

# Climate Change: Some Winners, More Losers

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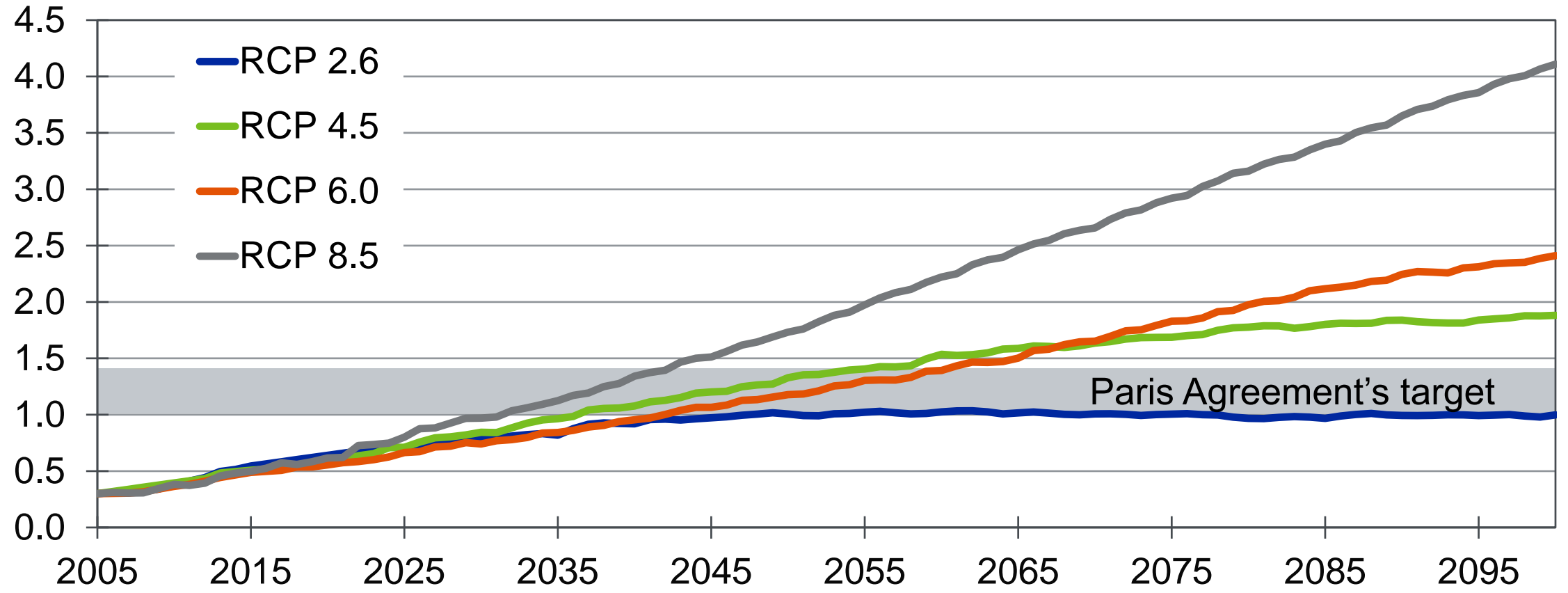
# Climate Change and the Fed

San Francisco Federal Reserve, March 2019

“Climate change describes the current trend toward higher average global temperatures and accompanying environmental shifts such as rising sea levels and more severe storms, floods, droughts, and heat waves. In coming decades, climate change—and efforts to limit that change and adapt to it—will have increasingly important effects on the U.S. economy. These effects and their associated risks are relevant considerations for the Federal Reserve in fulfilling its mandate for macroeconomic and financial stability.”

