

Hållbar ekonomisk utveckling enligt Agenda 2030

Forskarseminarium 27 september 2021

Seminarier är del av initiativet Forum ekonomiska dimensionen
Agenda 2030 och kansliets arbete: *Samtal om hållbar utveckling*

Nationell samordnare
Agenda 2030 

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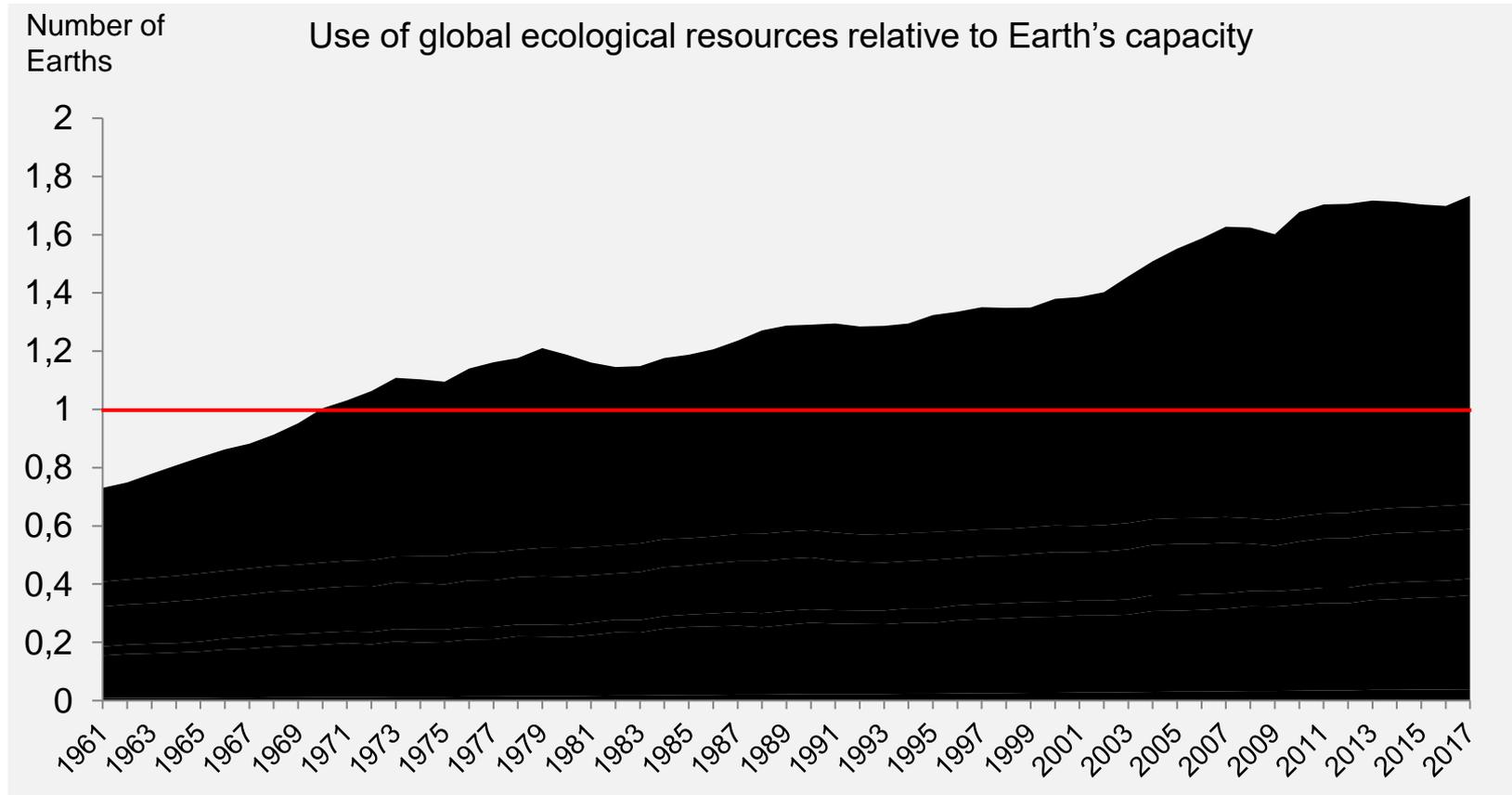
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Klimat, hållbarhet och tillväxt

