



CENTRE FOR
GREEN GROWTH

The Limits to Growth (1972) in a 50-year perspective

Jorgen Randers
Professor Emeritus
Climate Strategy
Norwegian Business School BI

50th Anniversary Conference of the Club of Rome
Rome, Oct 17, 2018



The Limits to Growth (1972):

The human footprint
cannot grow forever
on a finite planet

THE LIMITS TO GROWTH

Donella Meadows, Dennis Meadows, Erich Zahn, Peter Miling
Die Grenzen des Wachstums
Bericht des Club of Rome* zur Lage der Menschheit

svun at
TAMMI
en des ums

如月の限界
The Limits to Growth

DOHELLA H. MEADOWS / DENNIS L. MEADOWS / ERICH ZAHN / PETER MILING / WILLIAM W. BEHRENS III

oro
oro
*Friedenspreis des Deutschen Buchhandels 1973

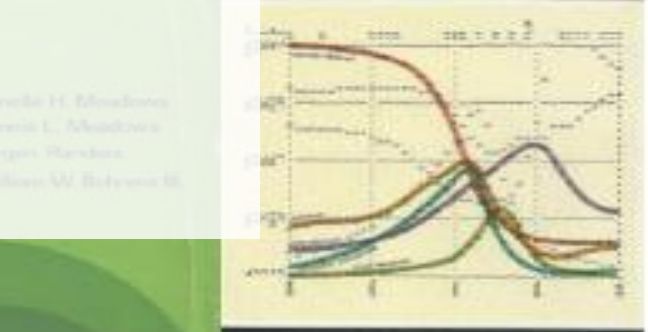
THE LIMITS TO GROWTH

A report for the CLUB OF ROME'S project on the predicament of mankind

محدودیت‌های رشد

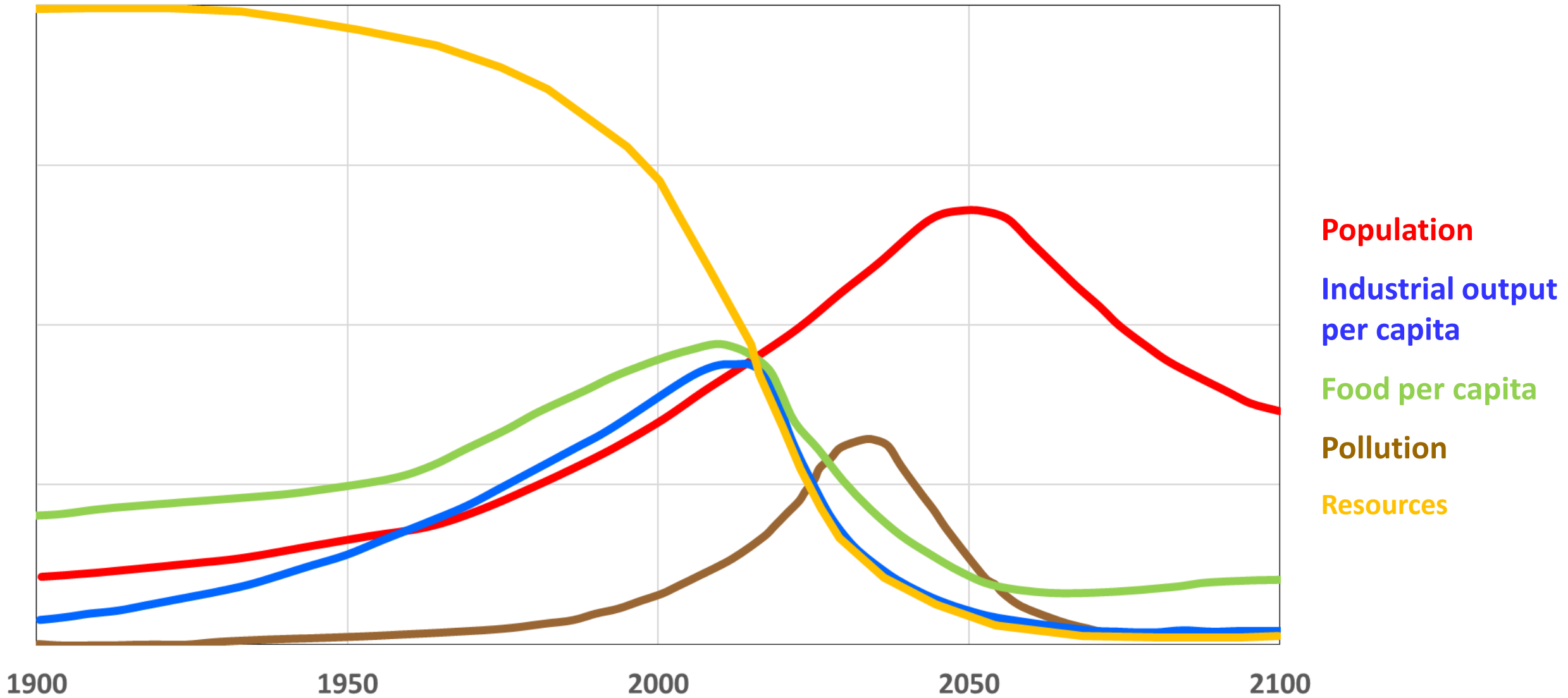
THE LIMITS TO GROWTH
Donella H. Meadows
Dennis L. Meadows
Jørgen Randers
William W. Behrens III
A Report for THE CLUB OF ROME'S Project on the Predicament of Mankind
A POTOMAC ASSOCIATES BOOK \$2.75

Meje rasti
Donella H. Meadows
Dennis L. Meadows
Jørgen Randers
William W. Behrens III
人類の危機