# Temperatures Will Rise Without Action

Projected mean global temp. increases relative to 1986-2005, °C



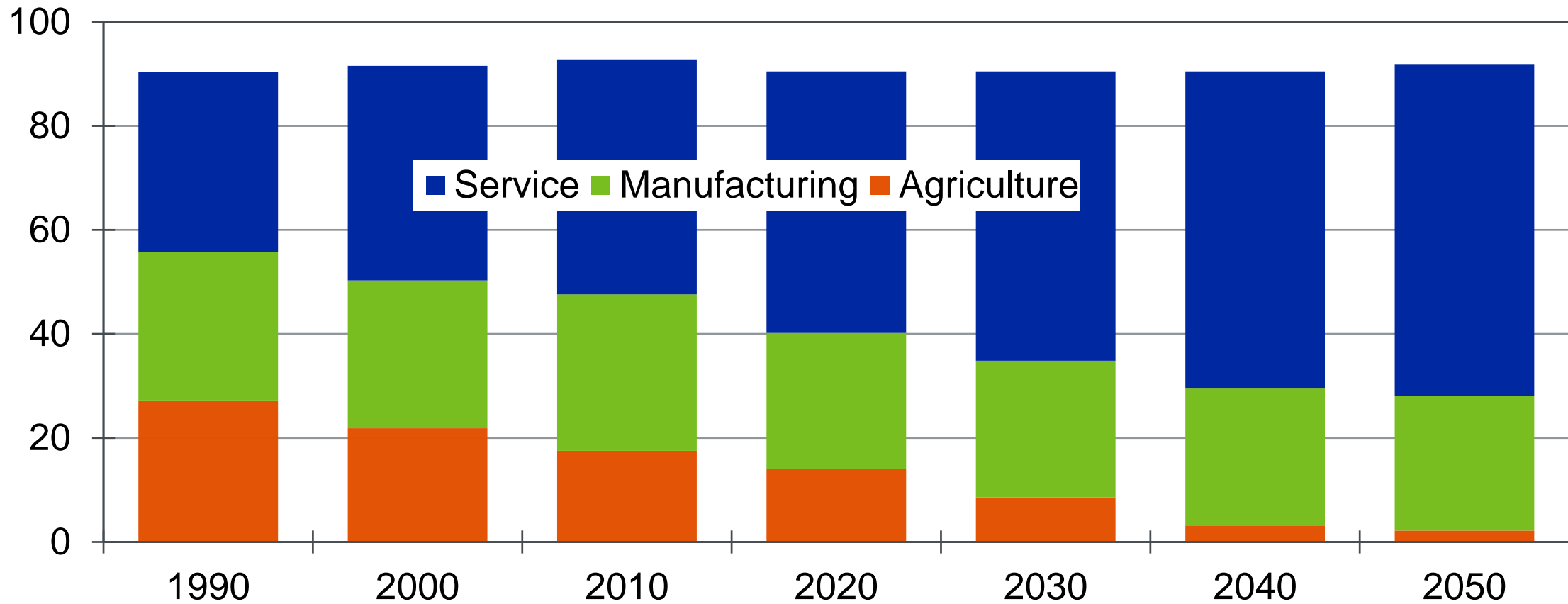
Sources: IPCC, Moody's Analytics

# We Assessed Six Impact Channels

- » Sea level rise
- » Agricultural productivity
- » Heat and labor productivity
- » Human health
- » Tourism
- » Energy demand

# Emerging Economies Industrialize

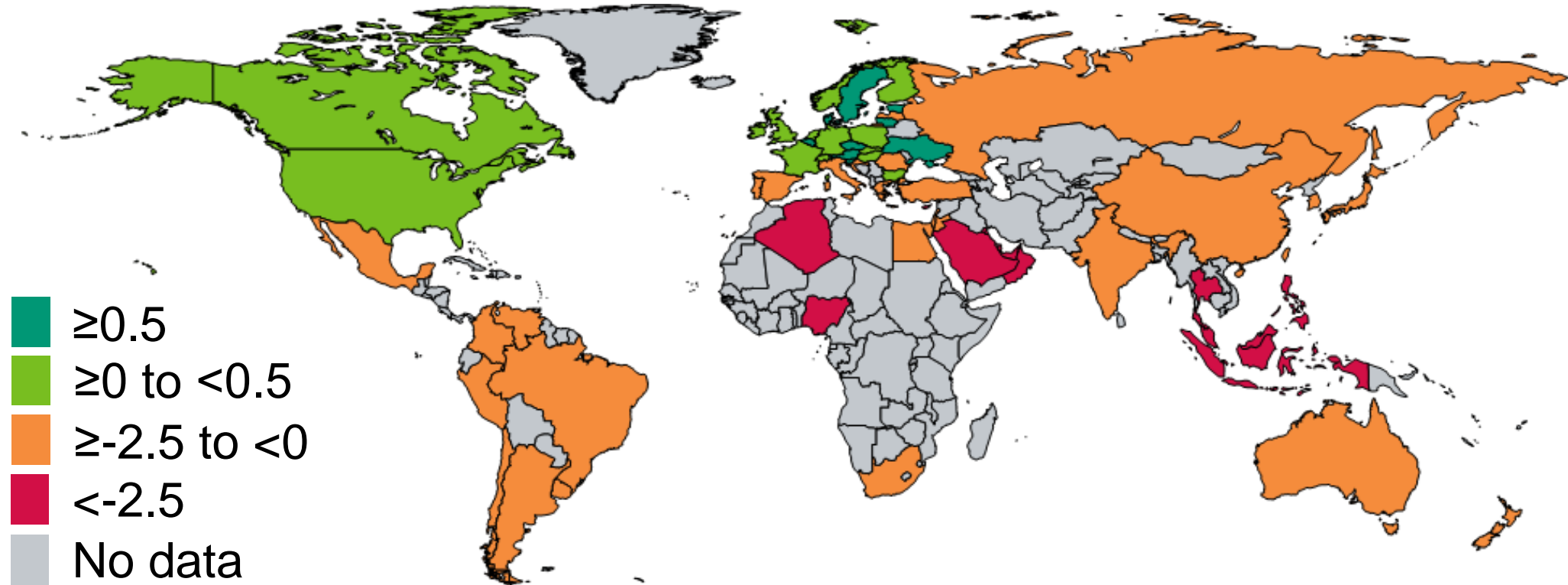
India, economic concentration by sector, %