John Hassler

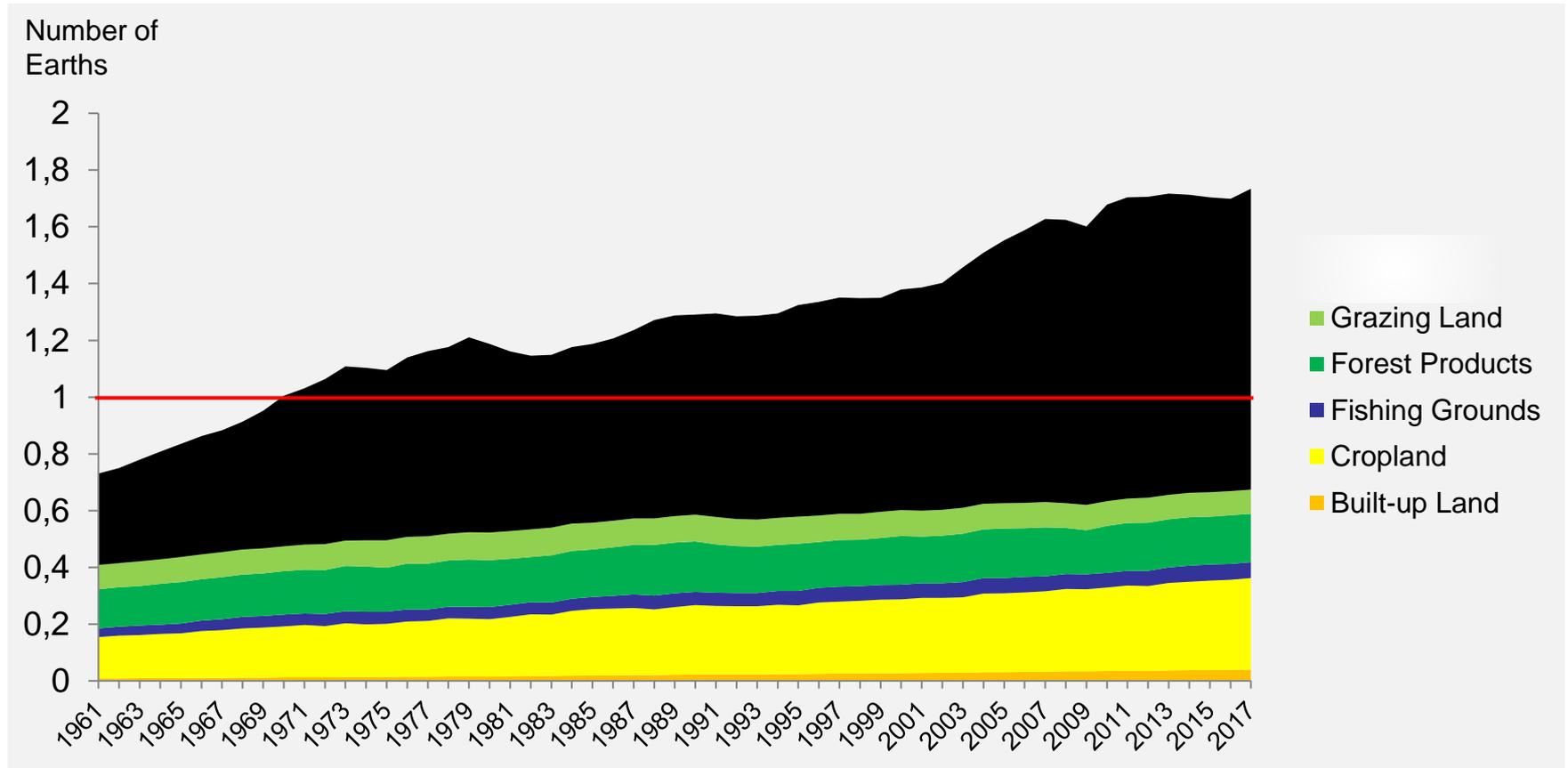
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Overuse of planet's resources



Source: Global Footprint Network

What is behind the curve?