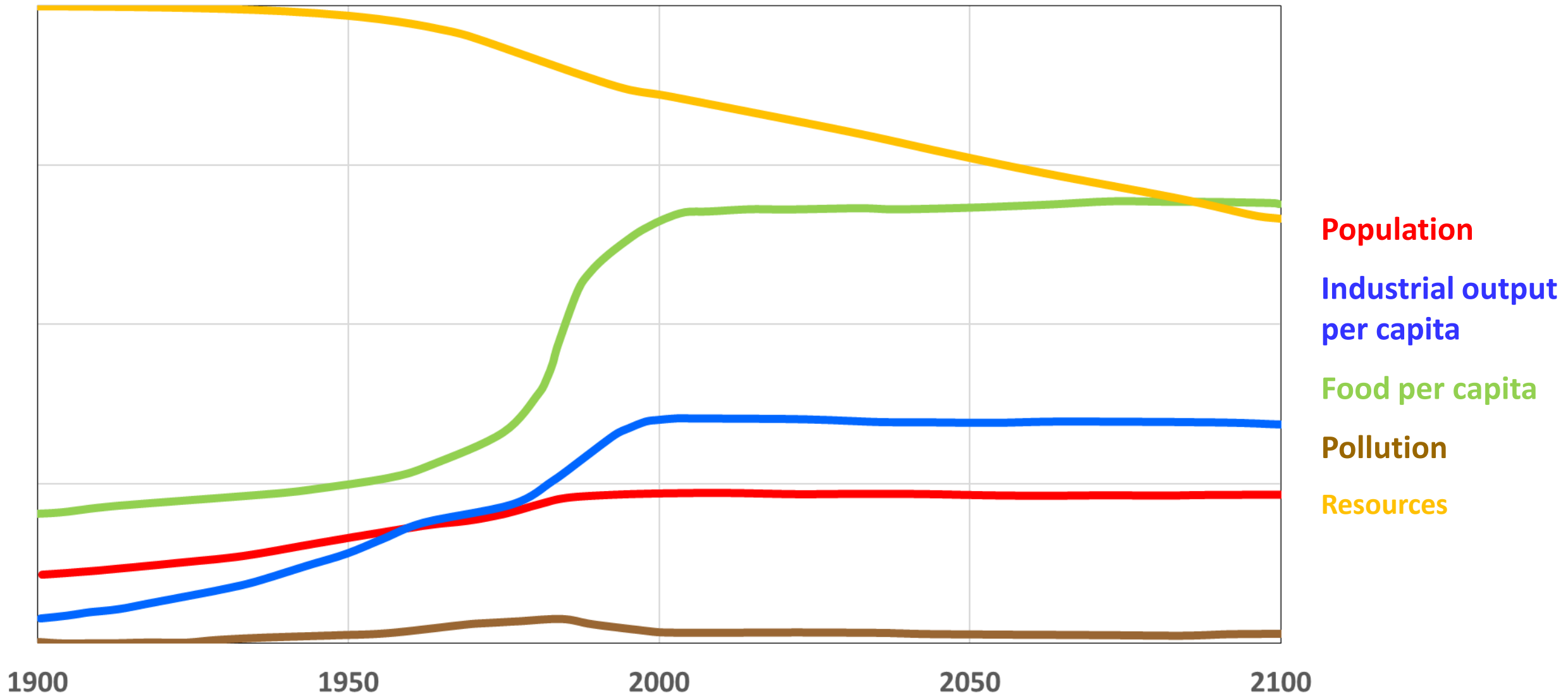


I LIMITI dello SVILUPPO
rapporto del System Dynamics Group
Massachusetts Institute of Technology (MIT)
per il progetto del Club di Roma
su dilemma dell'umanità
Biblioteca della EST
EDIZIONI SCIENTIFICHE E TECNICHE
MONDADORI

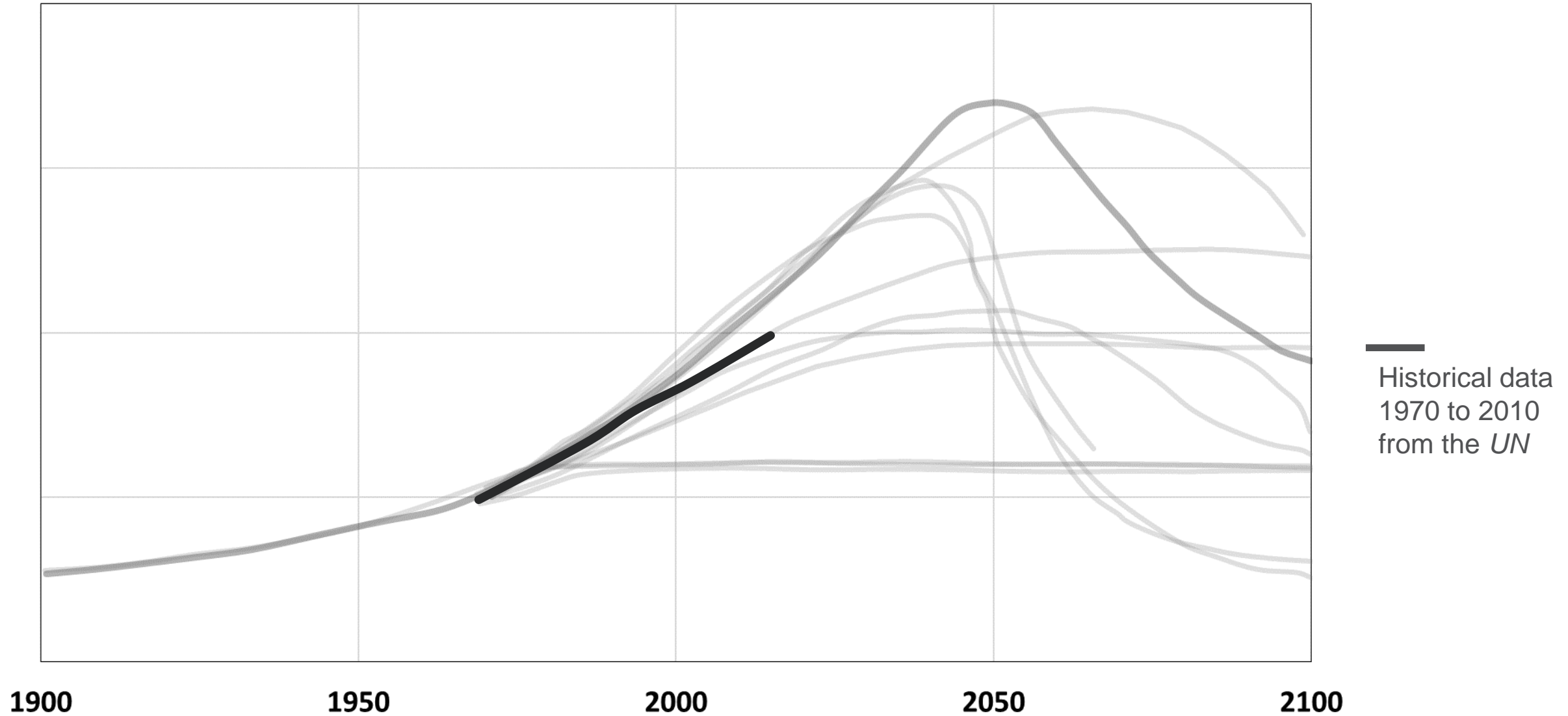
A pessimistic run from *Limits* - Resource crisis