Sources: World Bank, Moody's Analytics

# Some Winners, More Losers

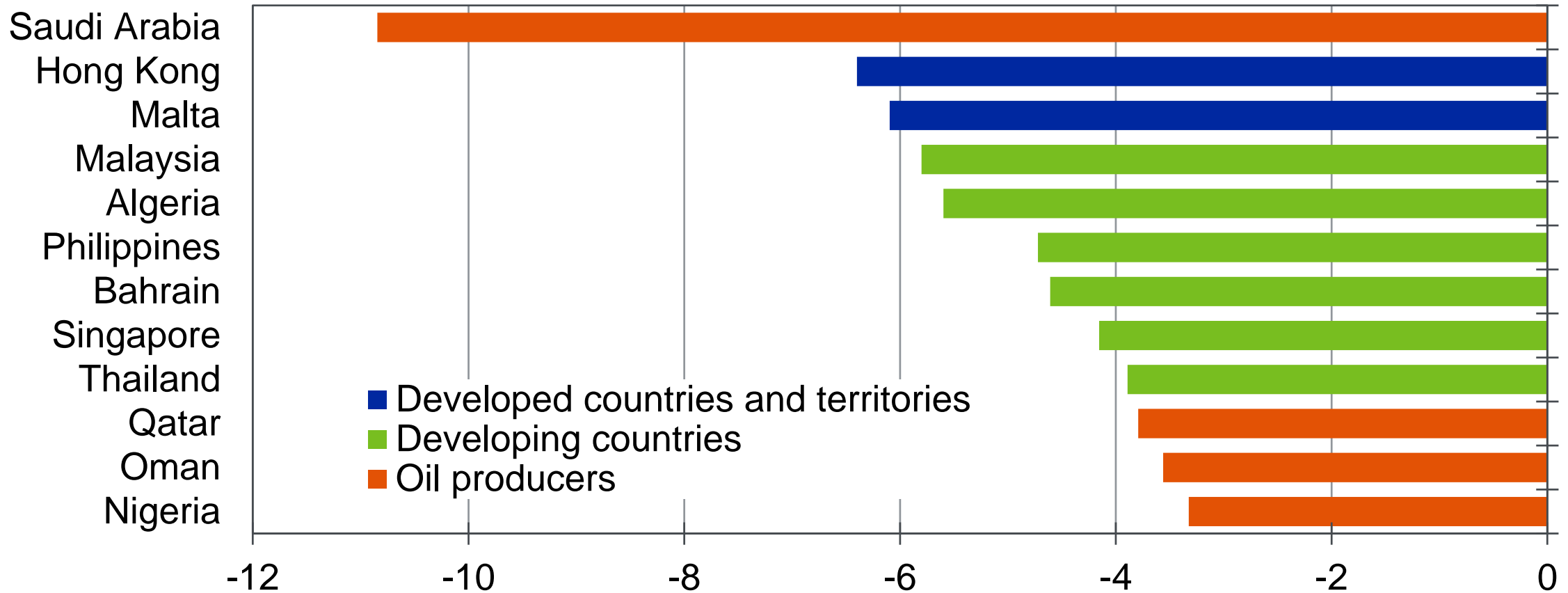
GDP % deviation from baseline in 2048, RCP 8.5