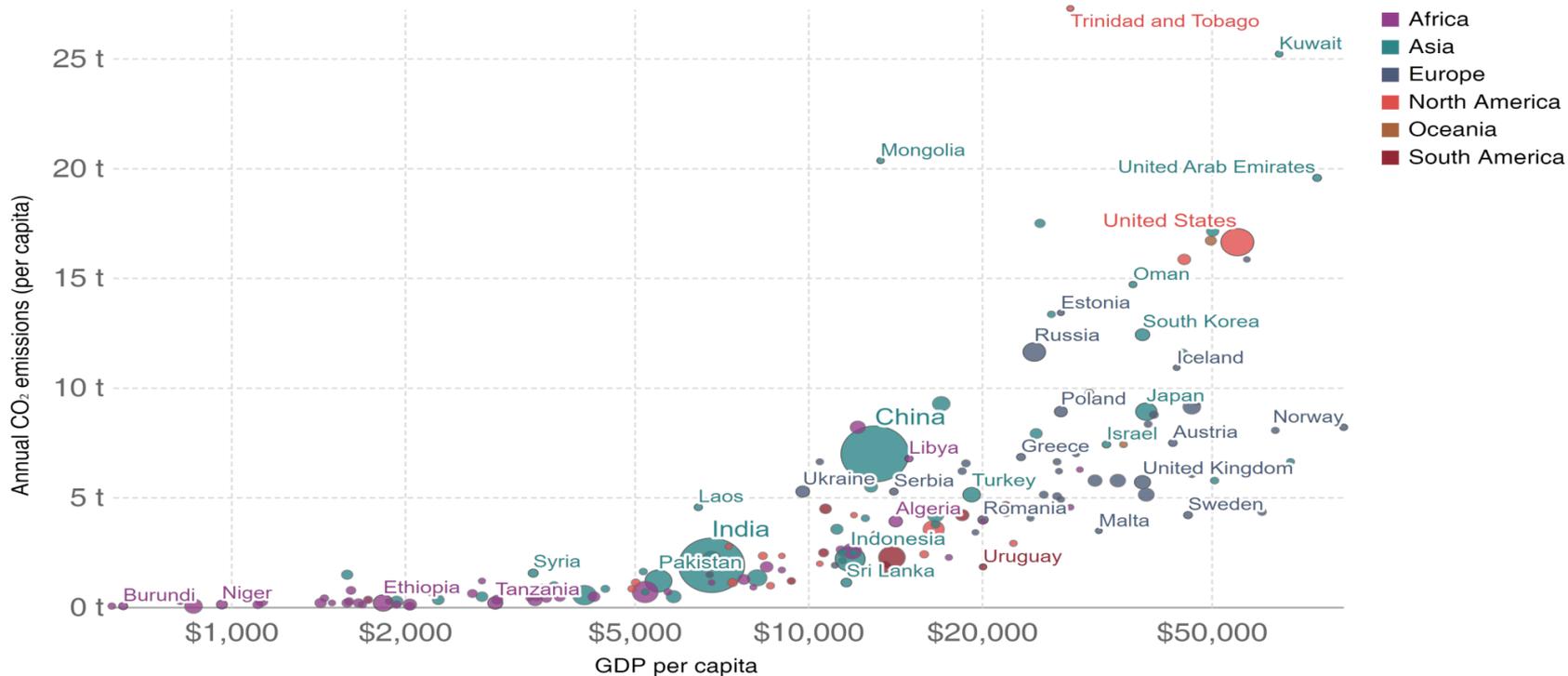
Source: Global Footprint Network

Growth and CO2 emissions

- Sometimes claimed the economic growth will solve the problem. First growth increases emissions and pollution, then it reduces them. Environmental Kuznets curve.

