

CLIMATE CHANGE 2014

Mitigation of Climate Change

Key Insights from the AR5

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Co-Chair, IPCC Working Group III
WCERE, Istanbul, Turkey
29 June 2014

Exploring the solution space

IPCC reports are the result of extensive work of many scientists from around the world.

1 Summary for Policymakers

1 Technical Summary

16 Chapters

235 Authors

900 Reviewers

More than 2000 pages

Close to 10,000 references

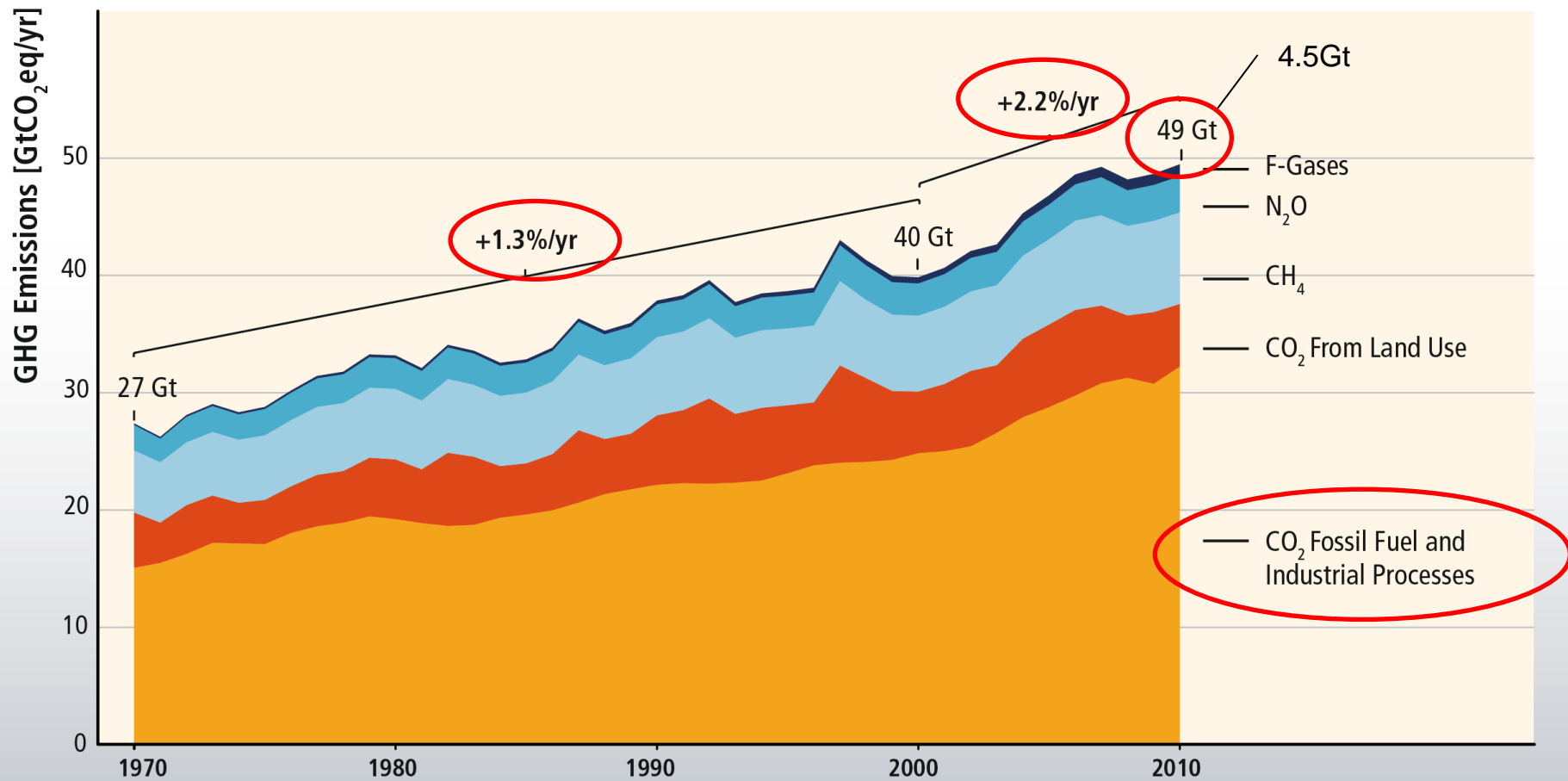
More than 38,000 comments



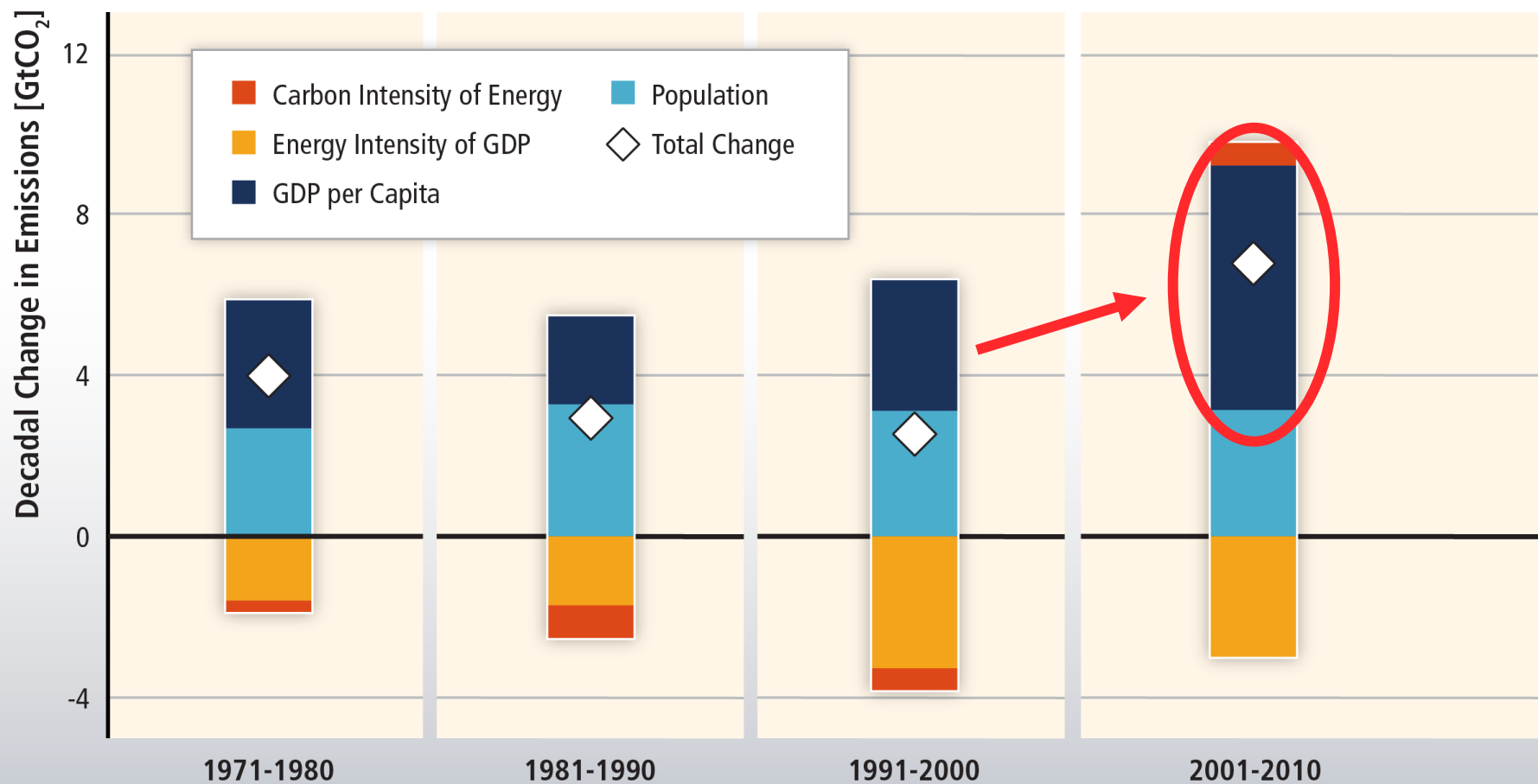
**GHG emissions growth has accelerated
despite reduction efforts.**



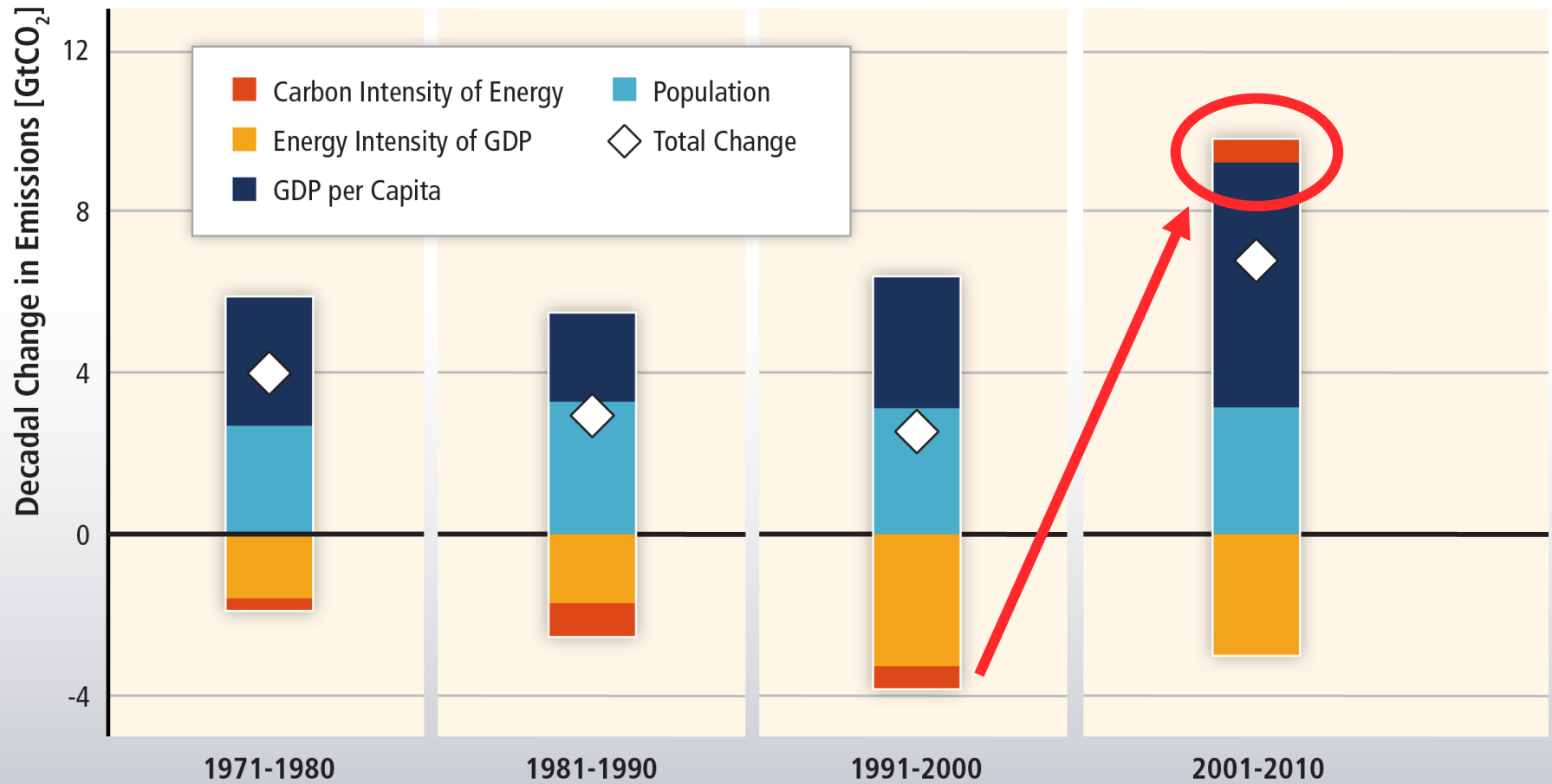
GHG emissions growth between 2000 and 2010 has been larger than in the previous three decades.