Source: Moody's Analytics

# Biggest Losers From Climate Change

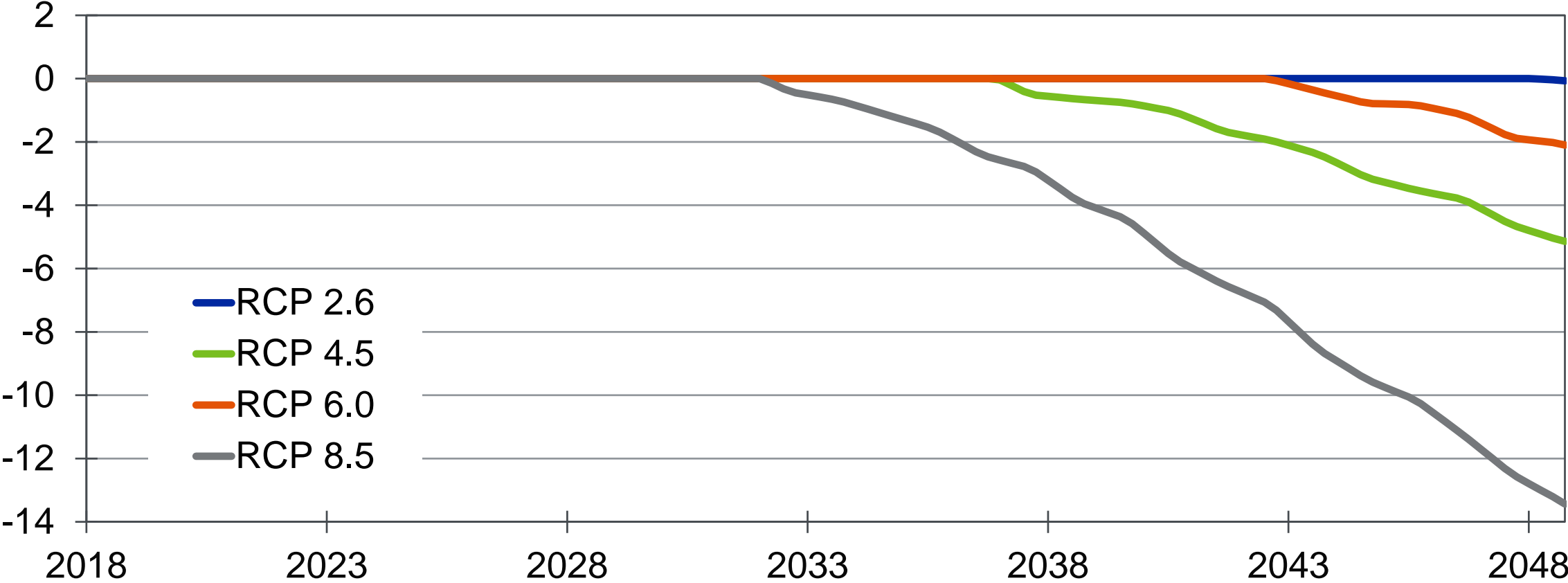
Real GDP, % change, RCP 8.5, 2048



Sources: World Bank, Moody's Analytics

# Falling Demand Cuts Oil Prices

Reduction in oil prices, %