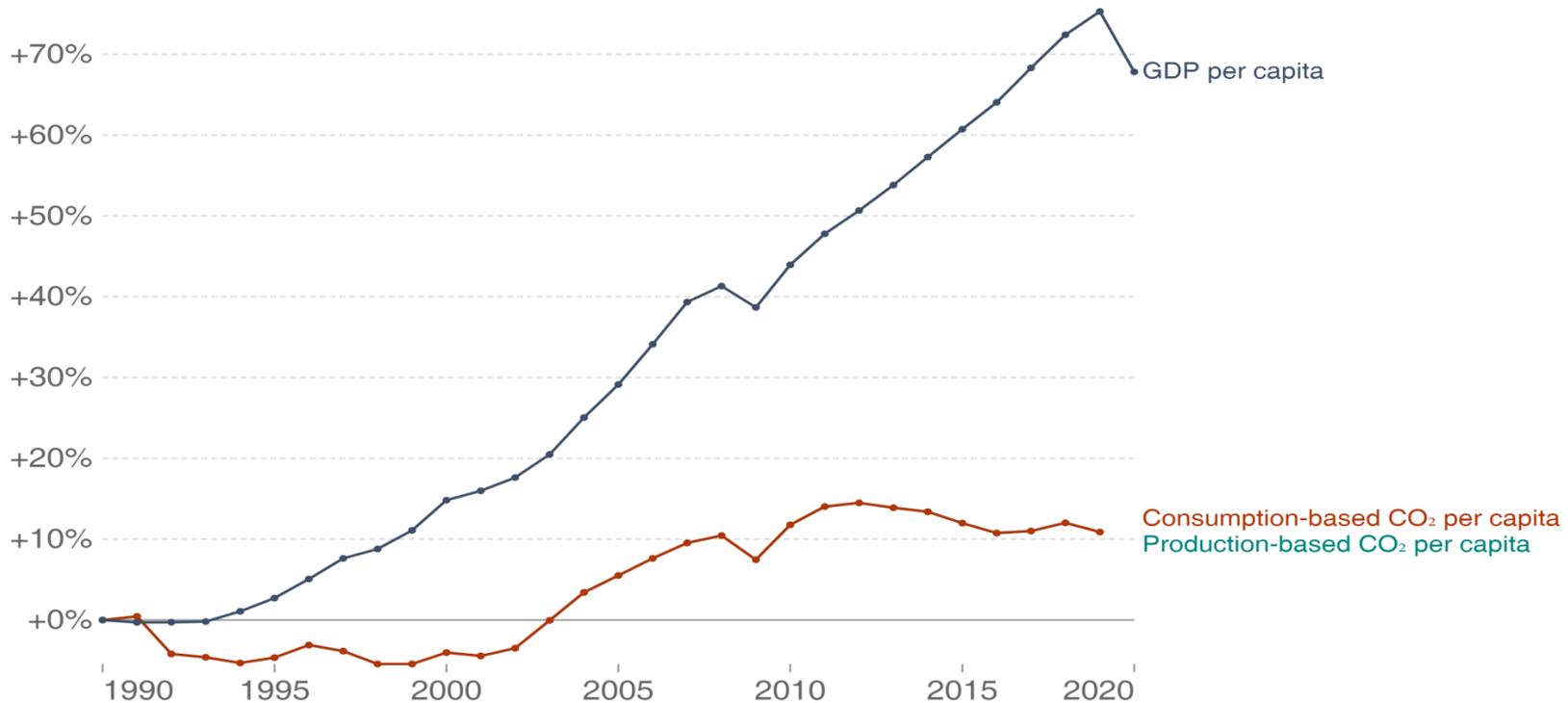
CO₂ emissions per capita vs GDP per capita, 2018

This measures CO₂ emissions from fossil fuels and cement production only – land use change is not included. Gross domestic product (GDP) per capita is measured in international-\$ in 2011 prices to adjust for price differences between countries and adjust for inflation.