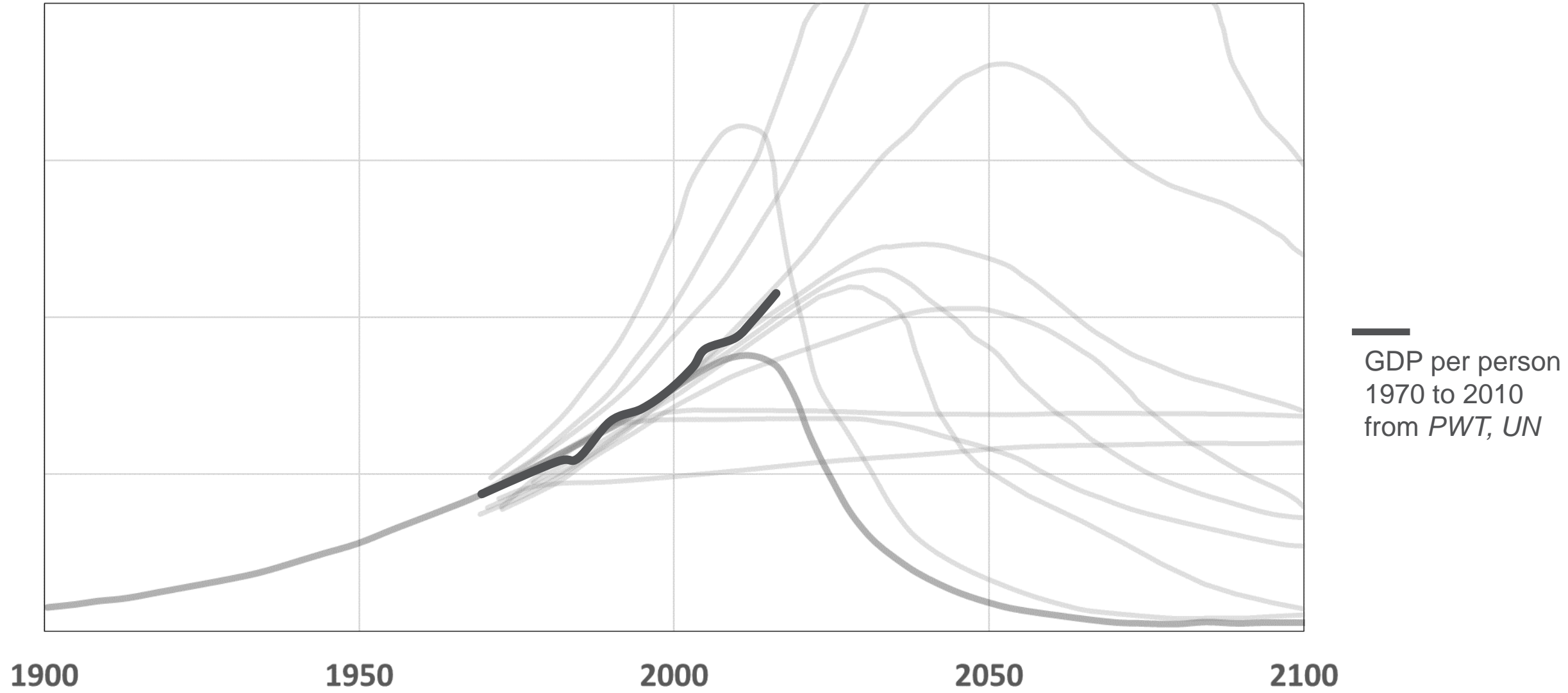
An optimistic run from *Limits* - Stabilized world