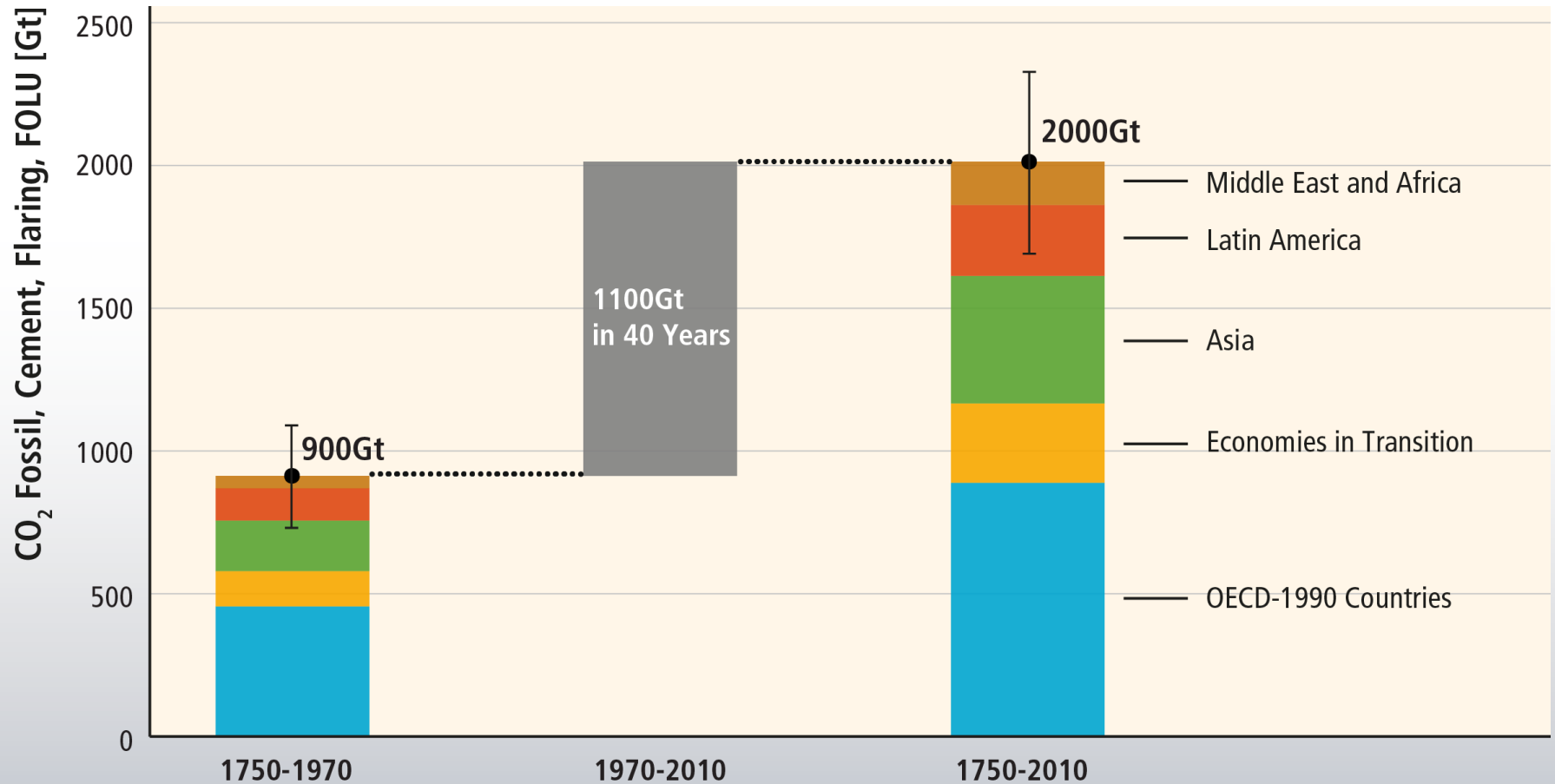
Most of the recent GHG emissions growth has been driven by growth in economic activity.



The long-standing trend of gradual decarbonization of energy has reversed recently.

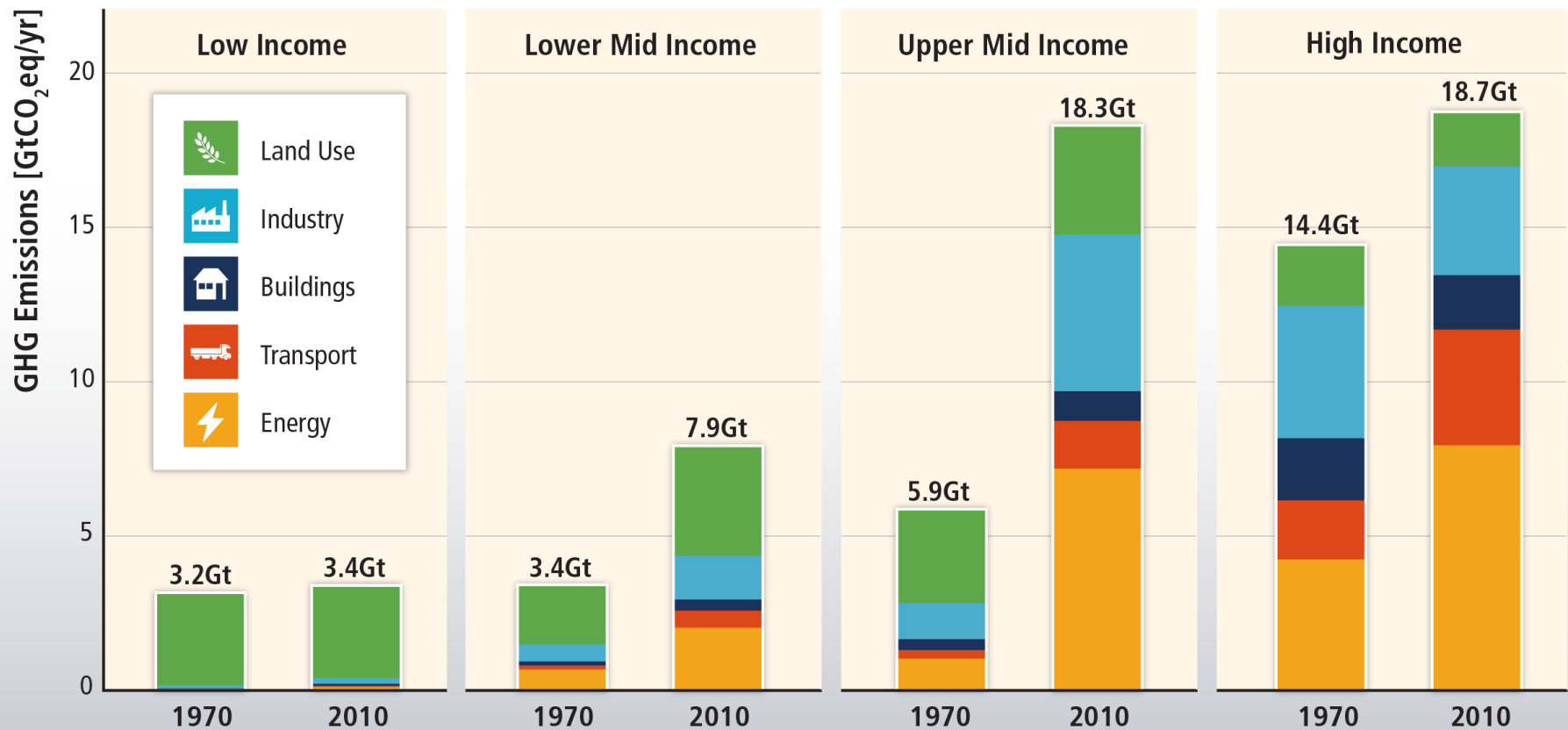


About half of the cumulative anthropogenic CO₂ emissions between 1750 and 2010 have occurred in the last 40 years.

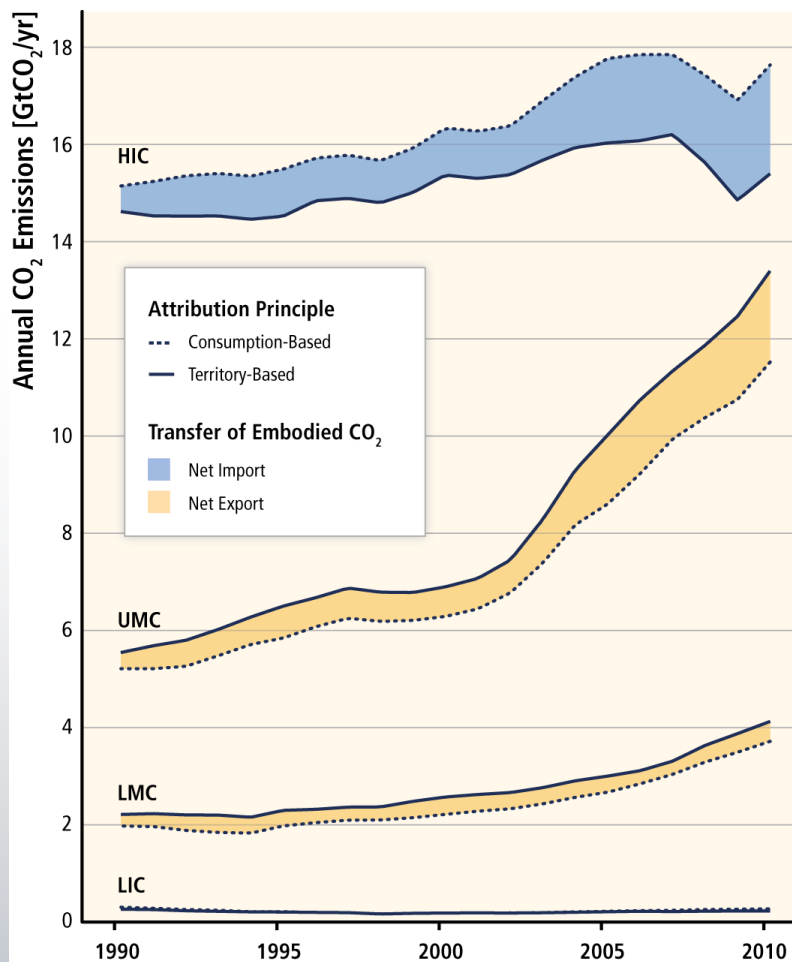


Regional patterns of GHG emissions are shifting along with changes in the world economy.