Change in per capita CO₂ emissions and GDP, World

Annual consumption-based emissions are domestic emissions adjusted for trade. If a country imports goods the CO₂ emissions caused in the production of those goods are added to its domestic emissions; if it exports goods then this is subtracted.



Source: Data compiled from multiple sources by World Bank, Our World in Data based on the Global Carbon Project
Note: GDP is measured in constant 2011 international-\$ which adjust for inflation and cross-country price differences.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Growth – the solution?

- Sometimes claimed the economic growth will solve the problem. First growth increases emissions and pollution, then it reduces them.
- Higher income may shift relative demand towards less polluting goods and services,
- but it also increases demand for most things including intercontinental flying.
- Economic growth **CANNOT** be expected to lead to climate neutrality.

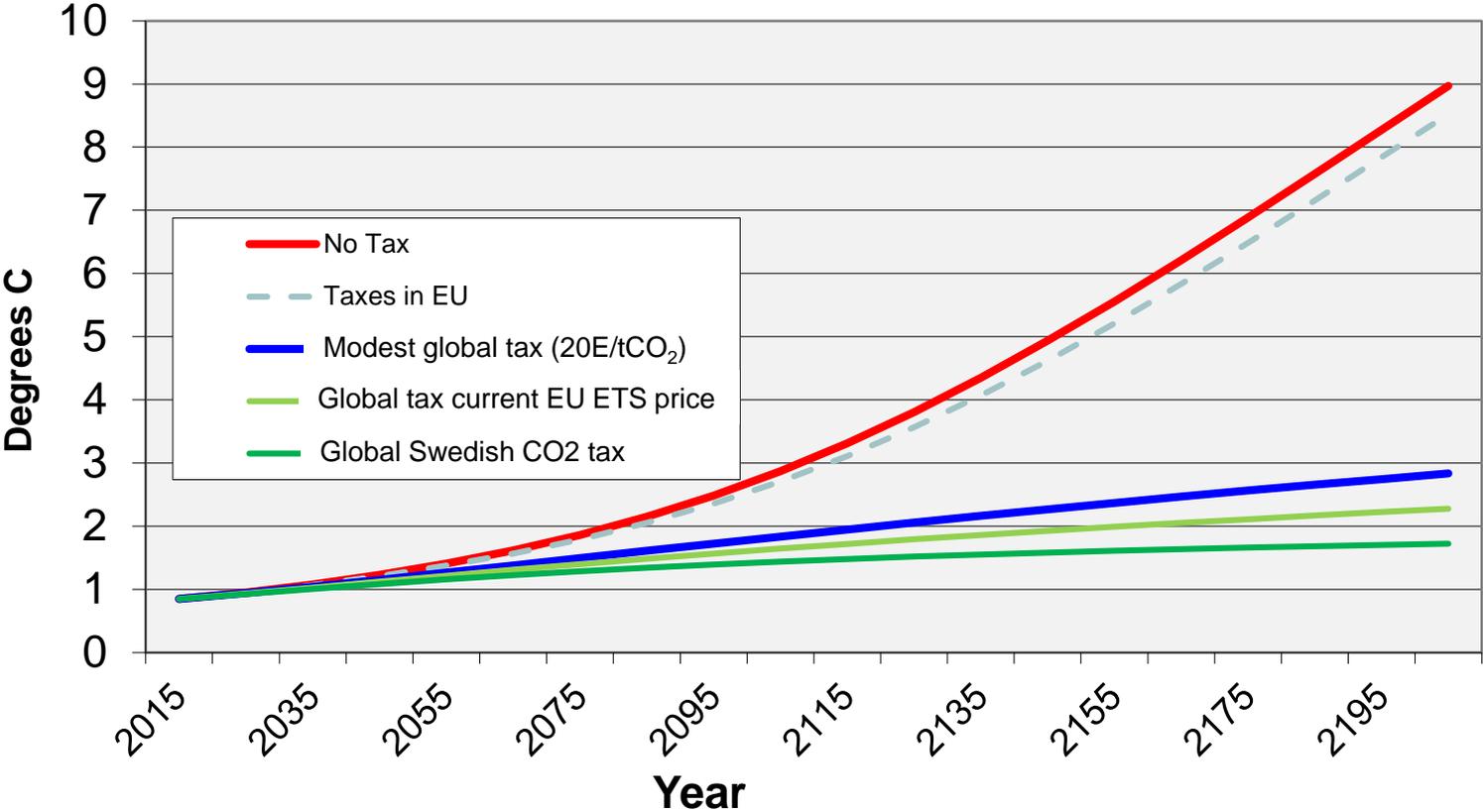
Growth – the problem?