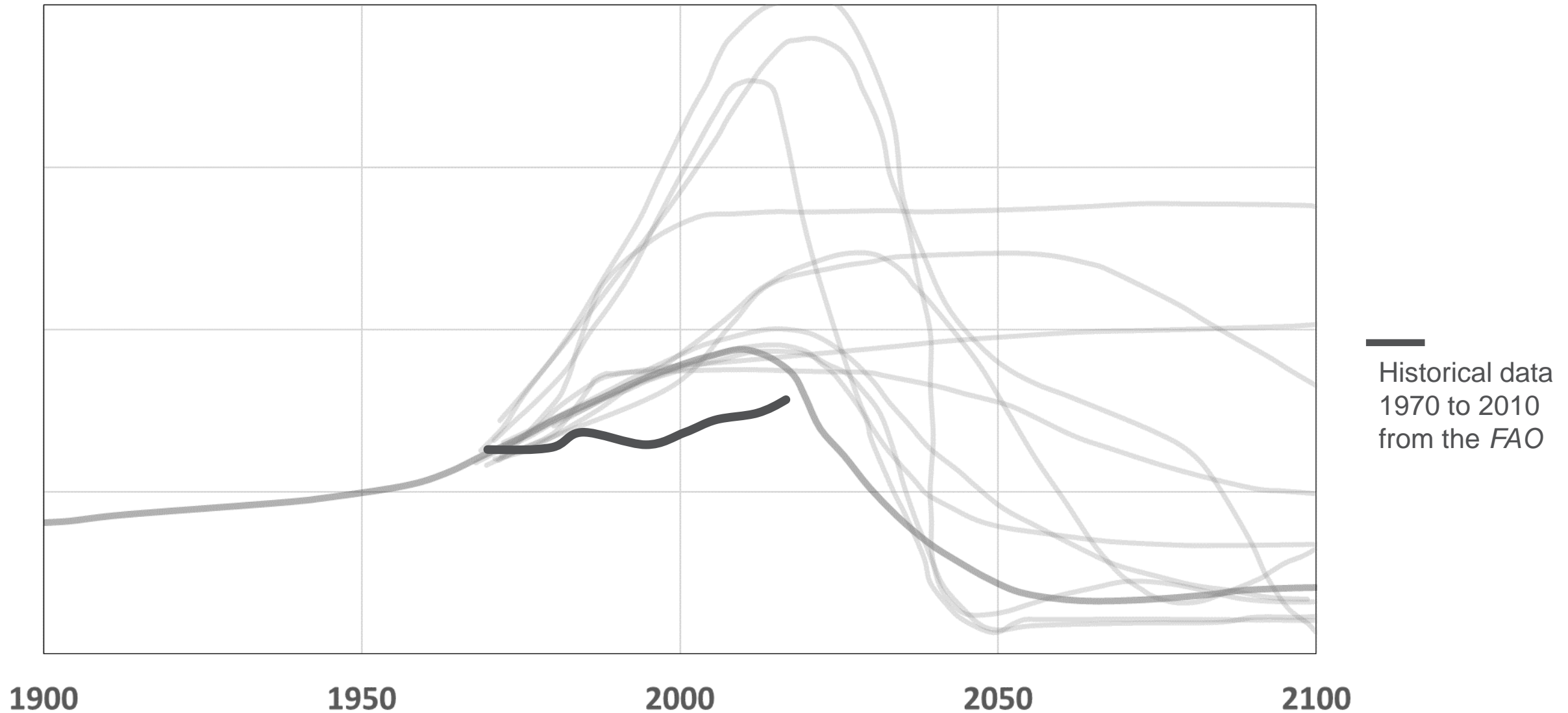
12 scenarios from *Limits* - Population



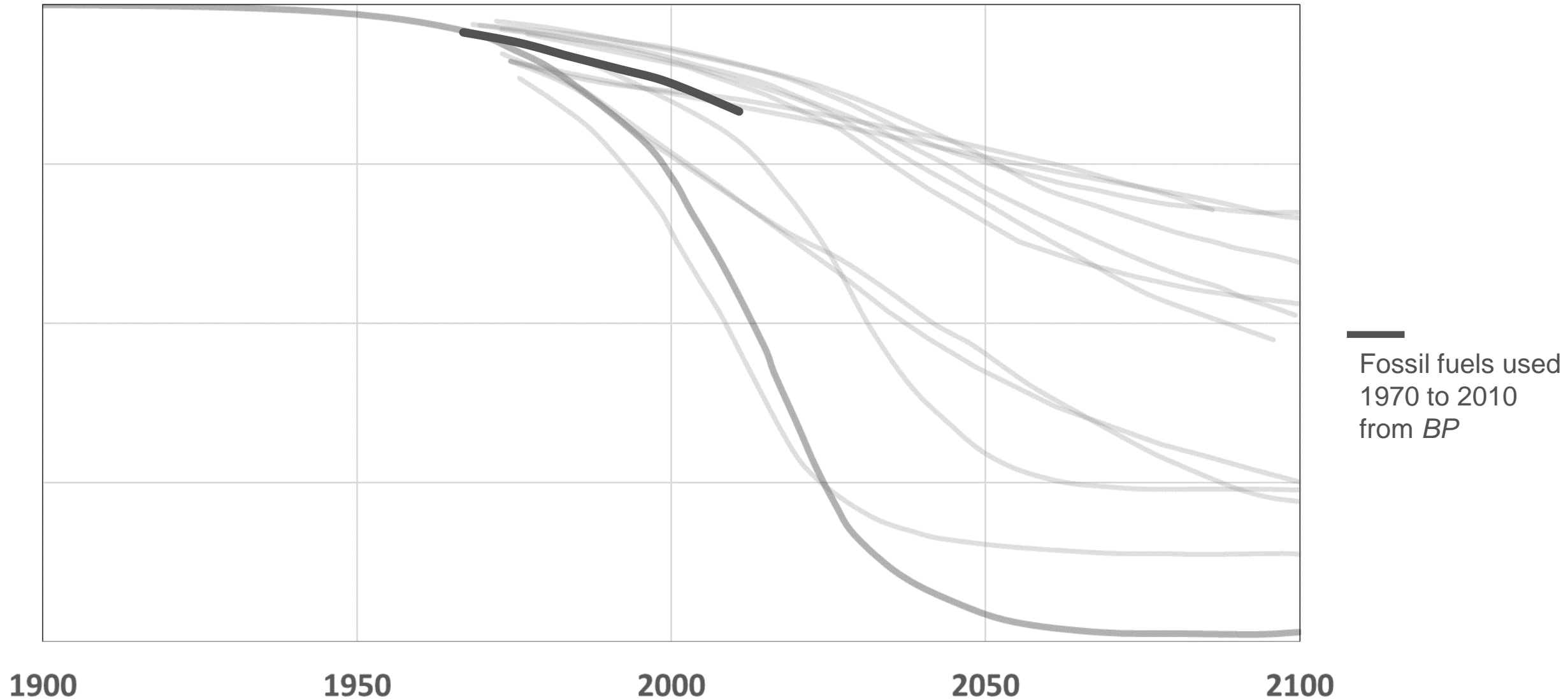
12 scenarios from *Limits* - Industrial output per capita



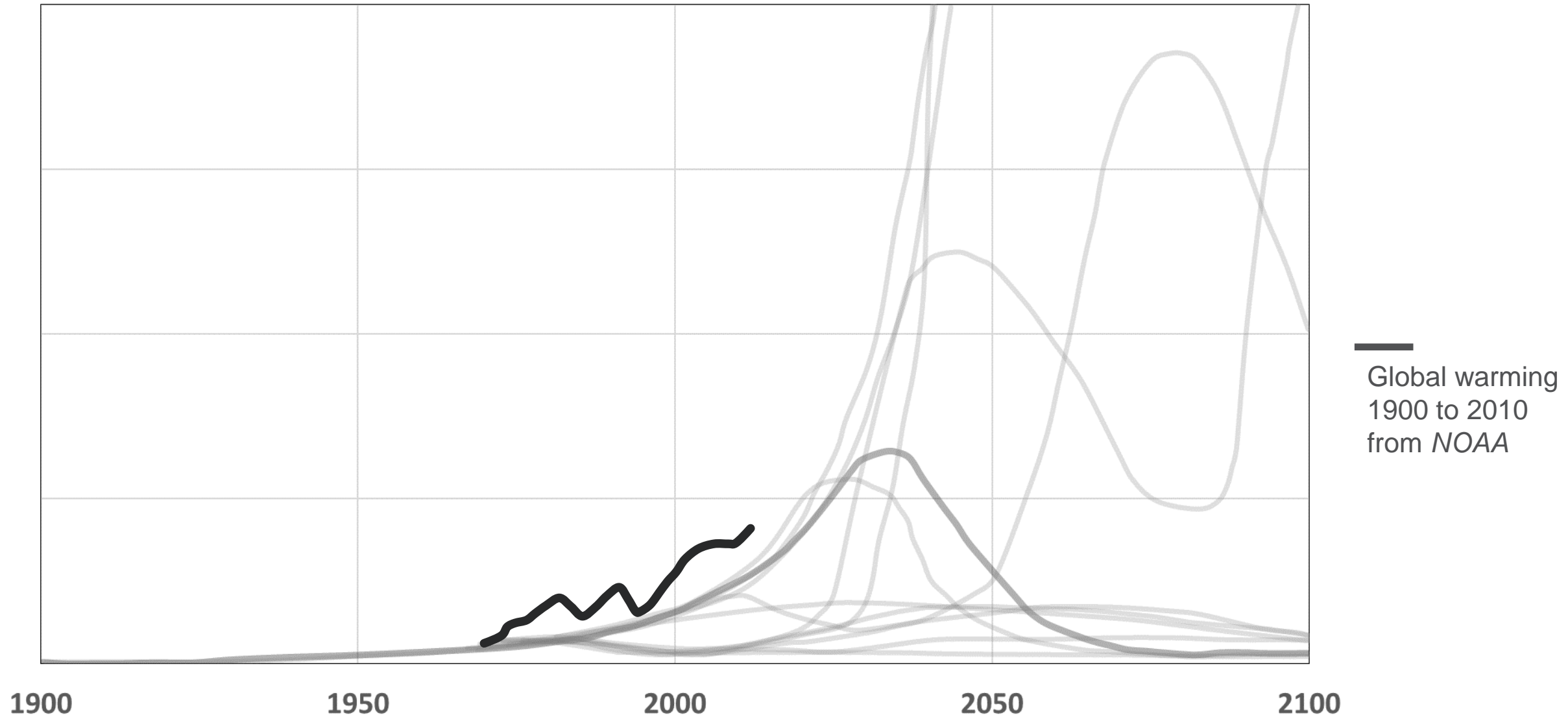
12 scenarios from *Limits* - Food per capita



12 scenarios from *Limits* - Resources



12 scenarios from *Limits* - Pollution



The real messages of *Limits*

1. Planet Earth is finite

Even in light of technological advance, since it takes time to develop new solutions

2. Footprint growth must stop

Continued growth in the human footprint will cause resource and pollution problems before mid-21st century. The footprint must stop growing, not the value added (GDP).