GHG Emissions by Country Group and Economic Sector



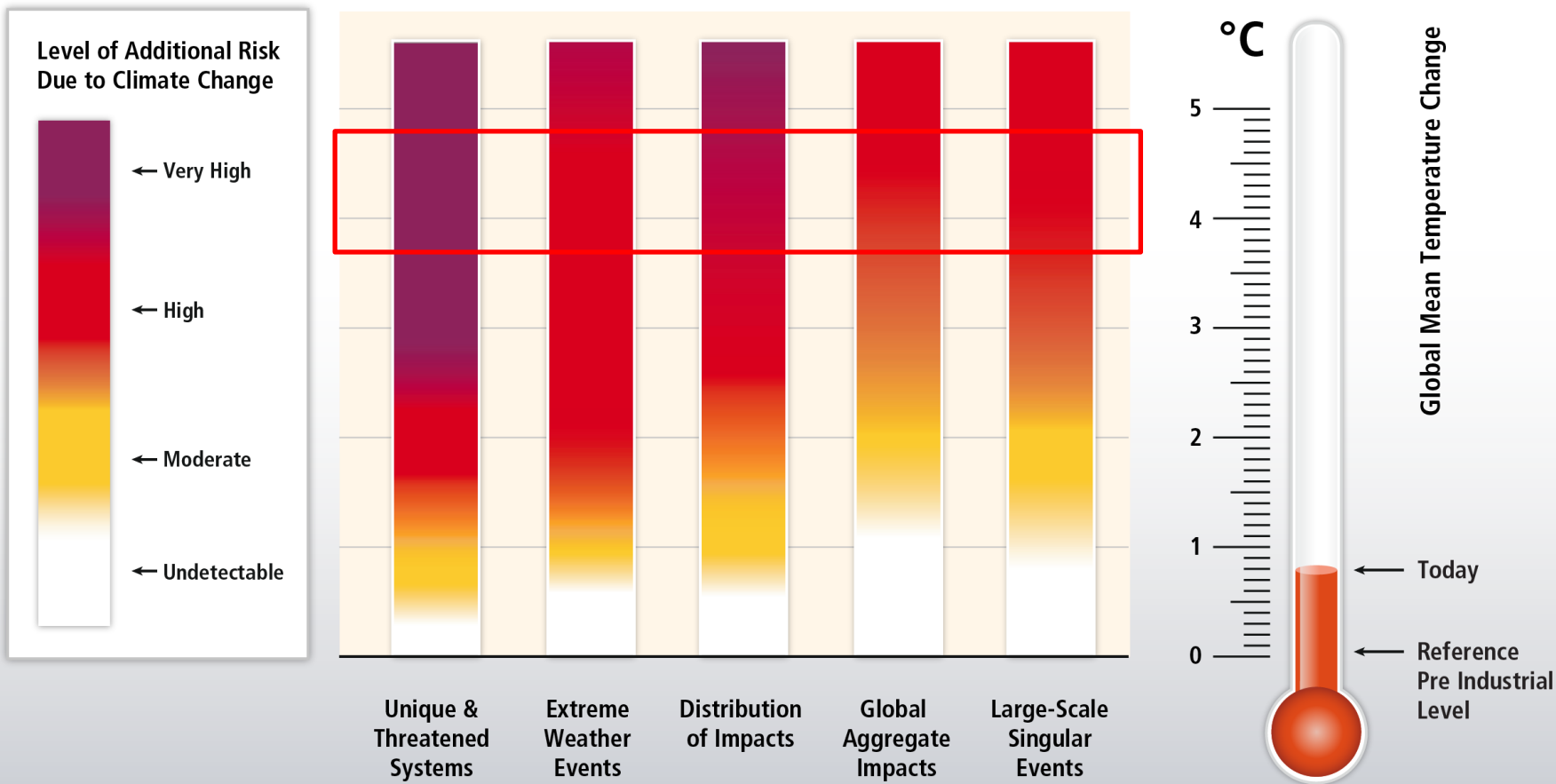
A growing share of CO₂ emissions from fossil fuel combustion and industrial processes in low and middle income countries has been released in the production of goods and services exported, notably from upper-middle income to high income countries.



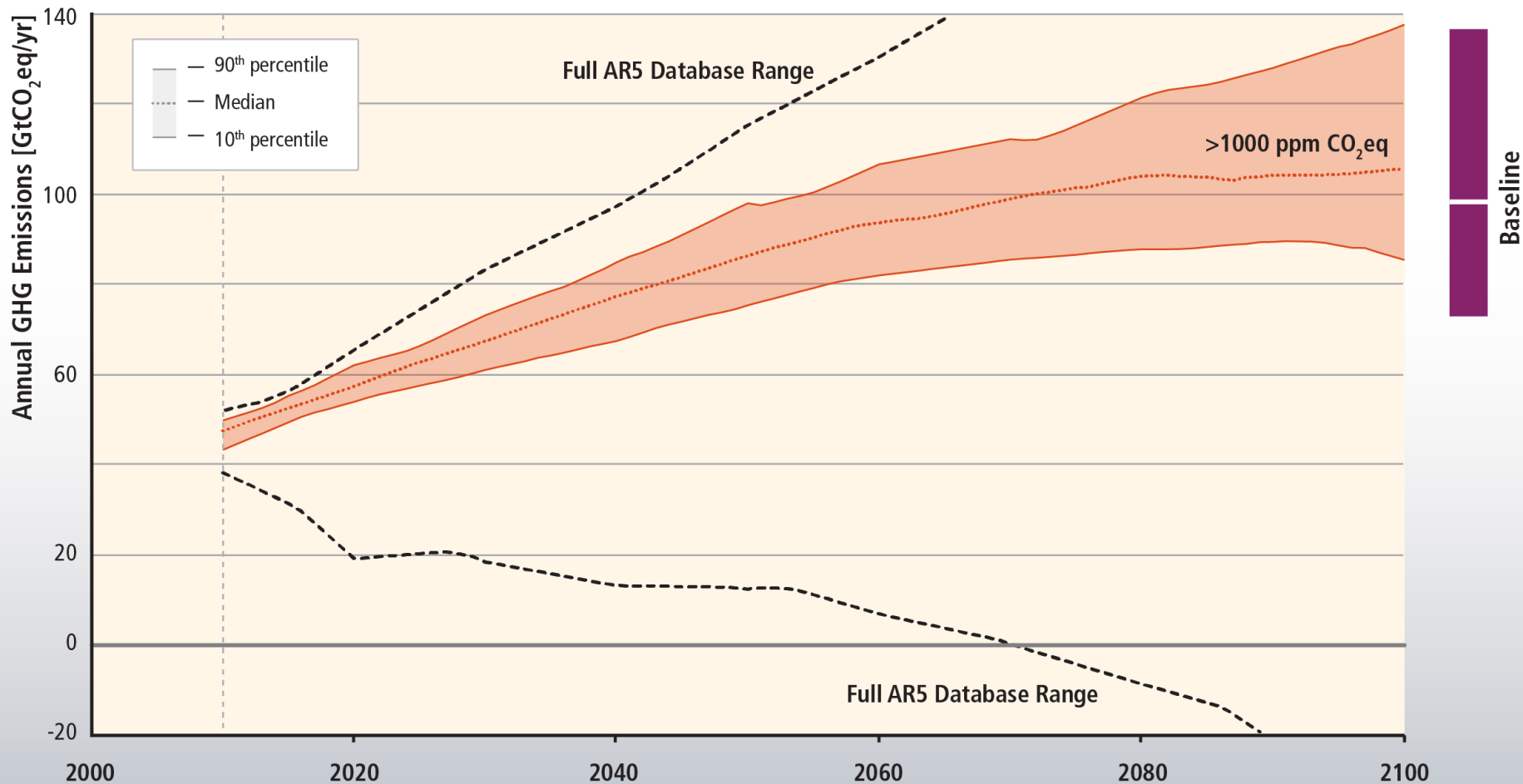
Limiting warming to 2 C relative to pre-industrial levels involves substantial technological, economic and institutional challenges.



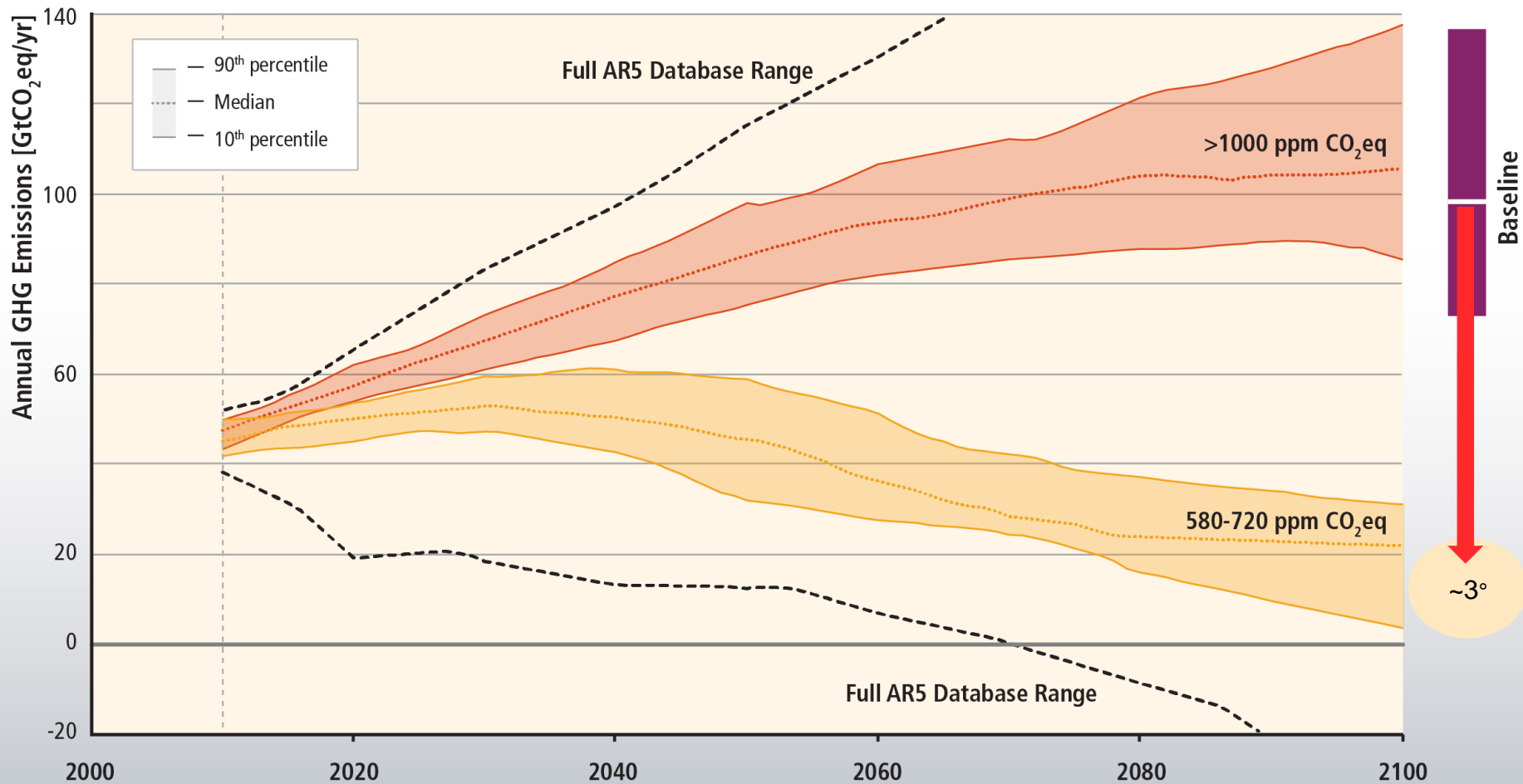
Without additional mitigation, global mean surface temperature is projected to increase by 3.7 to 4.8°C (2.5 - 7.8°C) until 2100.