- Often claimed the economic growth is the fundamental problem. Is it?
- Must realize that atmosphere's capacity to absorb CO₂ is a resource in limited supply, much like many other natural resources including minerals, land, forests, fish,...
- A resource in limited supply that is up for grabs for free will be overused. This is the case for CO₂ emissions in many parts of the world.
- So, the answer is **NO**, the problem is not growth *per se* but that it is for free to pollute.
- But, an **important but**, consequences of lack of pricing typically worsen as population and economy grow.

Then how to reduce emissions?

- Global de-growth might reduce emission, but how should it be achieved and at what costs to human welfare?
- A complete and immediate fossil ban would in theory be easy. Not reasonable – we need to phase out emissions over time. But how?
- Letting (world) government determine what everyone could use highly impractical and costly. Does not work for other goods.
- We use markets (more or less regulated) to determine who uses what.
- A global minimum price on emission is a surprisingly effective way of reducing emissions. Works both by reducing use directly and by steering technical change right. Much more effective than subsidies and actions through financial markets.
- Must have large coverage.

Increase in Global Mean Temp

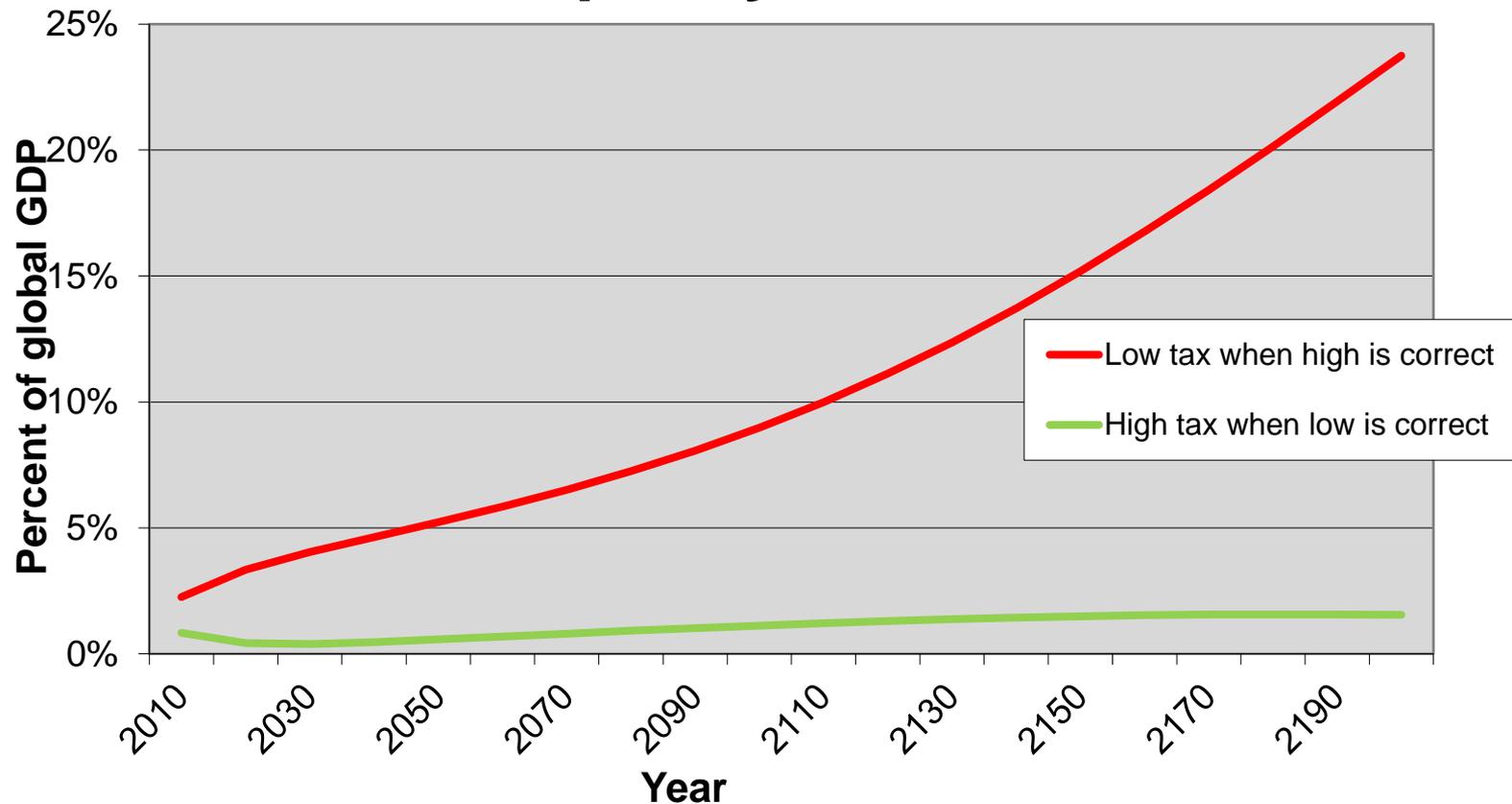


Source: "On the effectiveness of climate policies", Hassler, Krusell, Olovsson and Reiter, WP 2022.

Large Uncertainty

- There is very large uncertainty about parameters and mechanisms around best guesses of climate change.
- Applies also to consequences for welfare of climate change.
- However, no evidence for tipping points at “global scale in climate projections for the next century” IPCC 6th report p 1:66.
- Will not likely soon be too late for policy, but uncertainty implies that it is impossible to find “optimal” climate policy.
- We used our integrated assessment model to analyze two policy errors:
 - a. **Precautionary** high global tax, assuming high climate and welfare sensitivities.
Ex post turns out sensitivities are low.