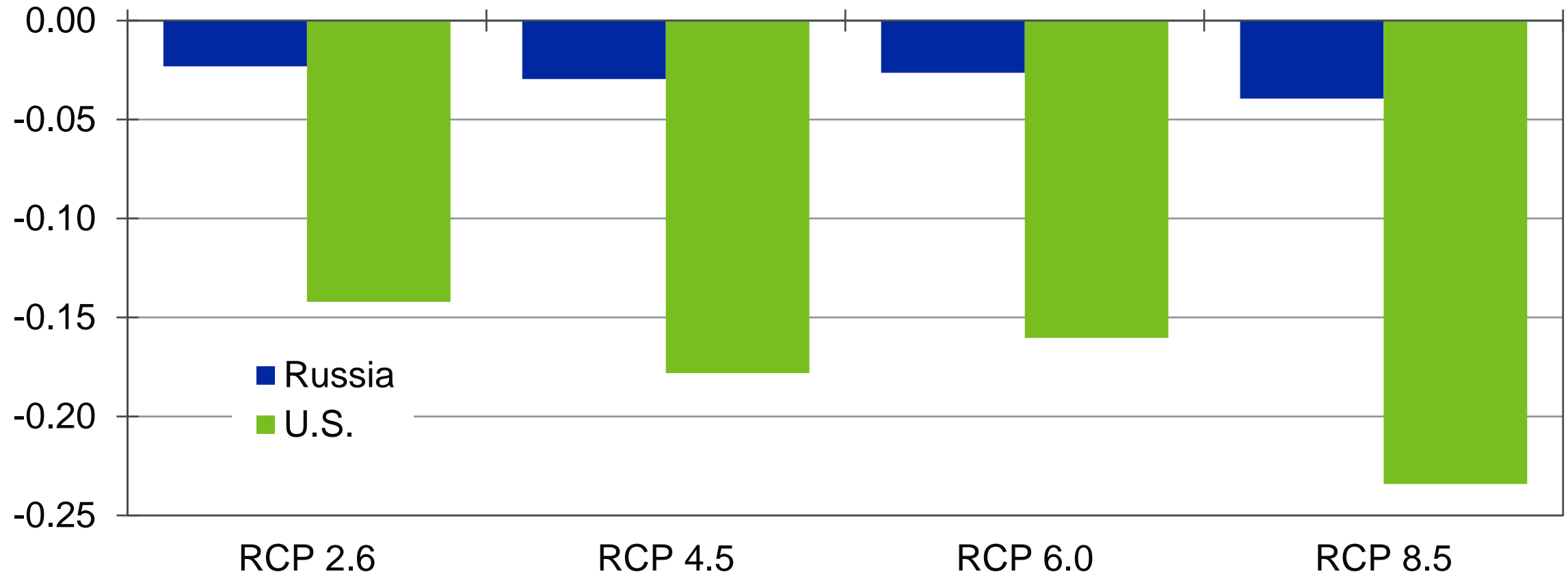


Sources: World Bank, Moody's Analytics



# Productivity Will Fall in Every Country...

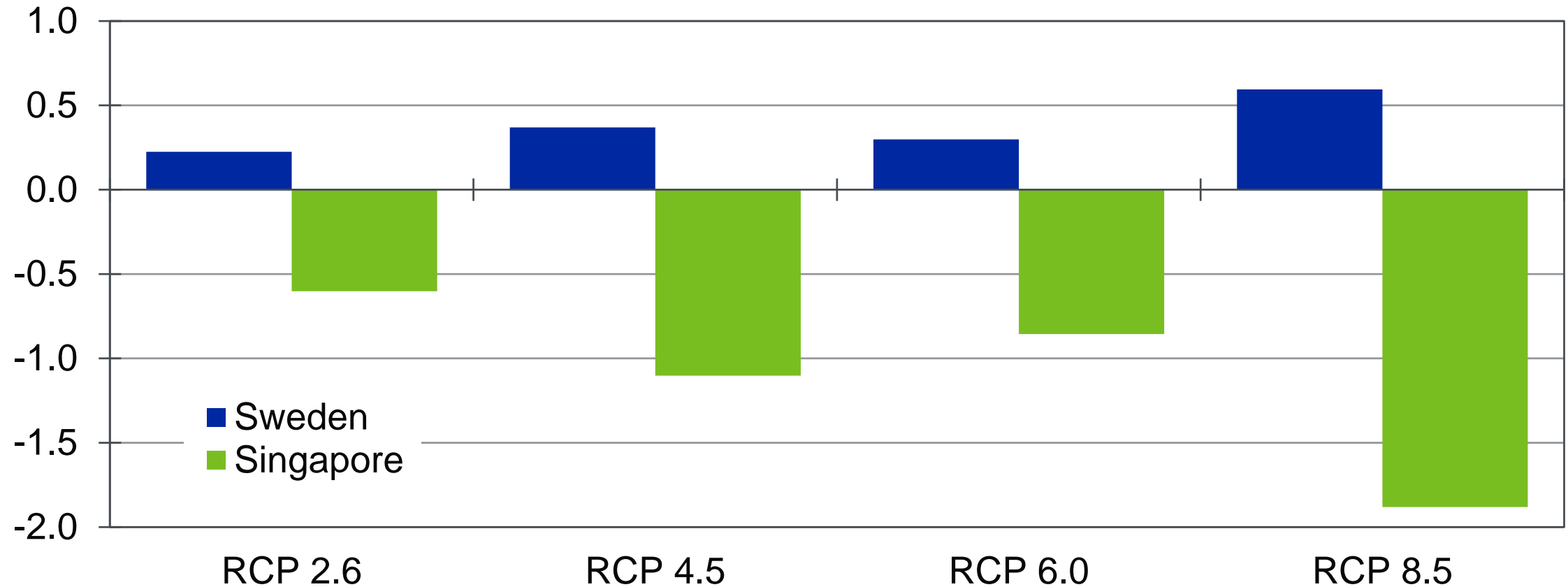
Reduction in potential productivity by 2048, %