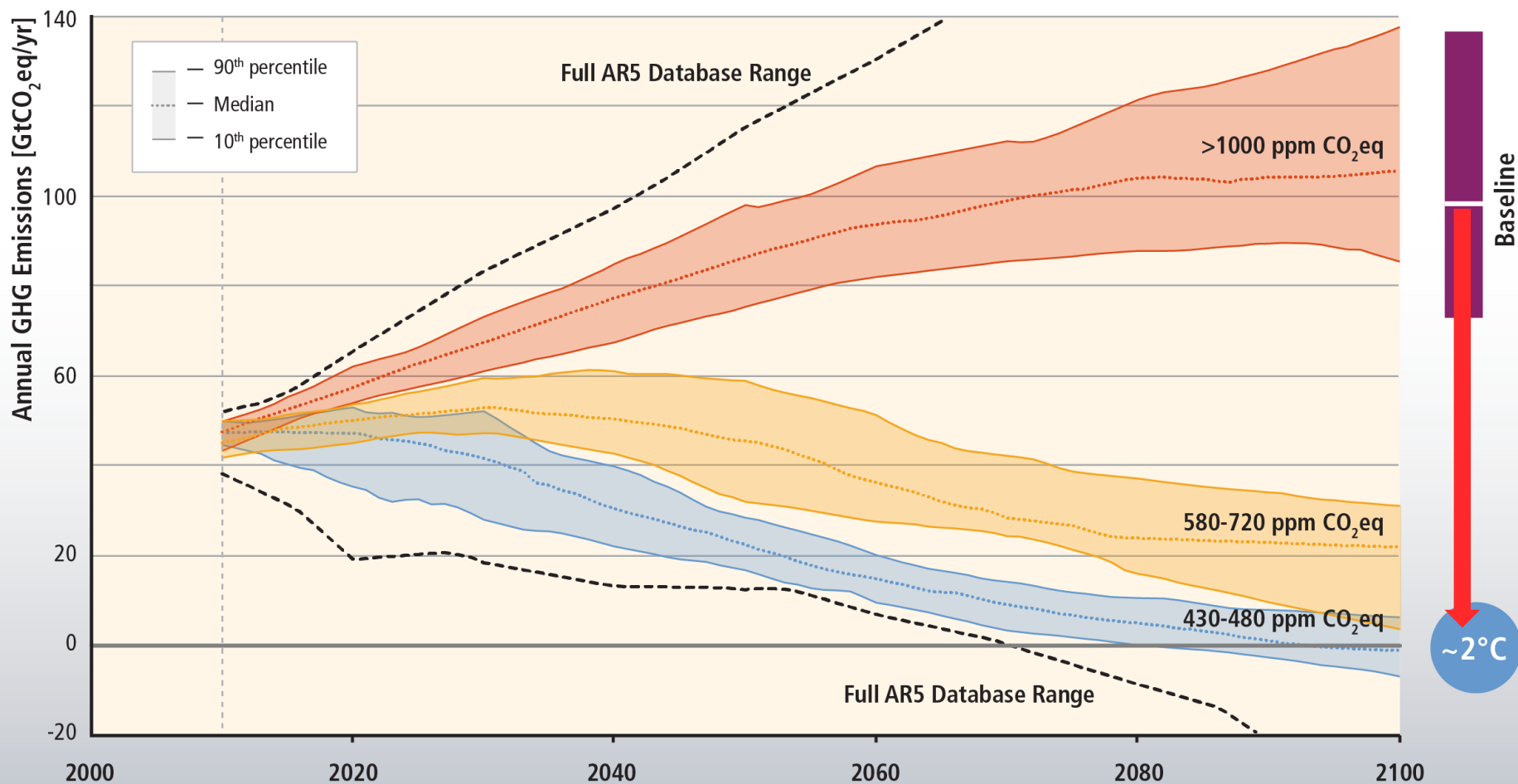
Stabilization of atmospheric GHG concentrations requires moving away from the baseline, regardless of the mitigation goal.



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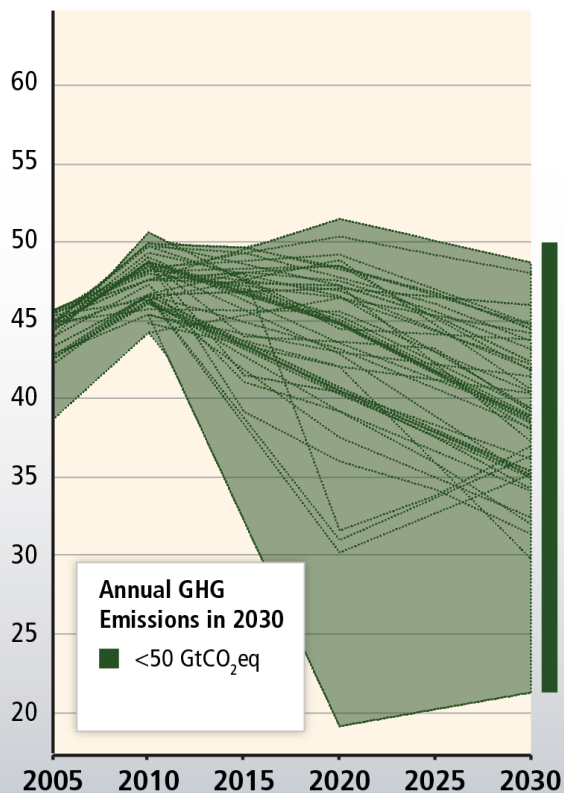
Stabilization of atmospheric GHG concentrations requires moving away from the baseline, regardless of the mitigation goal.



Delaying mitigation increases the difficulty and narrows the options for limiting warming to 2°C.

Before 2030

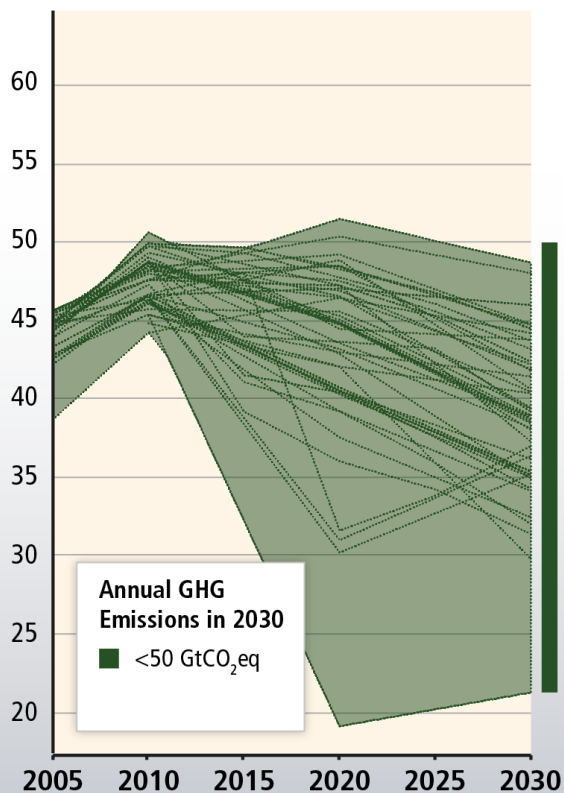
GHG Emissions Pathways [GtCO₂eq/yr]



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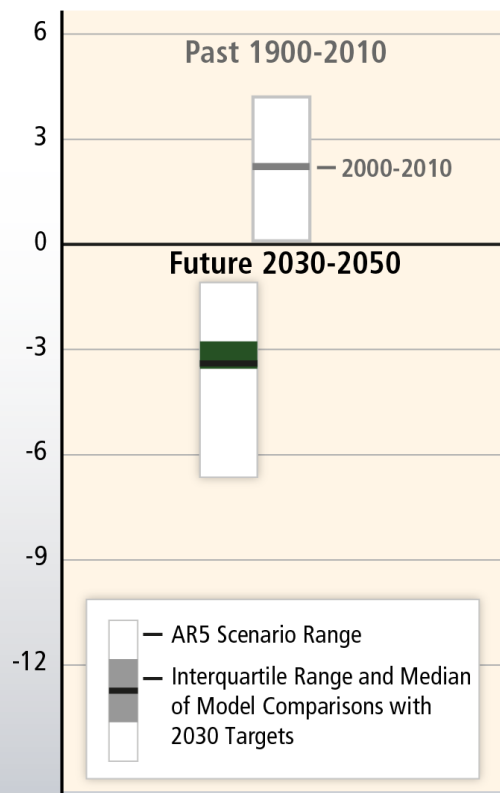
Before 2030

GHG Emissions Pathways [GtCO₂eq/yr]



After 2030

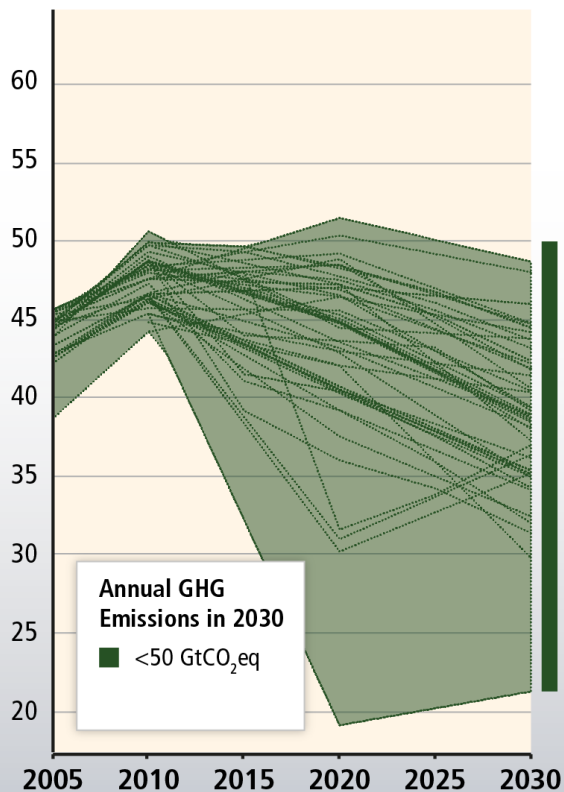
Rate of CO₂ Emission Change [%/yr]