 - b. **Hope for the best** (low sensitivities) and set a low tax.
Ex post turns out sensitivities are high

Cost of policy mistakes



Is sustainable growth possible?

- Nature puts boundaries on the use of very many essential natural resources. Do these limits imply that growth is impossible?
- History gives some guidance. Recent work published in top-5 JPE* with empirical application to (fossil) energy use.
- Findings;
 - In short run, energy use and GDP moves one by one, regardless of energy price.
 - In longer run, energy prices are key. At constant prices, energy use grows in parallel with GDP, but higher energy prices spur redirection of R&D towards increasing energy efficiency. 1% higher prices approximately reduce energy use by 1%.
 - Thus, to reduce absolute energy use, energy prices must grow faster than GDP.
 - The redirection of R&D means less growth in labor/capital efficiency and thus lower GDP growth.
 - So far, trade-off has not been severe enough to preclude growth also if absolute energy use needs to forever fall over time.
- Conclusion: Energy (and likely other natural resources) behaves like other production factors (labor, land..). Moves 1:1 with GDP in short run, but increased use is not necessary for long-run growth. Non-increasing use requires growing prices.

* Hassler, Krusell, Olovsson, 2021, "Directed technical change as a response to natural-resource scarcity"

Conclusions

1. Growth is not going to automatically solve the climate problem, nor is it the fundamental problem itself.
2. History suggest that sustainable growth is possible.
3. Making the world climate neutral to 2050 can be done at reasonable cost and is a **cheap insurance**.
4. Even a **modest emission price** is quite effective in dealing with climate change. Reduces use and steers technical change towards green energy.
5. Emission prices must have broad global coverage. We cannot do it without China, India and Africa on board.
6. Yellow wests not the problem, but industry afraid of unilateral policy.
7. Reasons for realistic and cautious optimism.

Thanks for listening!

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