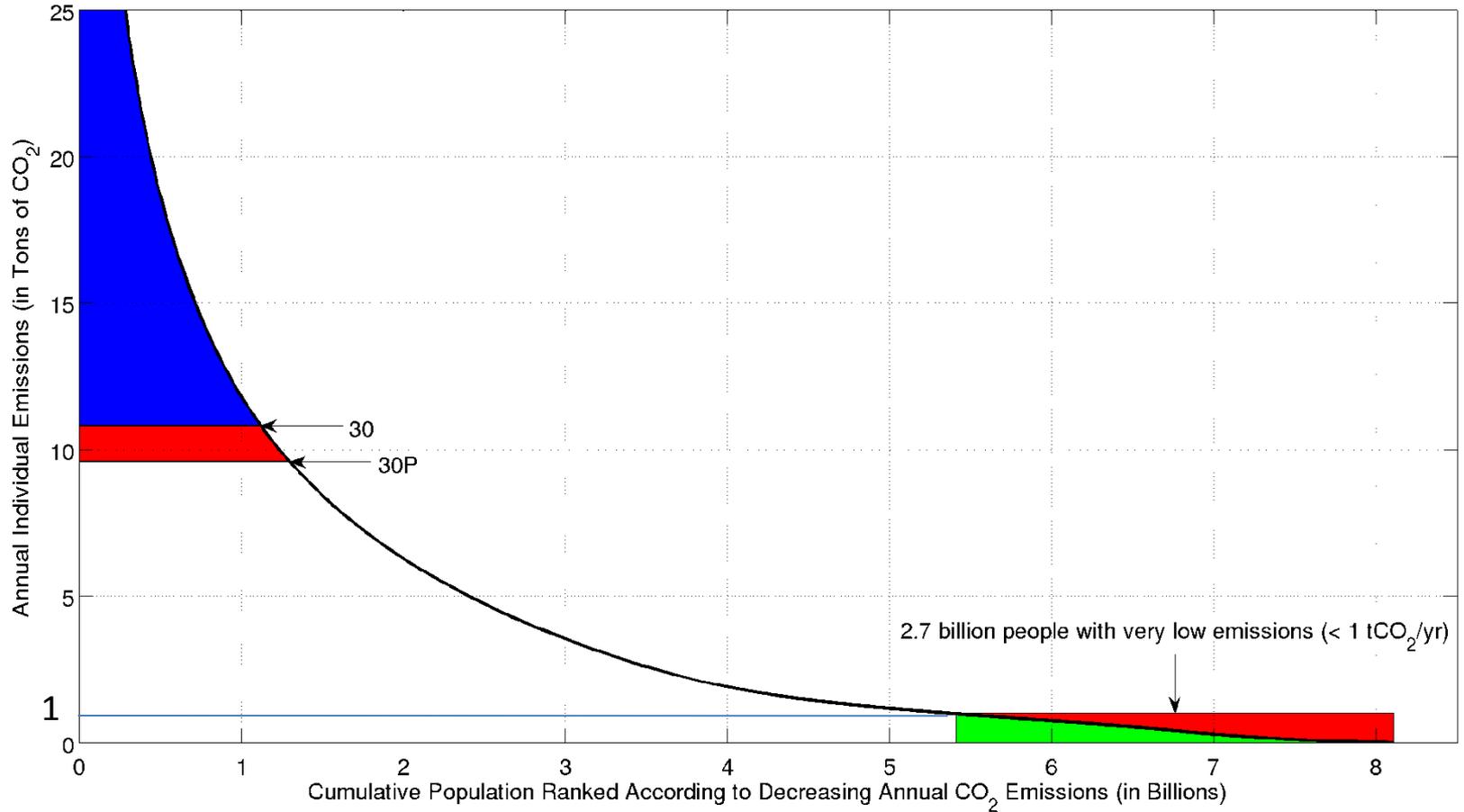
- “Modern energy services in DC unaffordable and with inequitable access”
- “2 Billion people with no access to modern energy”
- “Decarbonization of energy required to provide energy services to those without today, and for reducing GHGs”

**Allow the poor to use carbon generated electricity, gasoline fuel for transport, LPG for cooking fuel (1 tCO<sub>2</sub>)—where these technologies are the lowest-cost options.**