Sources: World Bank, Moody's Analytics

# ...But Tourism Impacts Are Uneven

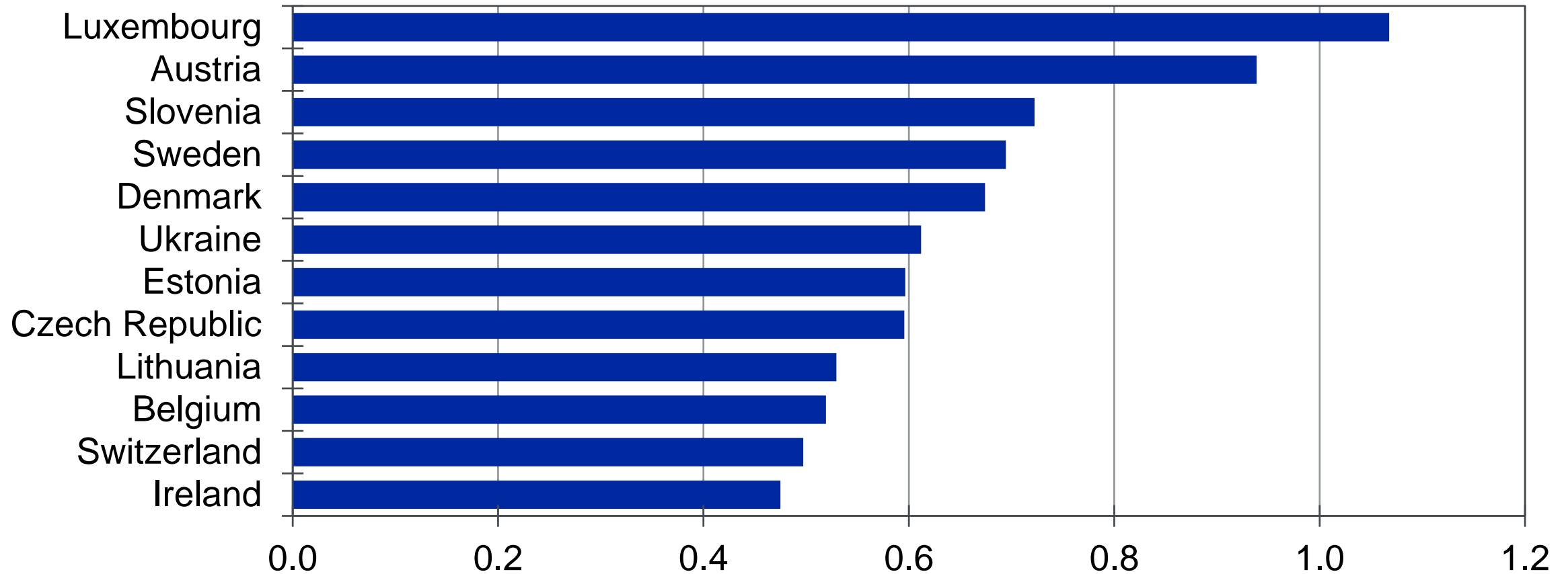
Change in economic output due to tourism by 2048, % of GDP