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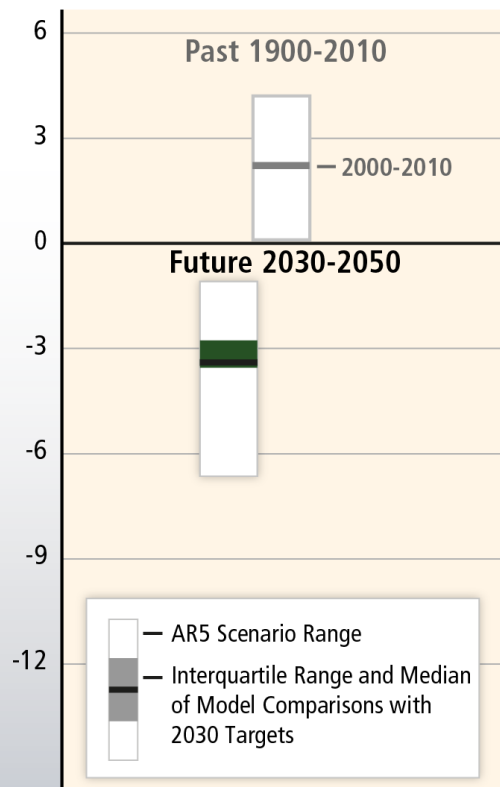
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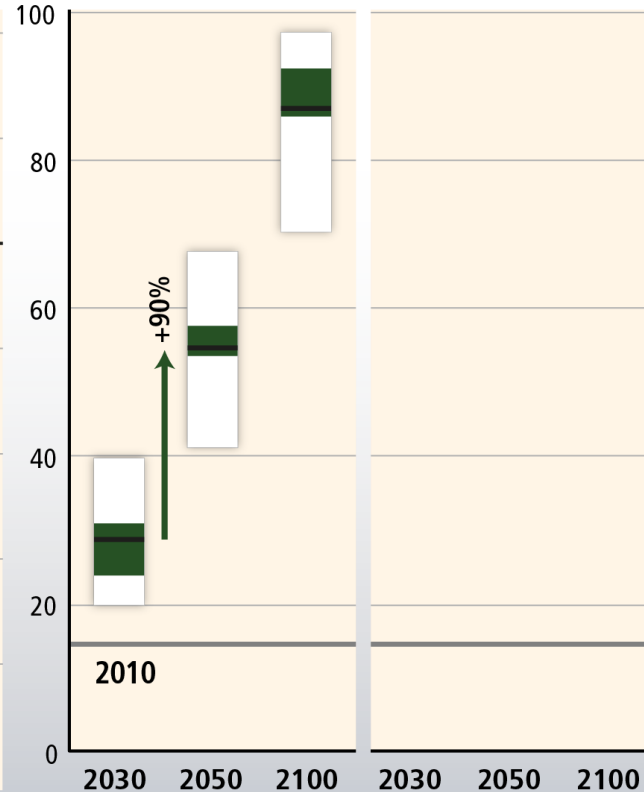


After 2030

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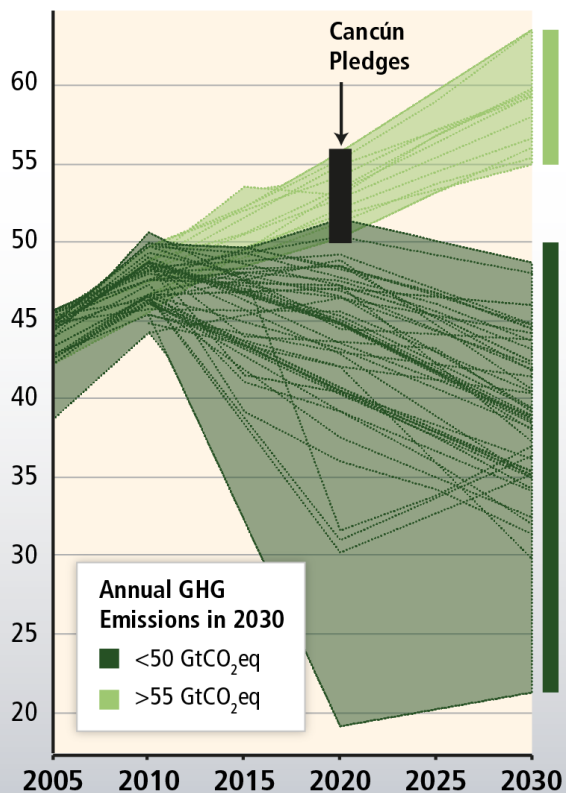
Share of Low Carbon Energy [%]



Delaying mitigation increases the difficulty and narrows the options for limiting warming to 2°C.

Before 2030

GHG Emissions Pathways [GtCO₂eq/yr]



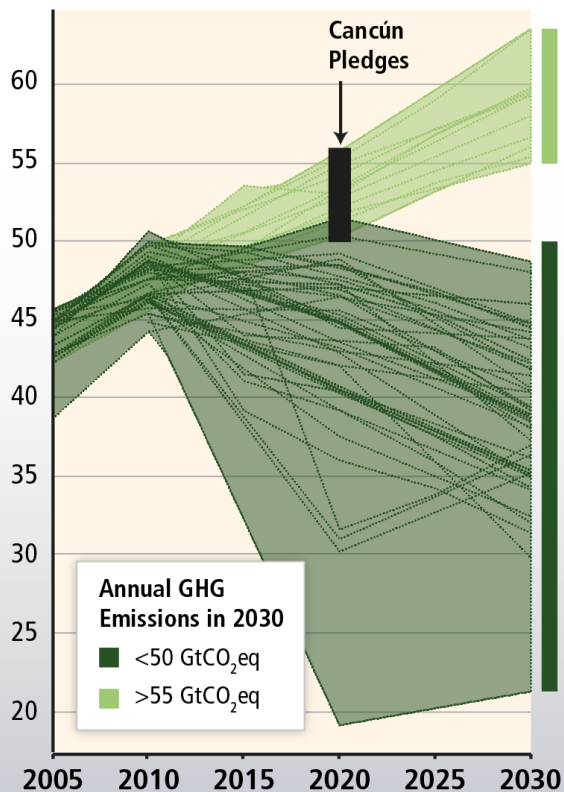
„delayed mitigation“

„immediate action“

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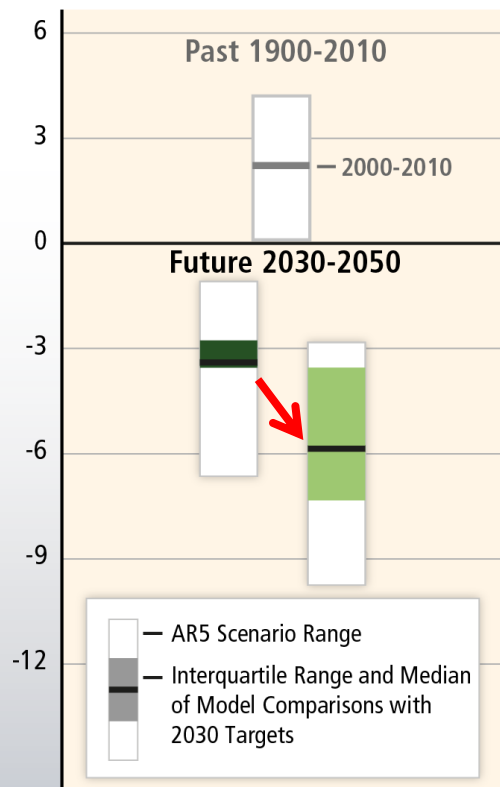
Before 2030

GHG Emissions Pathways [GtCO₂eq/yr]

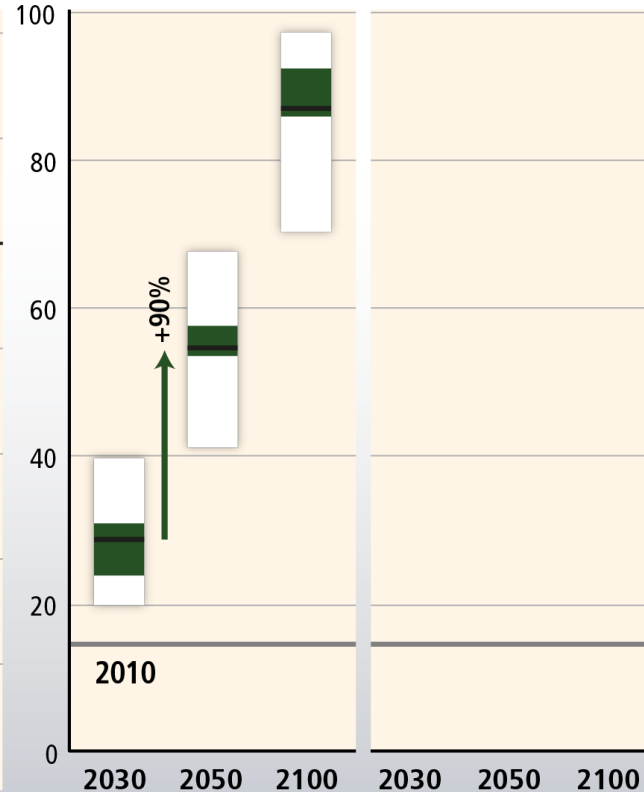


After 2030

Rate of CO₂ Emission Change [%/yr]



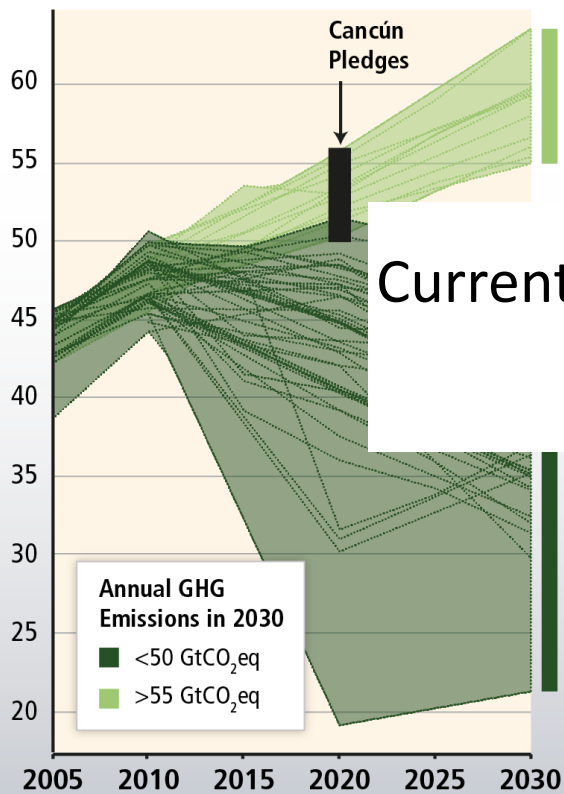
Share of Low Carbon Energy [%]



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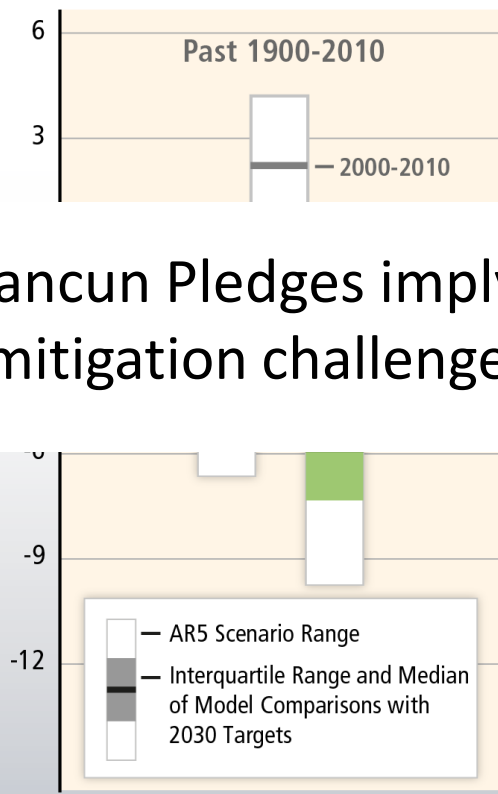
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GHG Emissions Pathways [GtCO₂eq/yr]