# Global distribution of individual emissions in 2030

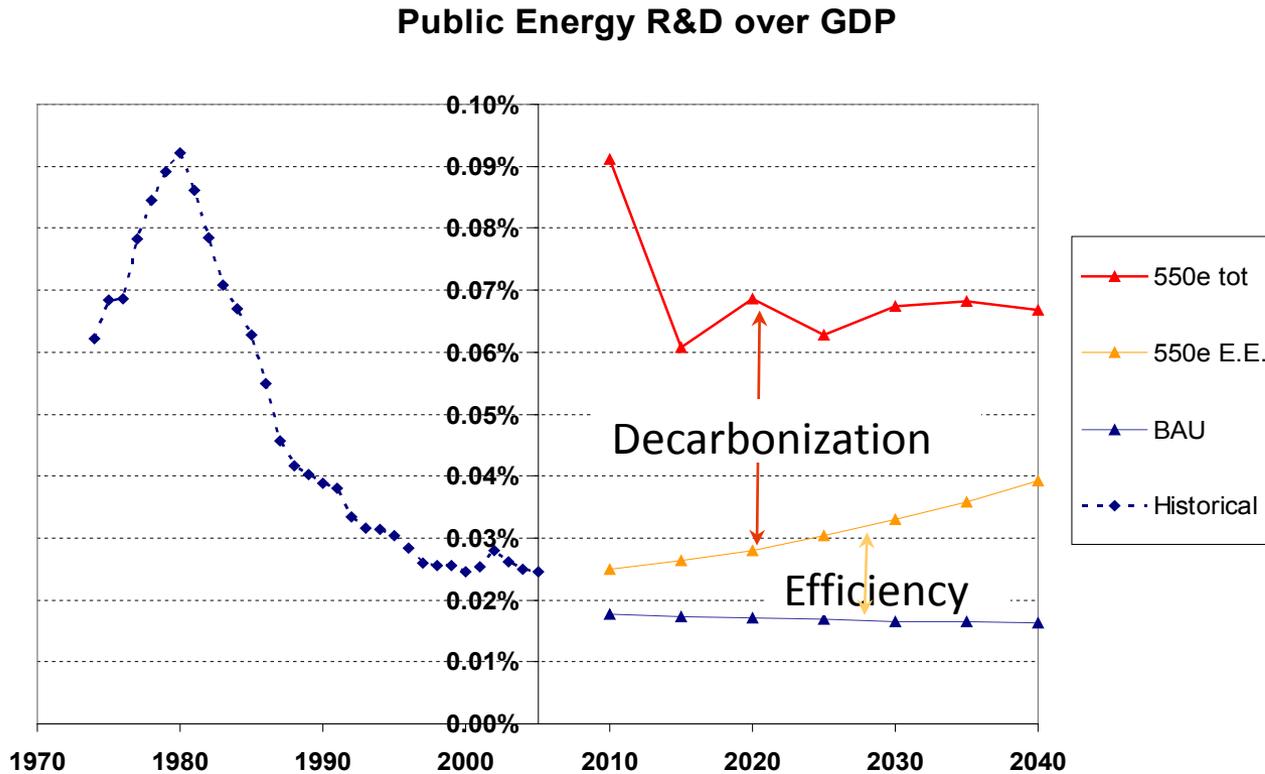


# Individual emissions cap with poverty headroom



# Energy R&D investments

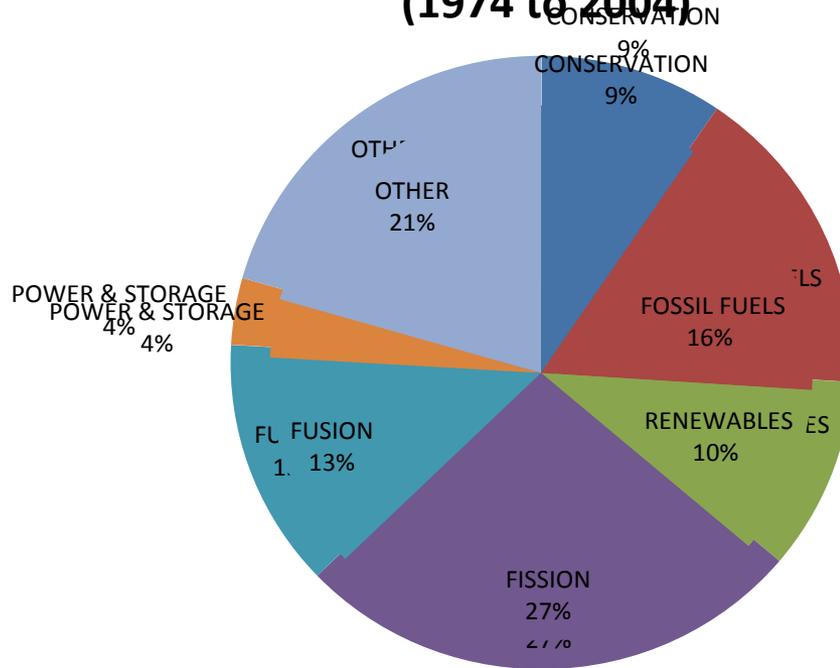
“Fivefold increase compared to current effort of some \$8 billion (public) would be appropriate”