Sources: World Bank, Moody's Analytics

# Biggest Winners Are in Northern Europe...

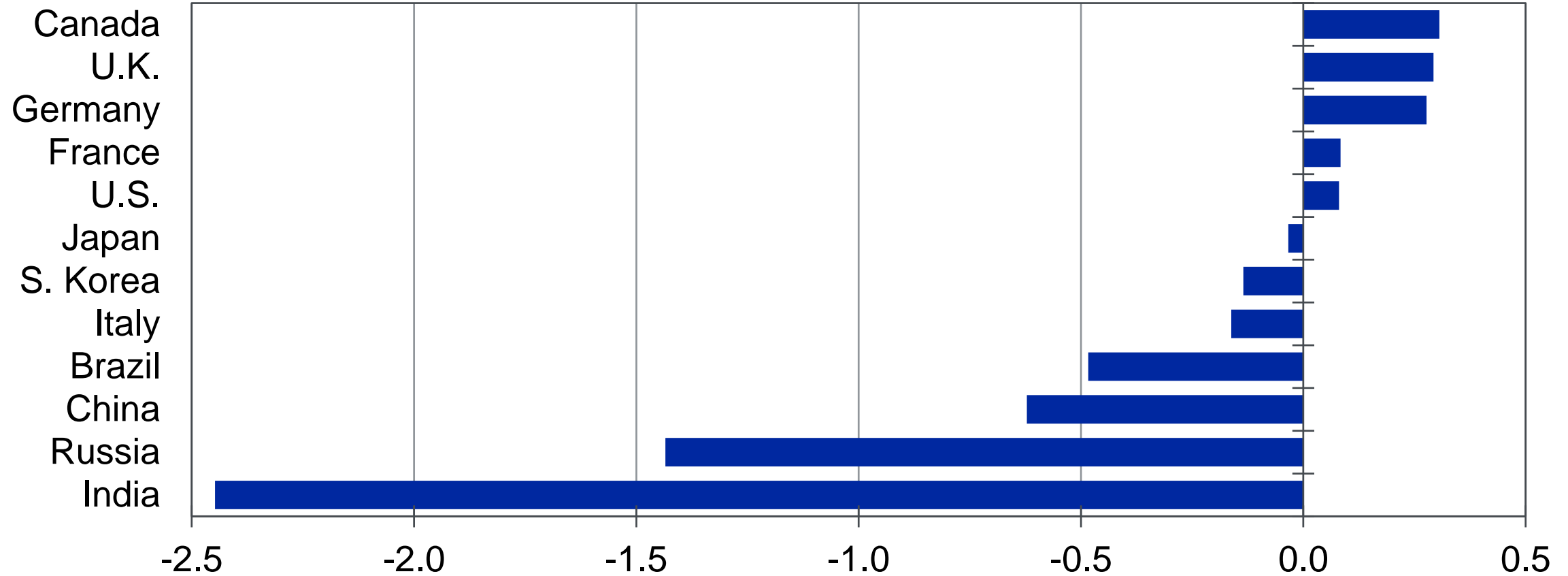
Real GDP, % change, RCP 8.5, 2048



Sources: World Bank, Moody's Analytics

# ...Largest Economies Change Little...

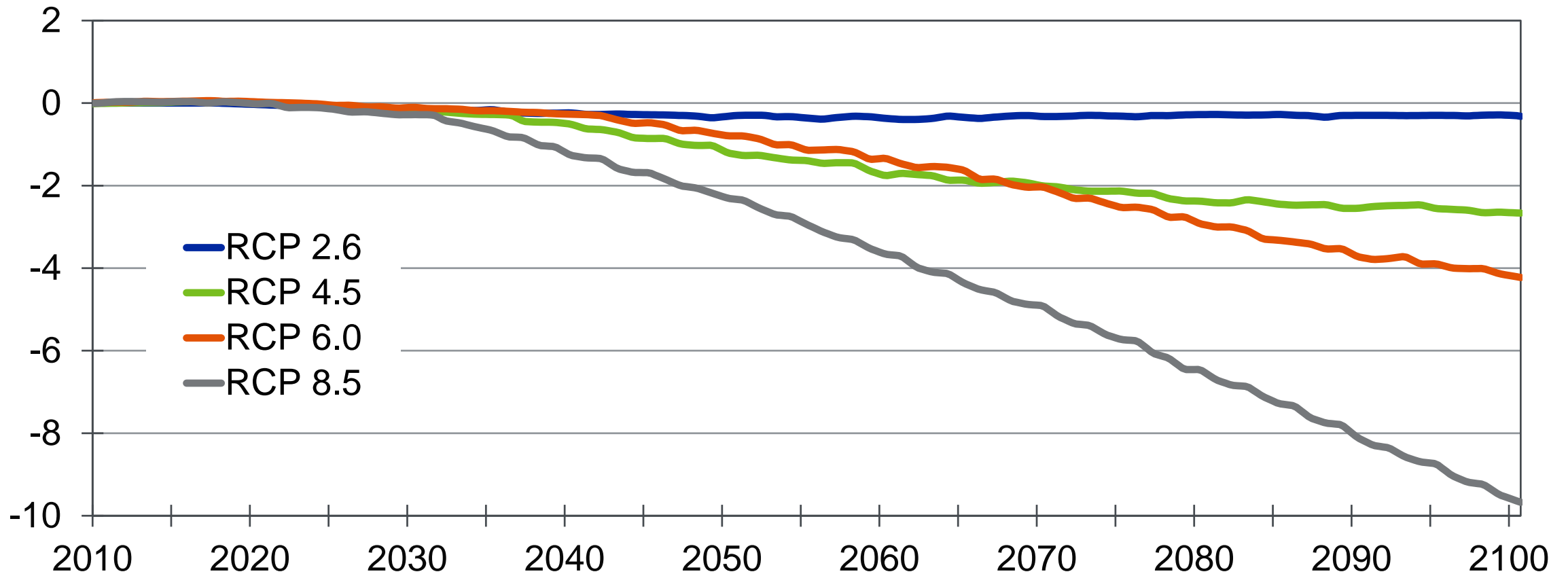
Real GDP, % change, RCP 8.5, 2048



Sources: World Bank, Moody's Analytics

# ...But Climate Stress Compounds Over Time

India, reduction in potential productivity, %



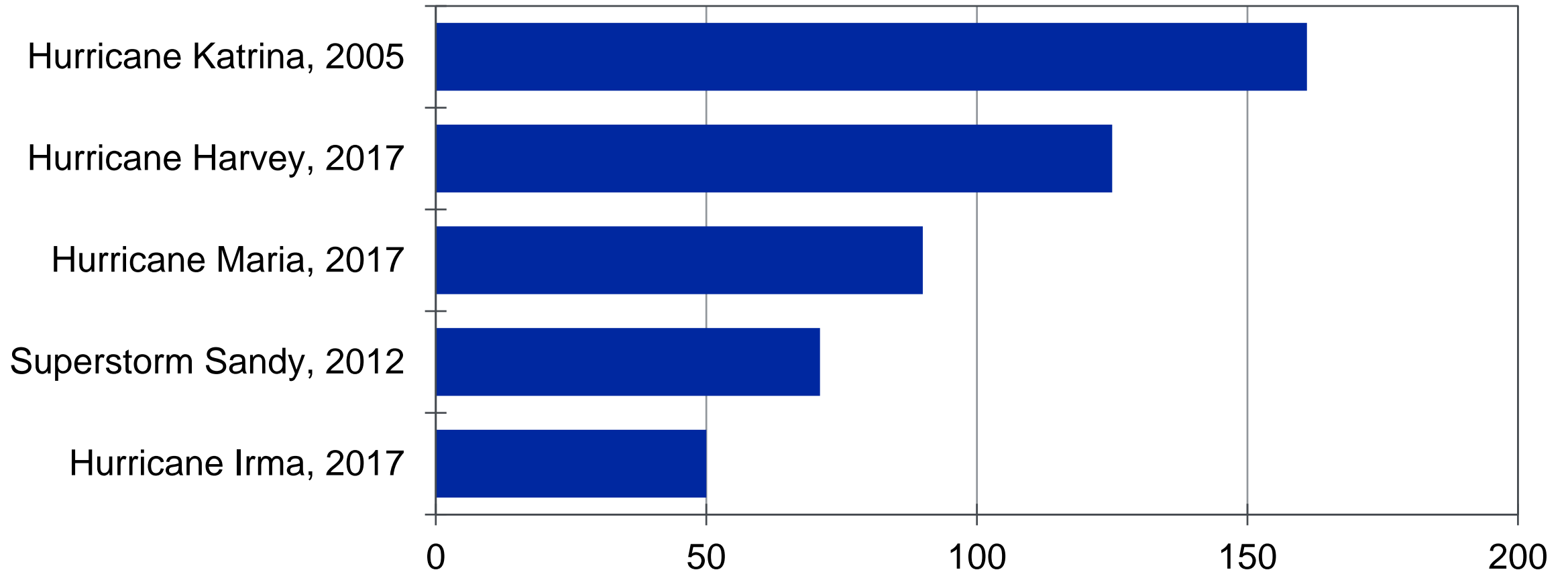
Sources: World Bank, Moody's Analytics

# Economic Research Limitations

- » Costs of extreme weather events are not quantified
- » Do not consider the impact of population dislocations and migration
- » Geopolitical fallout is not considered
- » Pollution mitigation costs are not assessed
- » Horizon of economic scenarios is only 30 years
- » Heightened uncertainty for economic projections

# Costliest U.S. Disasters Occurred Recently

Costliest weather events in U.S. history, \$ bil



Sources: NOAA, Moody's Analytics

# Q&A

Questions?

Contact us at [help@economy.com](mailto:help@economy.com)





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