3. Multiple limits

There are numerous planetary boundaries. If society manages to avoid one, it will soon face another

4. Social decline

If society fails to live within limits, the result will be social friction, conflict, and loss of human well-being. “Global collapse” may be the wrong word.

A Global Forecast
for the Next Forty Years

EINE GLOBALE PROGNOSE
FÜR DIE NÄCHSTEN 40 JAHRE

2052

나은 미래는
계 오지 않는다

A Global Forecast for the Next Forty Years
원순 세계, 나와 내 아이는 어떤 하루를 살고 있을까

2052 - A Global Forecast

for the Next Forty years (2012):

**What the world needs,
is not what is most profitable -**

nor what is in

the short-term interest of the voters

2



Jorgen Randers

A REPORT TO THE CLUB OF ROME
COMMEMORATING THE 40TH ANNIVERSARY OF
The Limits to Growth

JORGEN RANDERS

WILEY

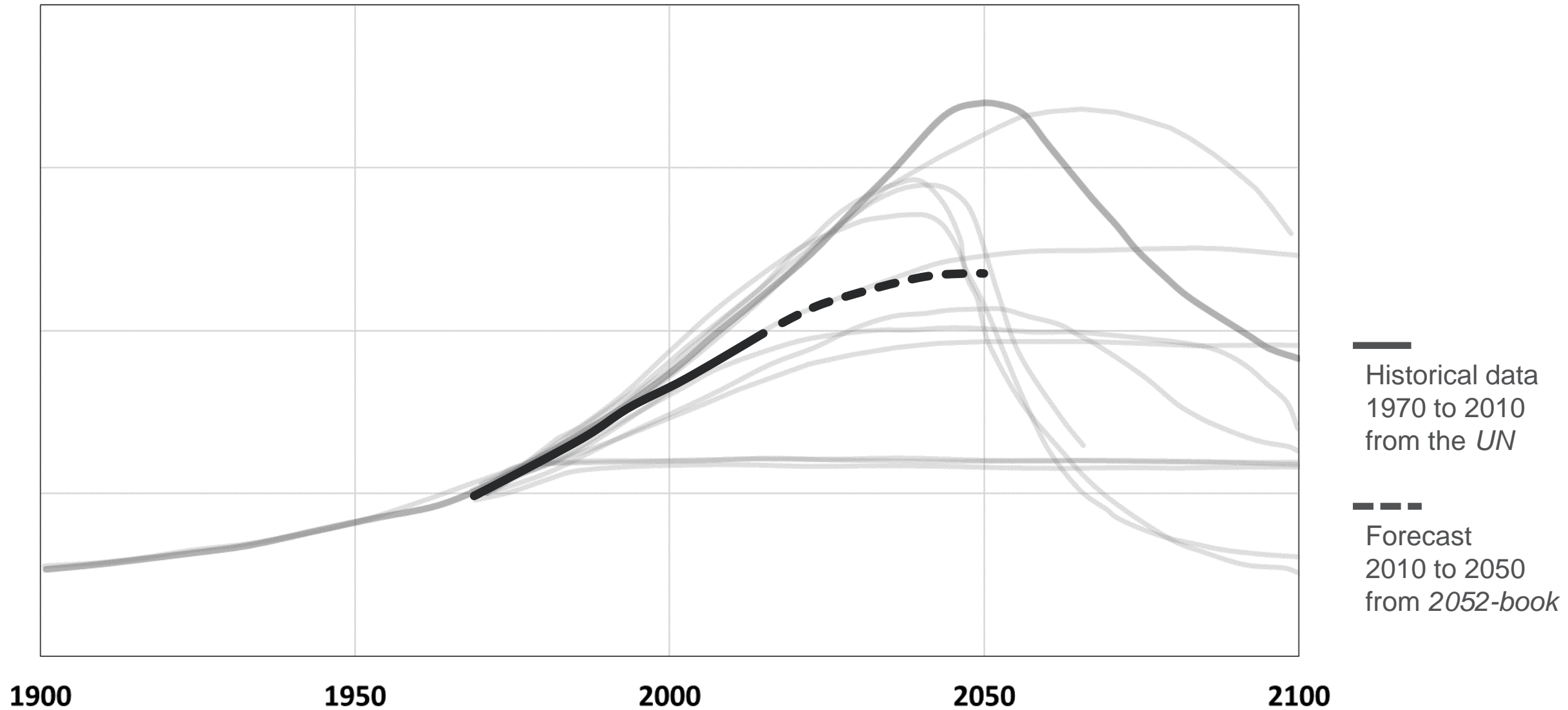
2052

未来四十年的中国与世界
A Global Forecast for the Next Forty Years

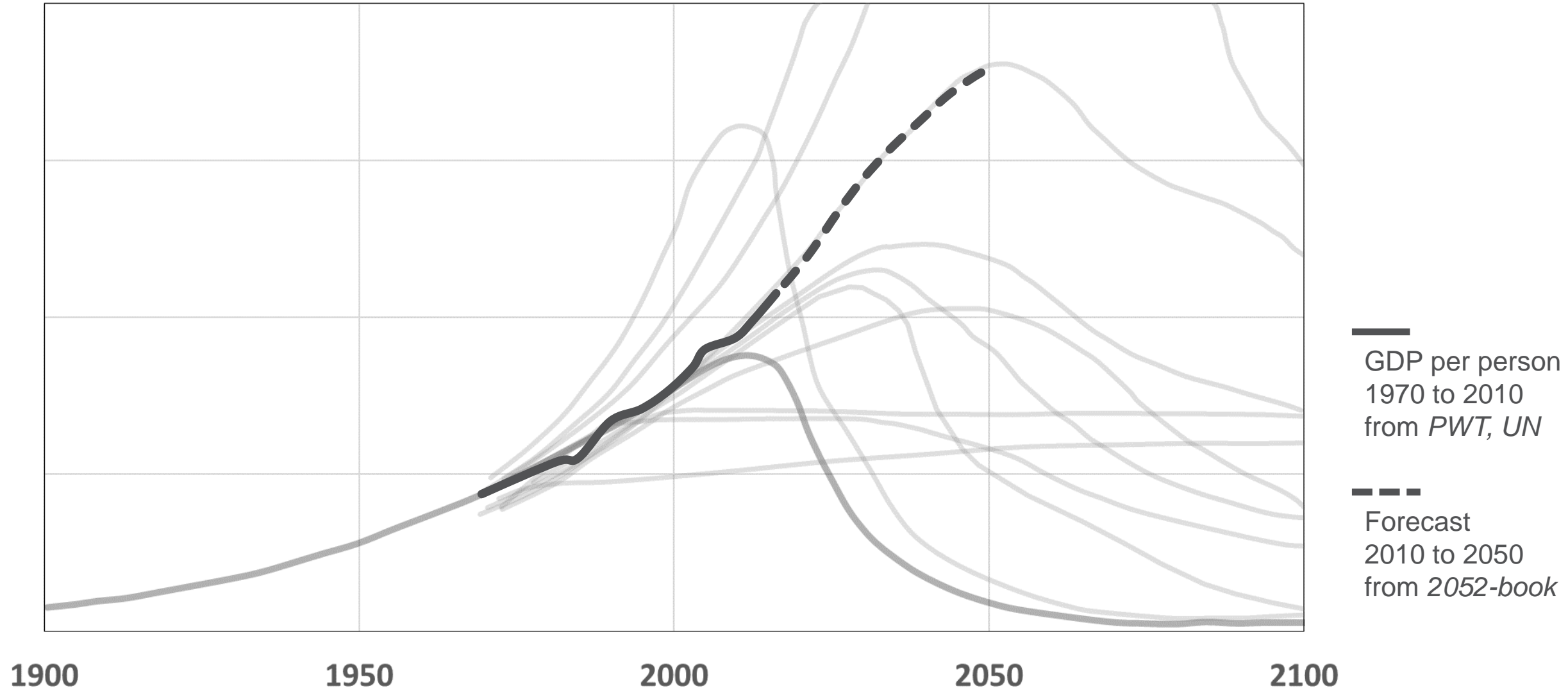


WILEY

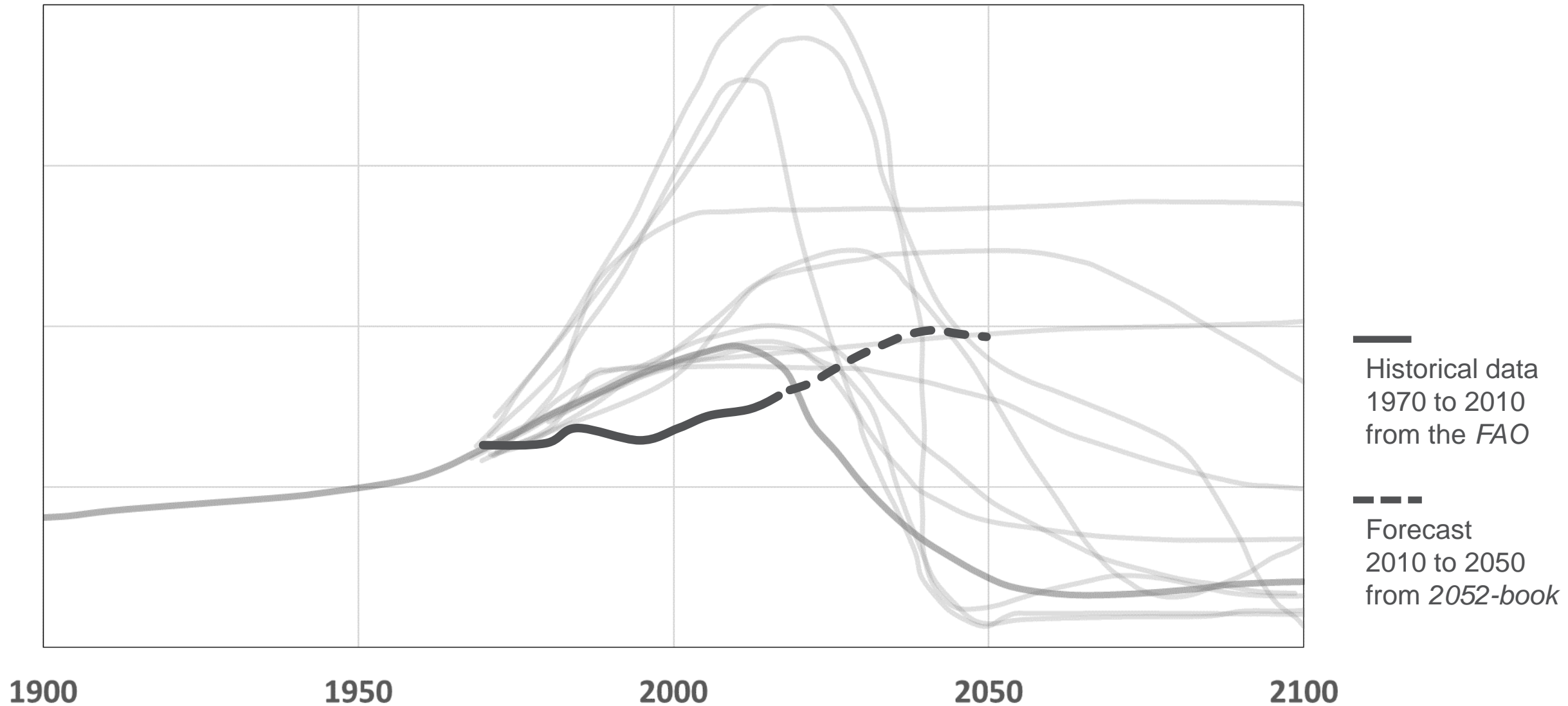
12 scenarios from *Limits* - Population



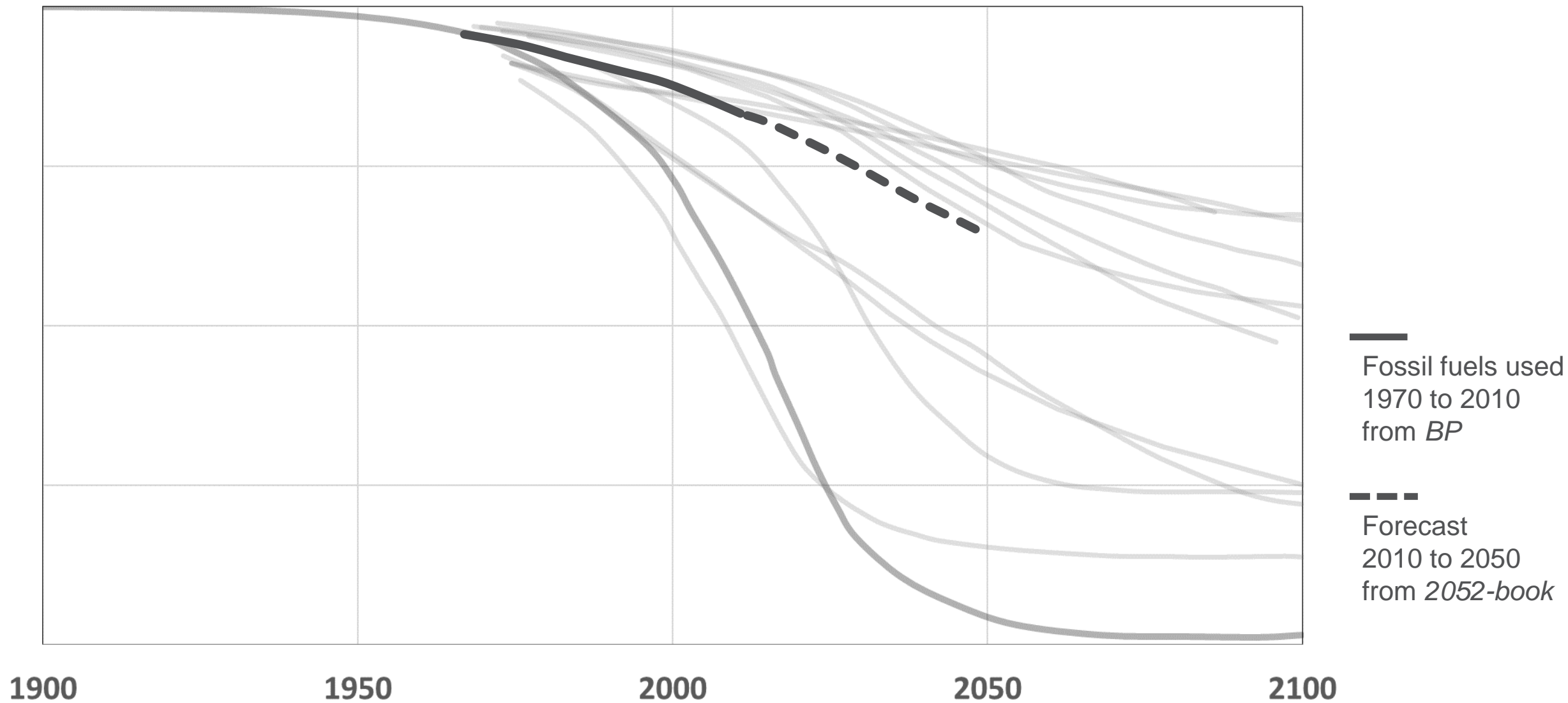
12 scenarios from *Limits* - Industrial output per capita



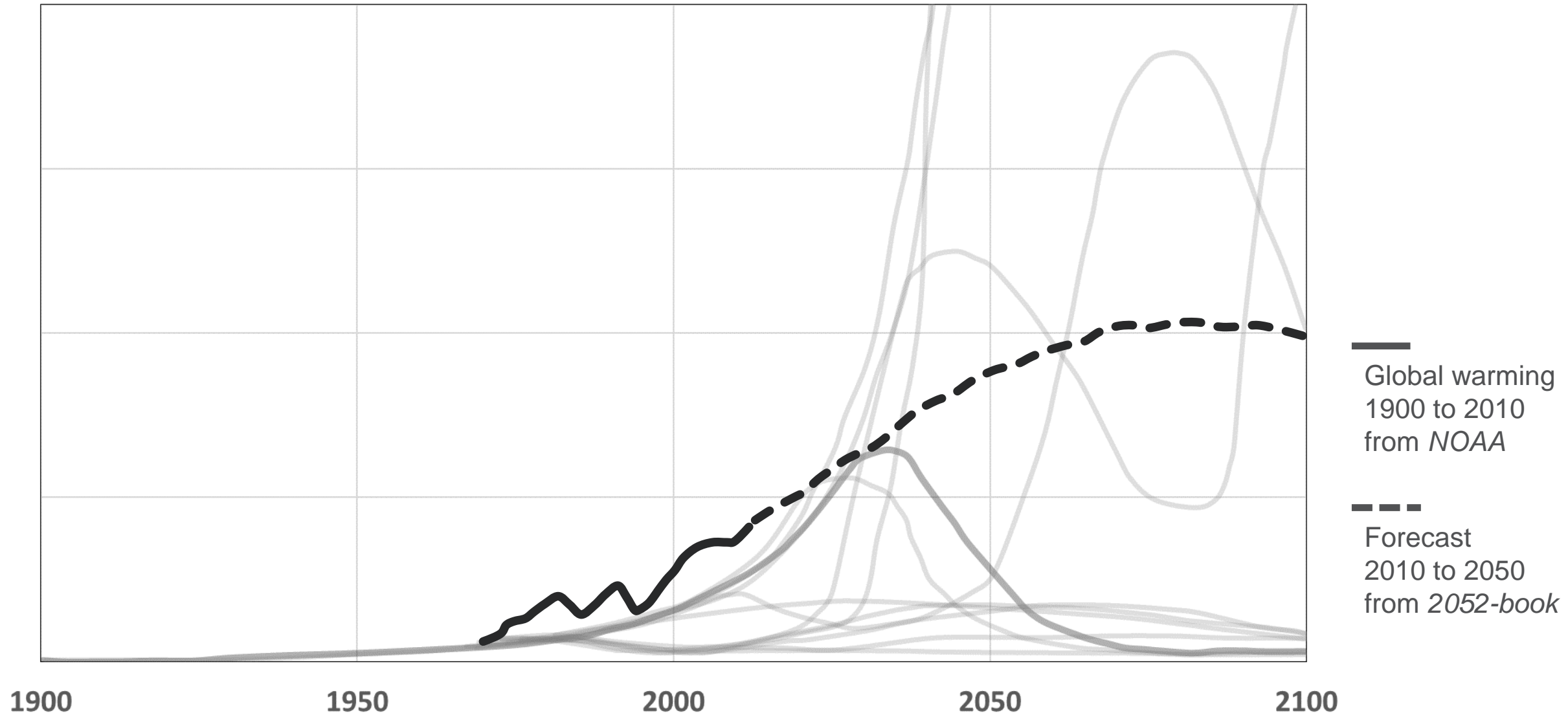
12 scenarios from *Limits* - Food per capita