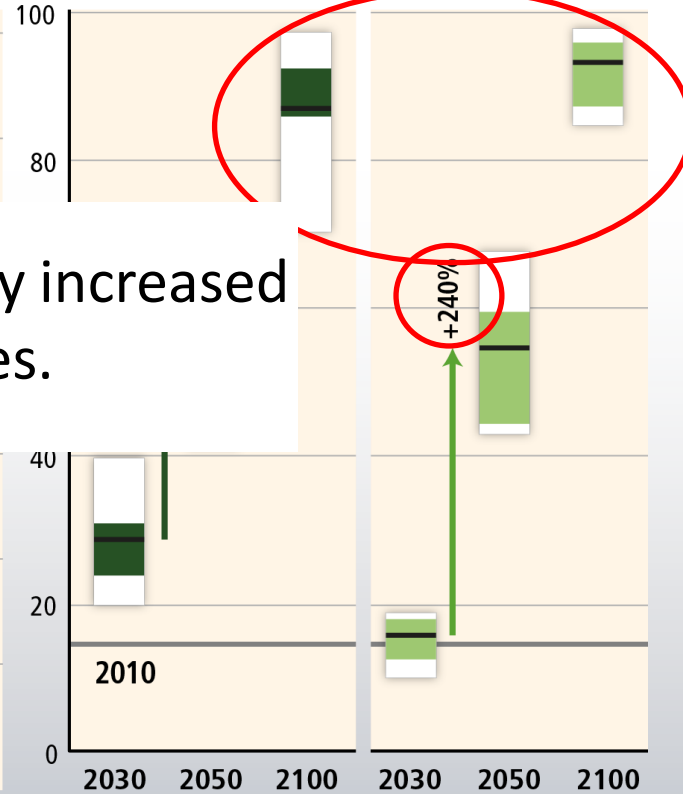


After 2030

Rate of CO₂ Emission Change [%/yr]



Share of Low Carbon Energy [%]

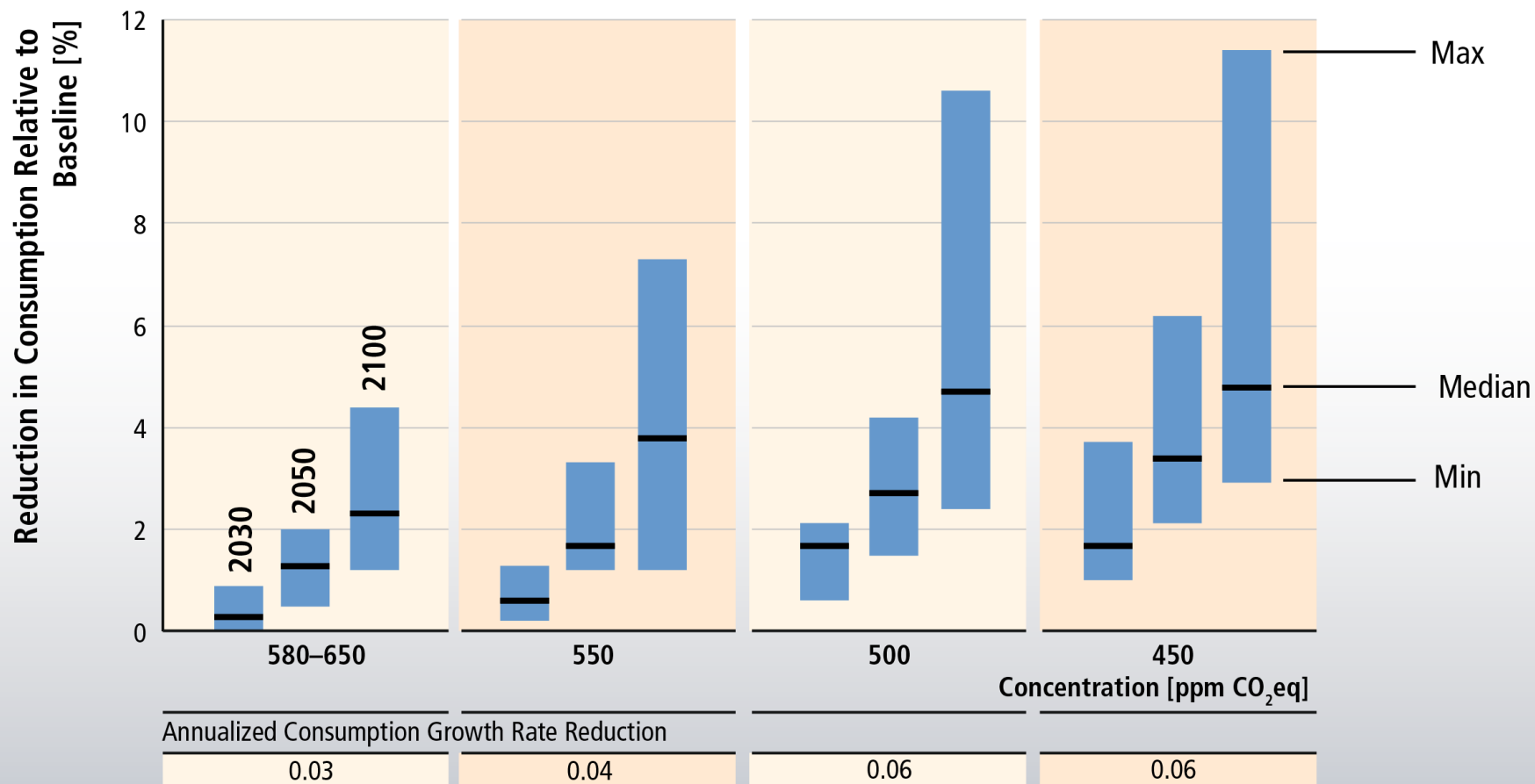


Current Cancun Pledges imply increased mitigation challenges.

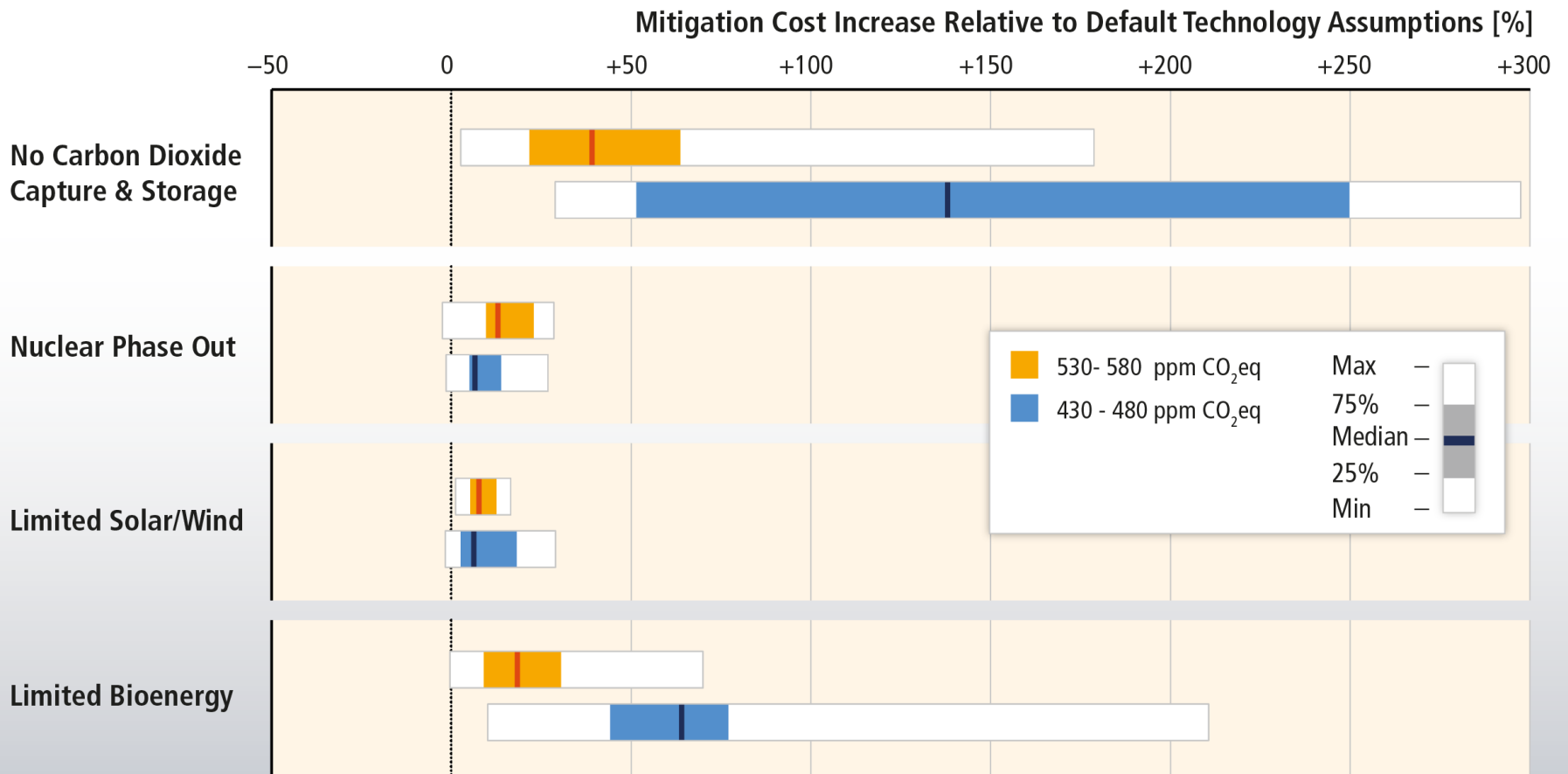
Mitigation cost estimates vary, but global GDP growth is not strongly affected.



Global costs rise with the ambition of the mitigation goal.