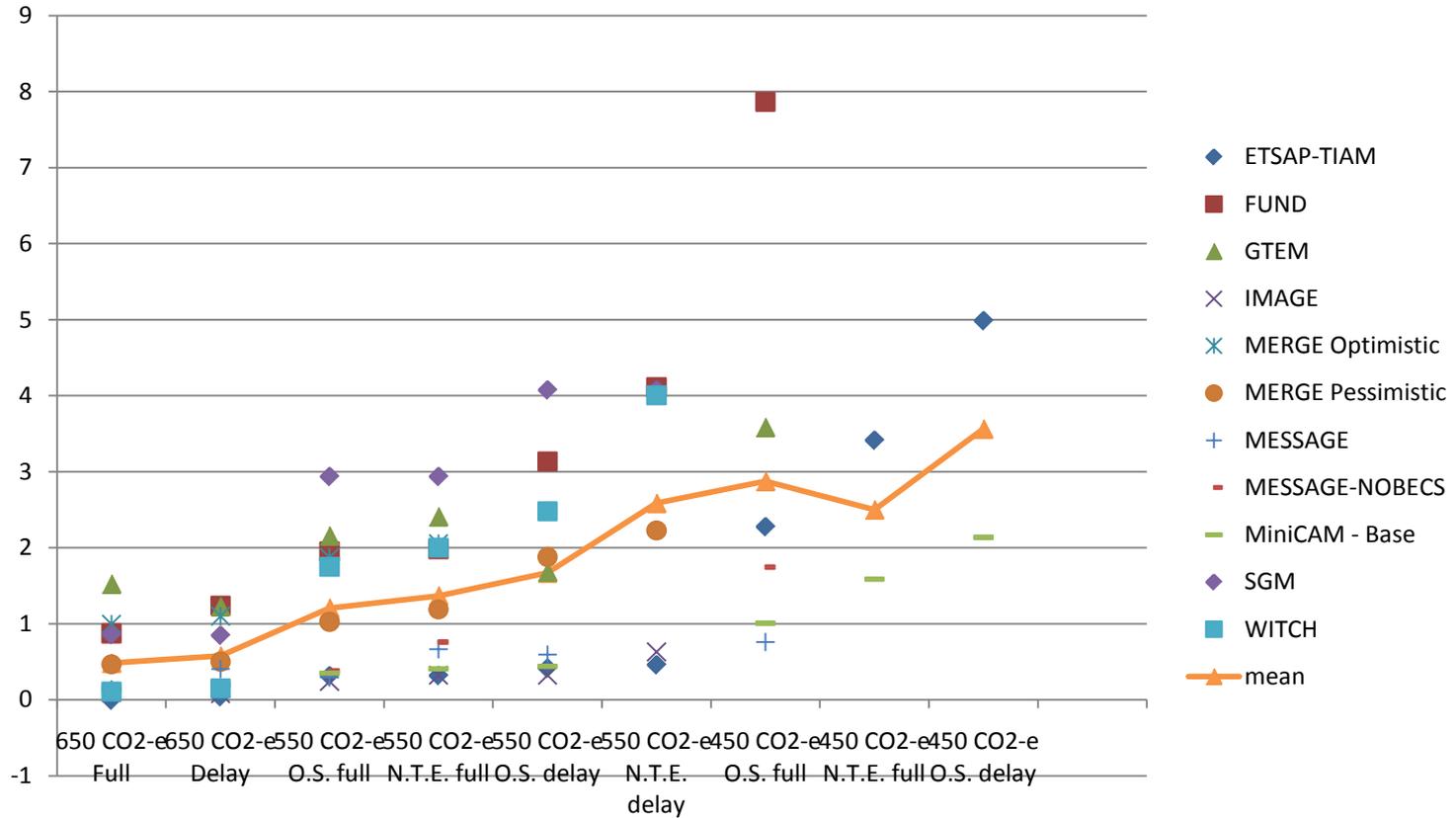


# Energy R&D portfolio

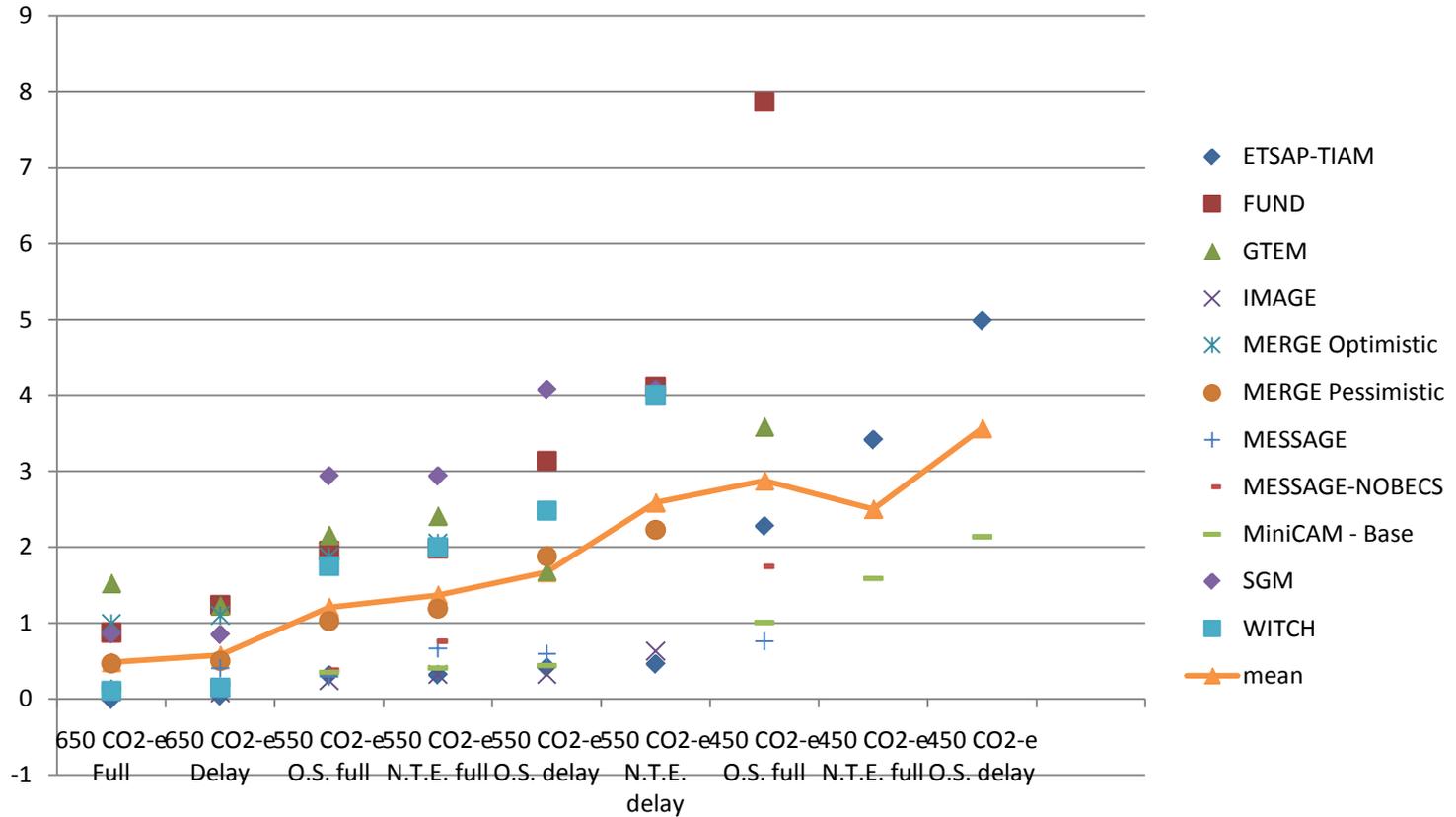
**Public Energy R&D expenditures in the US (1974 to 2004)**  
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# Policy costs towards 2 Celsius (EMF22)



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