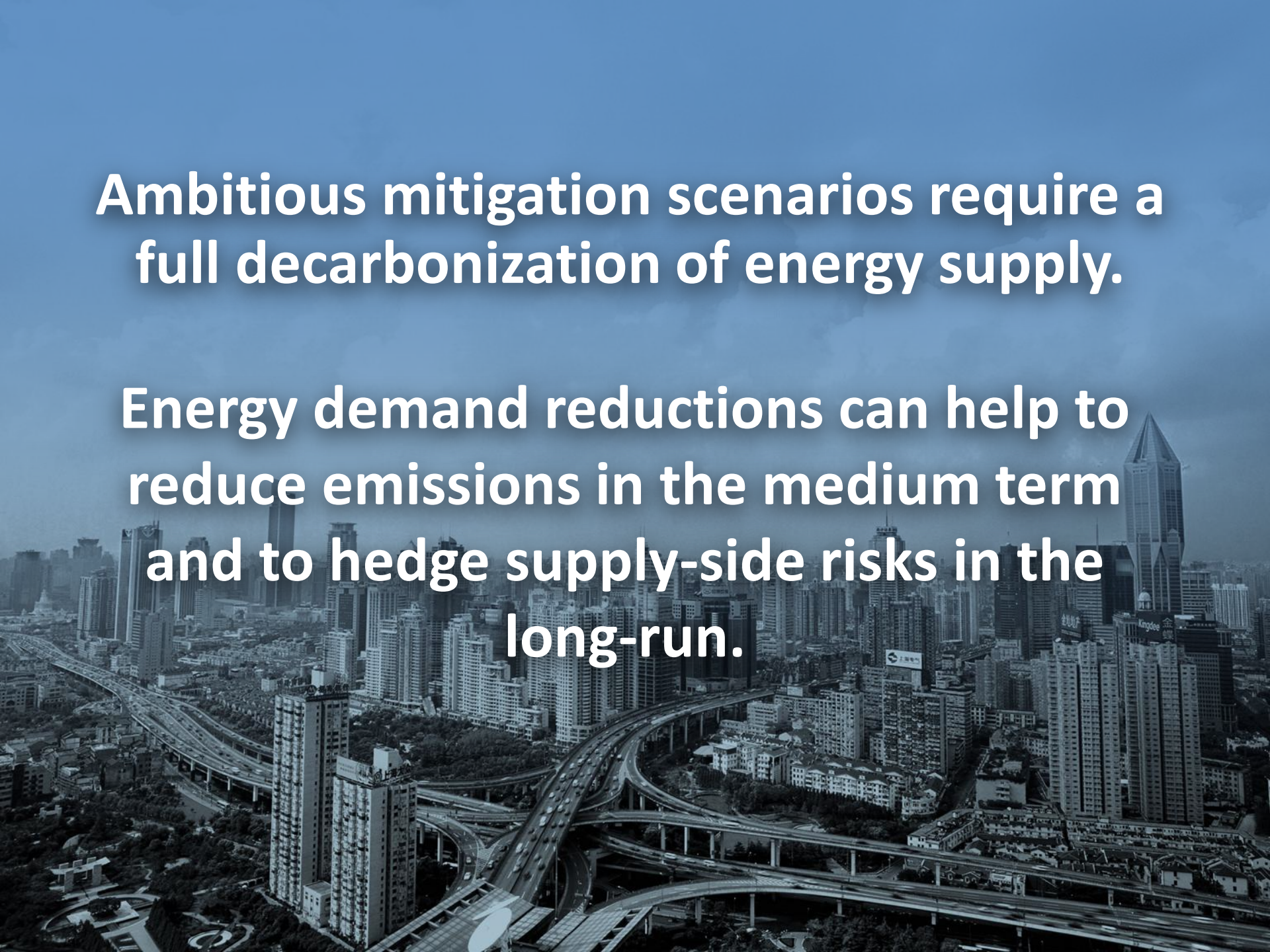


Limited availability of technologies can greatly increase mitigation costs.

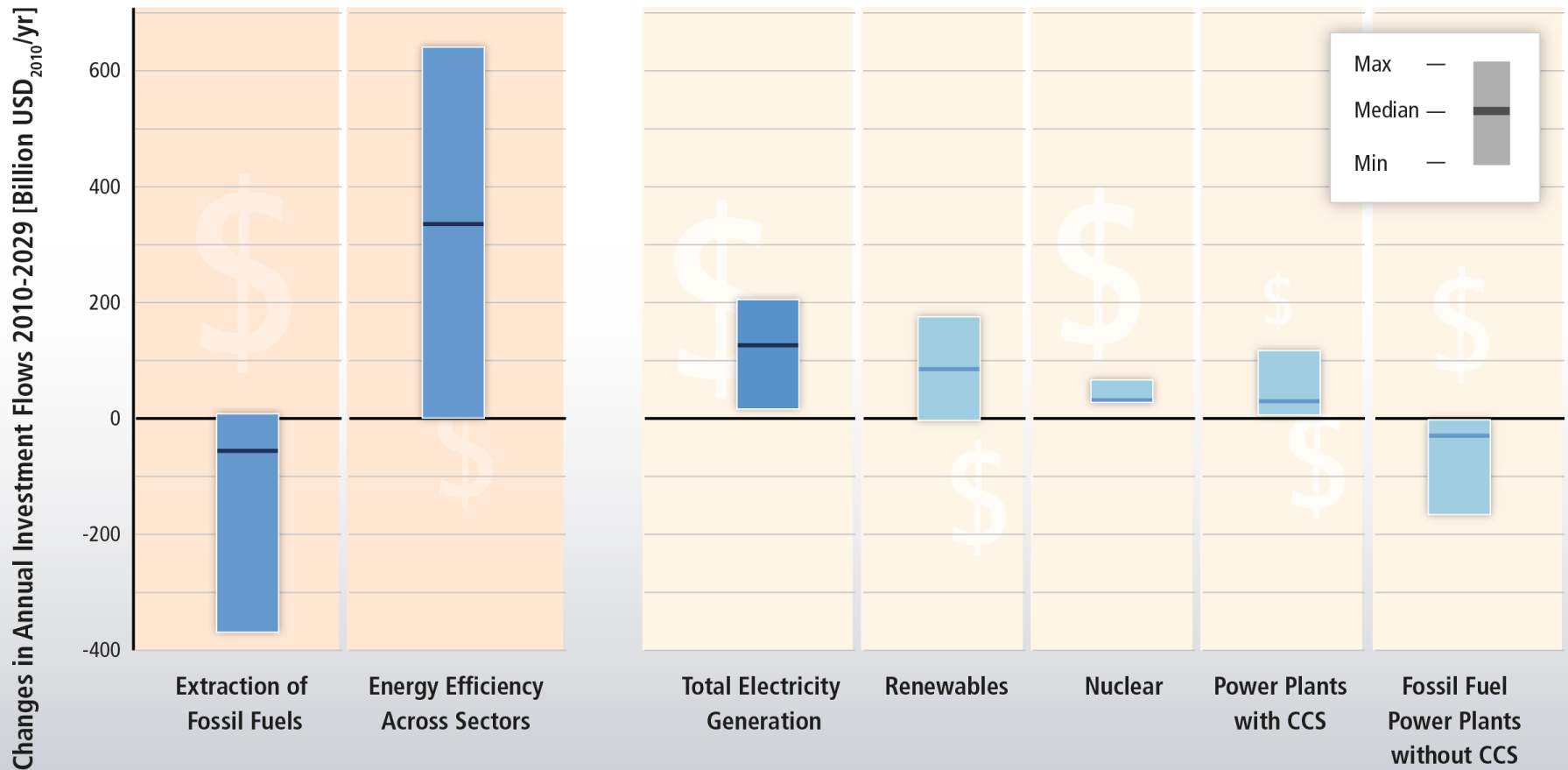


Ambitious mitigation scenarios require a full decarbonization of energy supply.

Energy demand reductions can help to reduce emissions in the medium term and to hedge supply-side risks in the long-run.



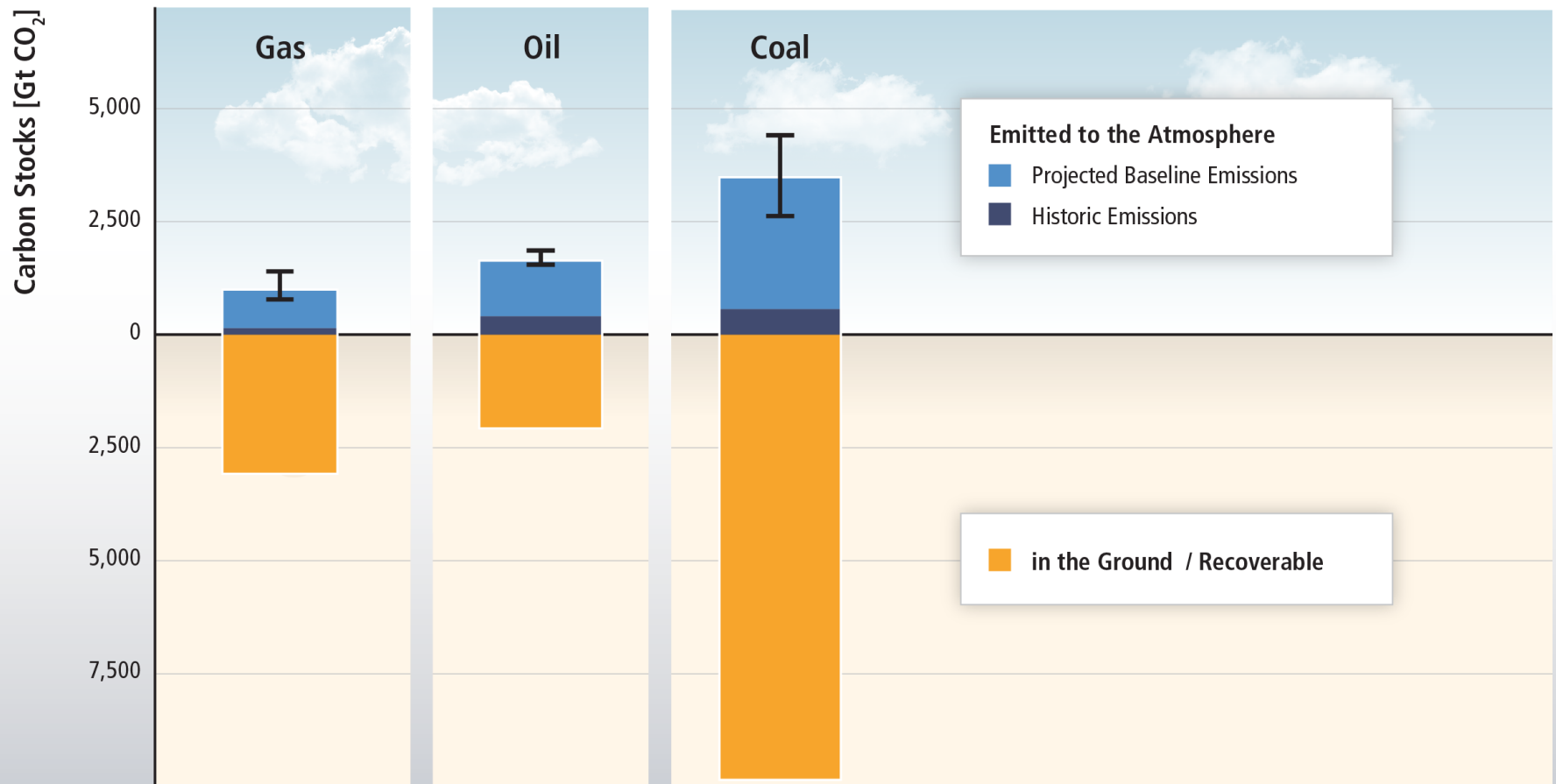
Substantial reductions in emissions would require substantial changes in investment patterns.



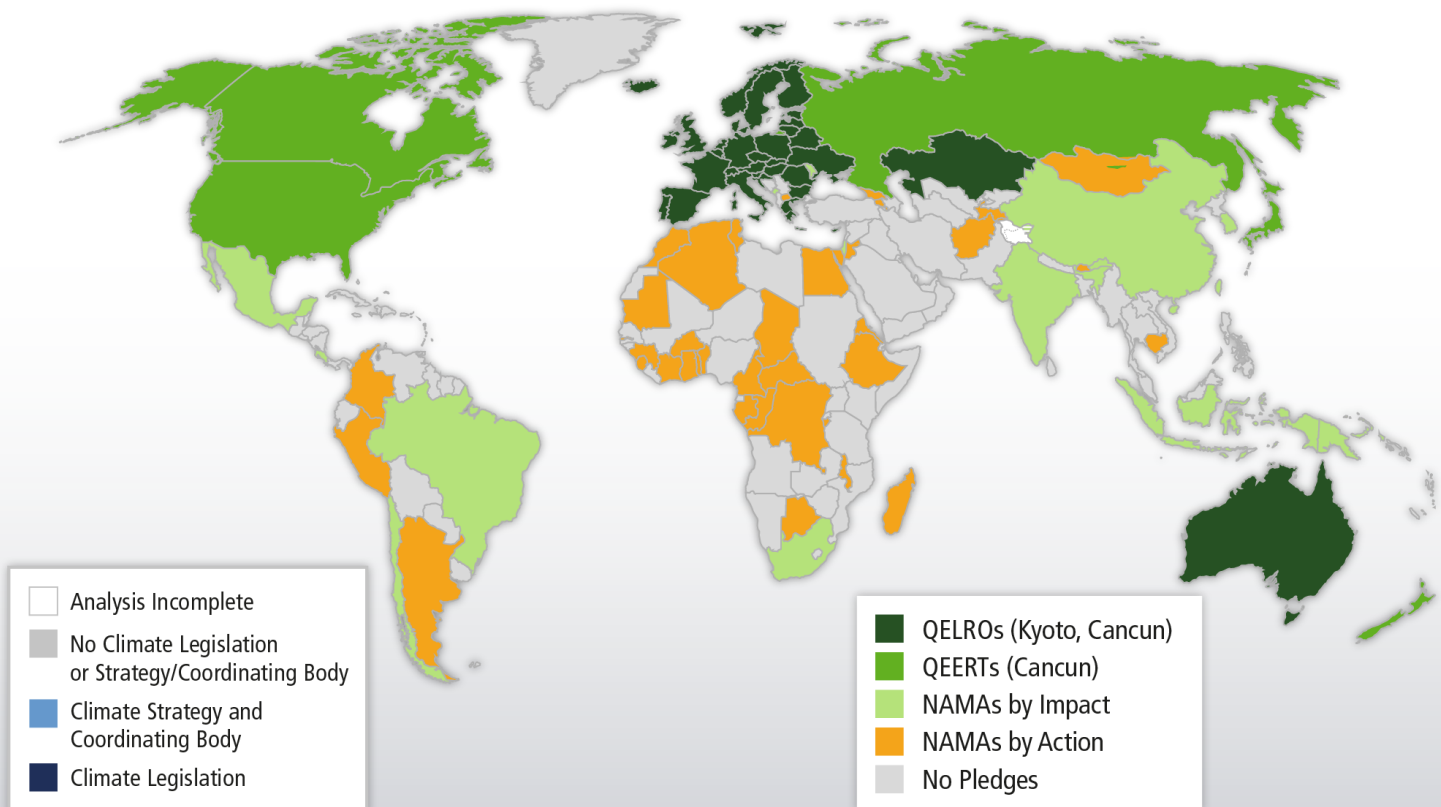
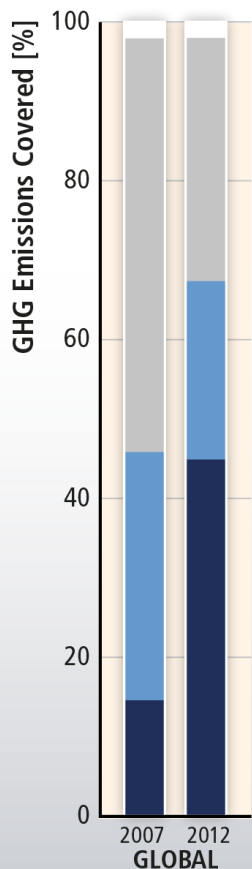
Climate change mitigation is a global commons problem that requires international cooperation and coordination across scales.



There is far more carbon in the ground than emitted in any baseline scenario.



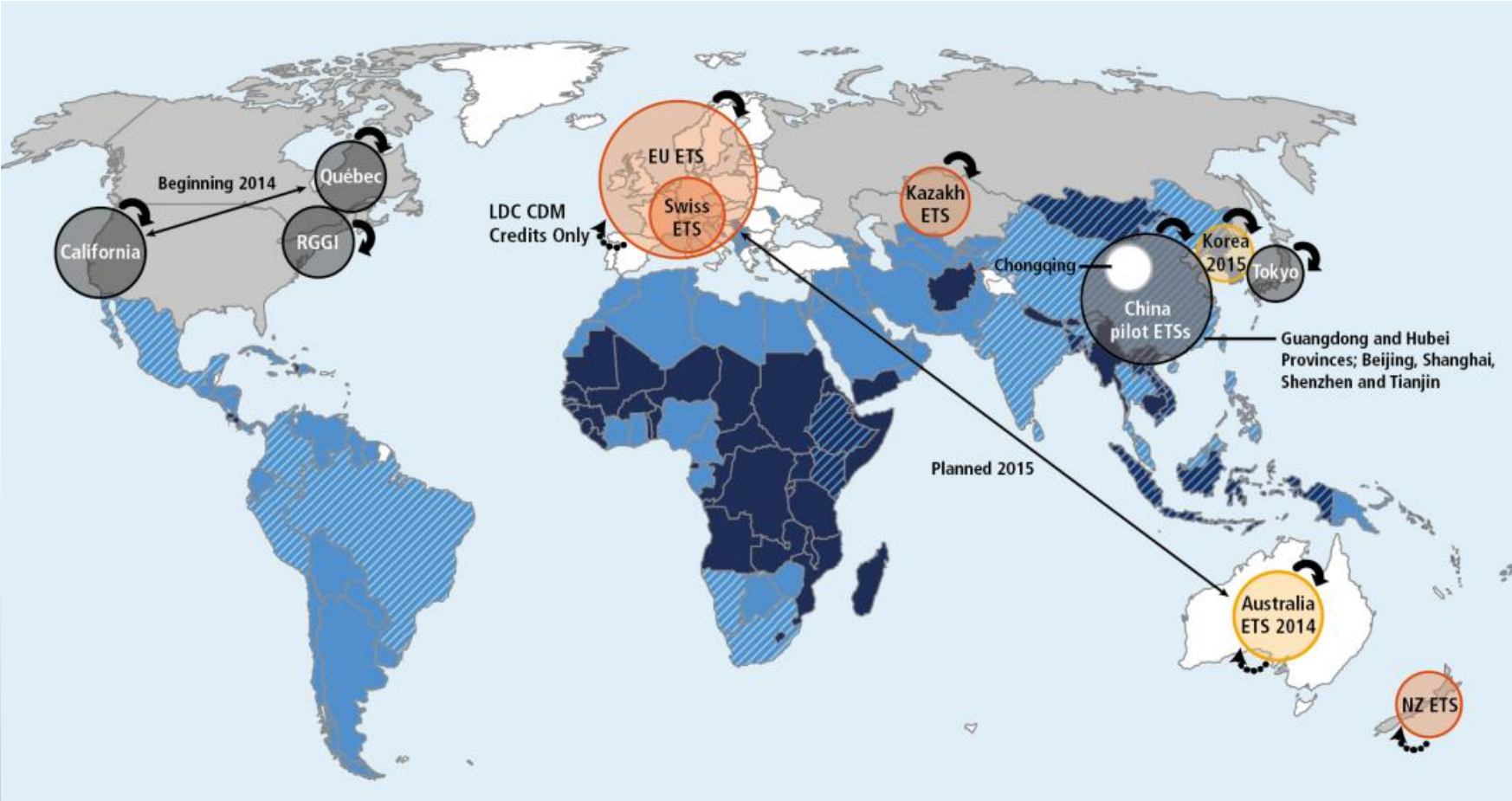
The number of climate change policies at the national and international level is growing. So far, these policies have not influenced the emission trend significantly.



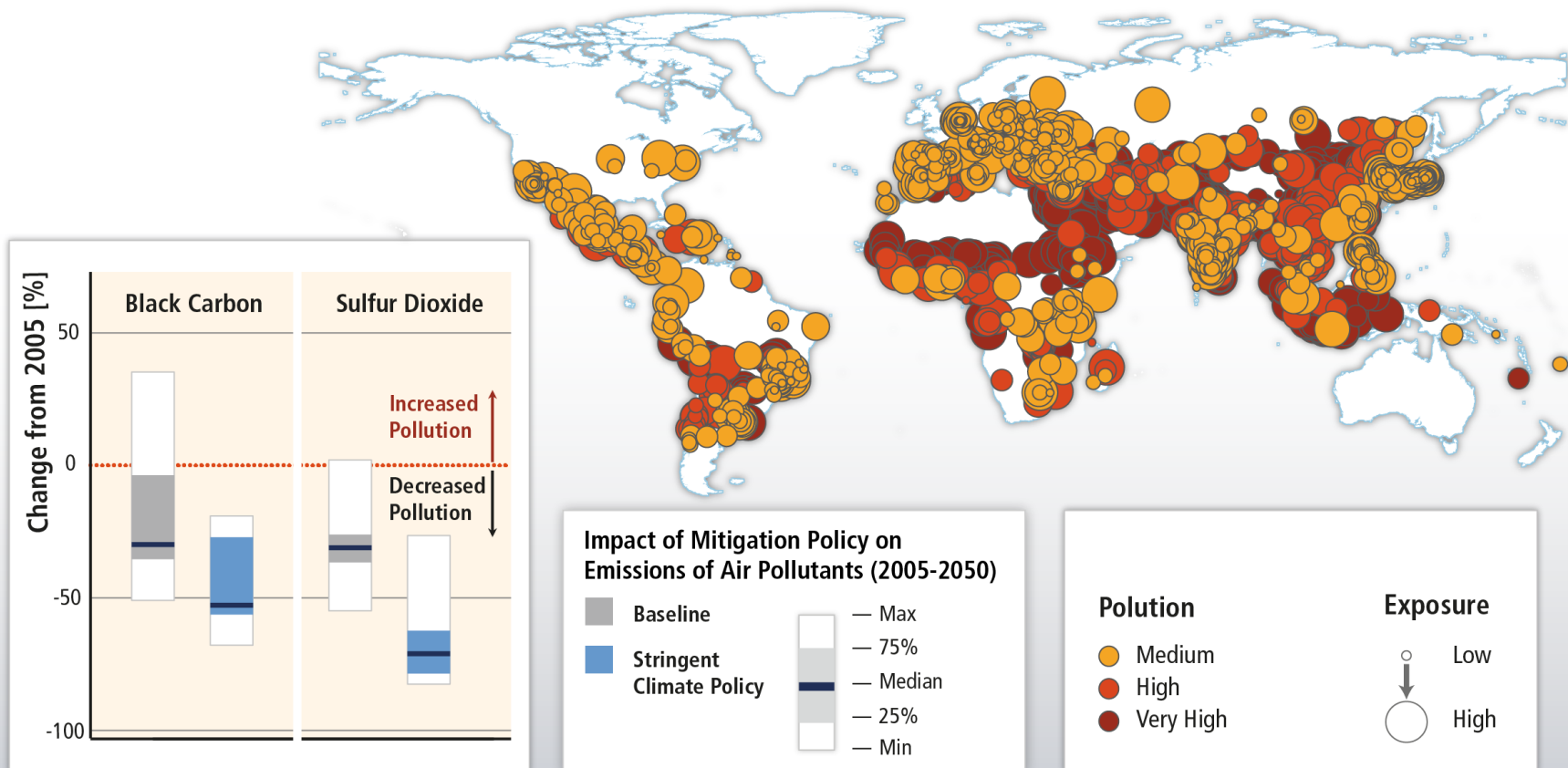
- Analysis Incomplete
- No Climate Legislation or Strategy/Coordinating Body
- Climate Strategy and Coordinating Body
- Climate Legislation

- QELROs (Kyoto, Cancun)
- QEERTs (Cancun)
- NAMAs by Impact
- NAMAs by Action
- No Pledges

Regions are starting to cooperate.



Mitigation can result in large co-benefits for human health and other societal goals.



Some final thoughts beyond IPCC

- After all, carbon pricing is a good idea: Taxing bads instead of goods.
- Finance ministers might be interested in carbon pricing even if they doubt scientific evidence of climate change.
- Infrastructure investments can create short-term benefits.

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