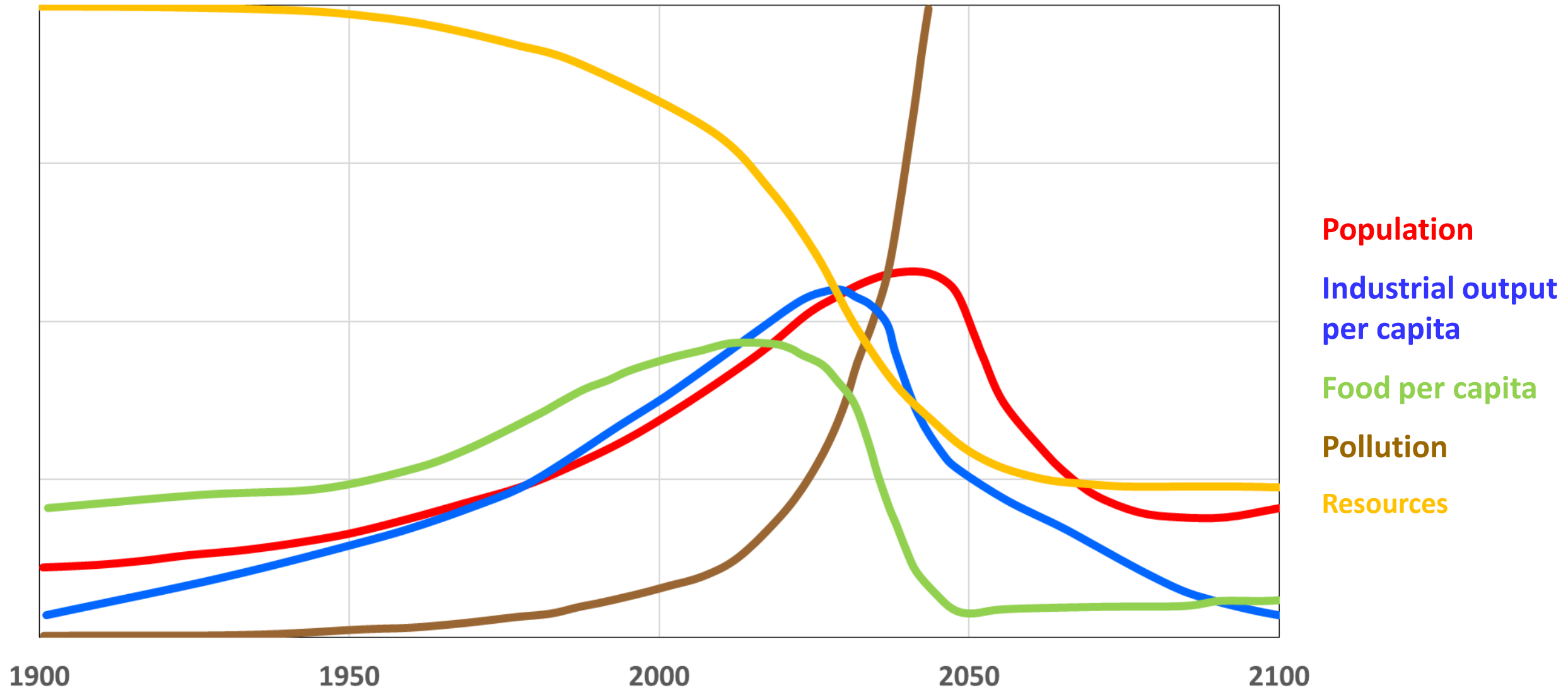
12 scenarios from *Limits* - Resources



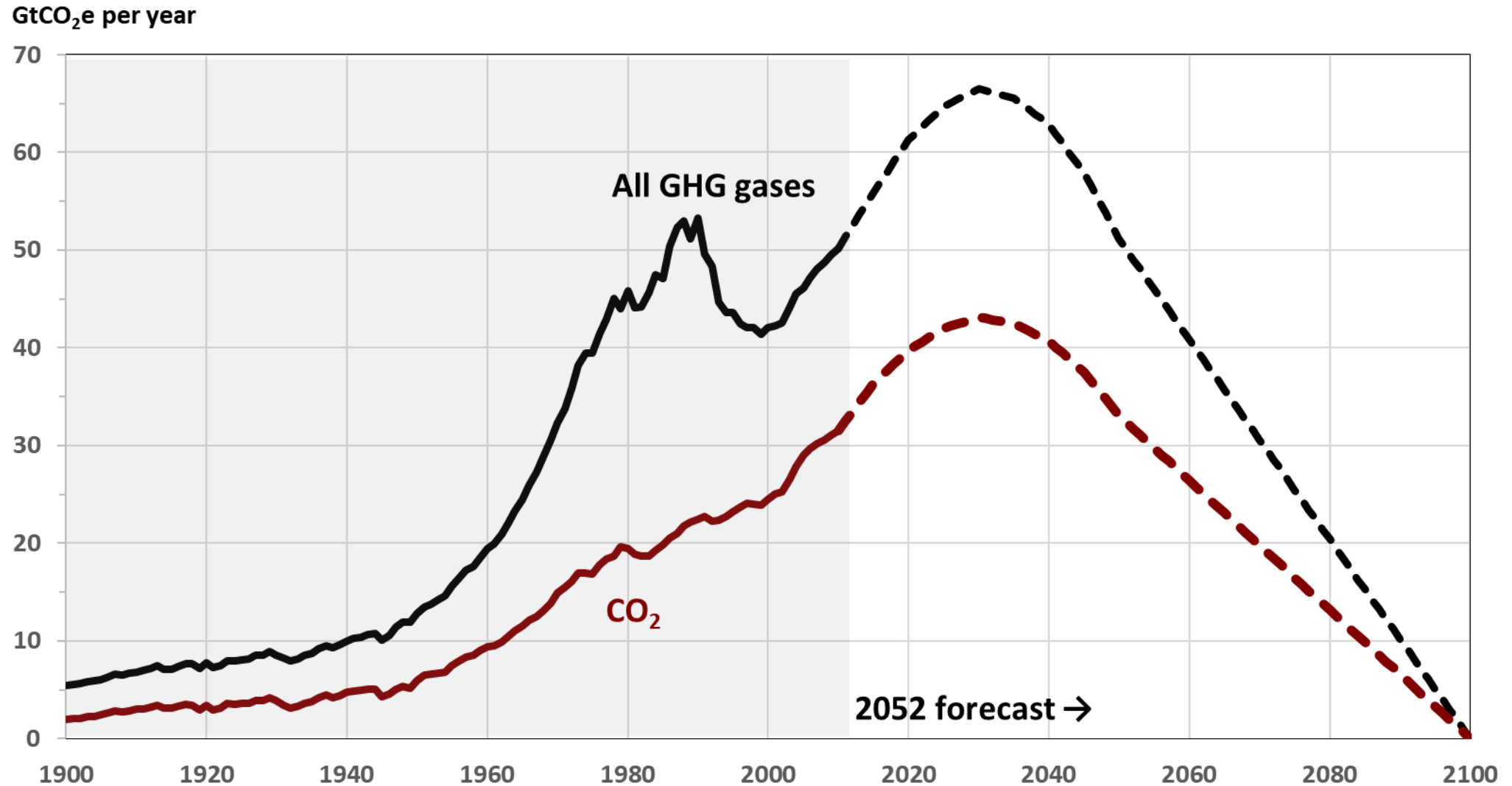
12 scenarios from *Limits* - Pollution



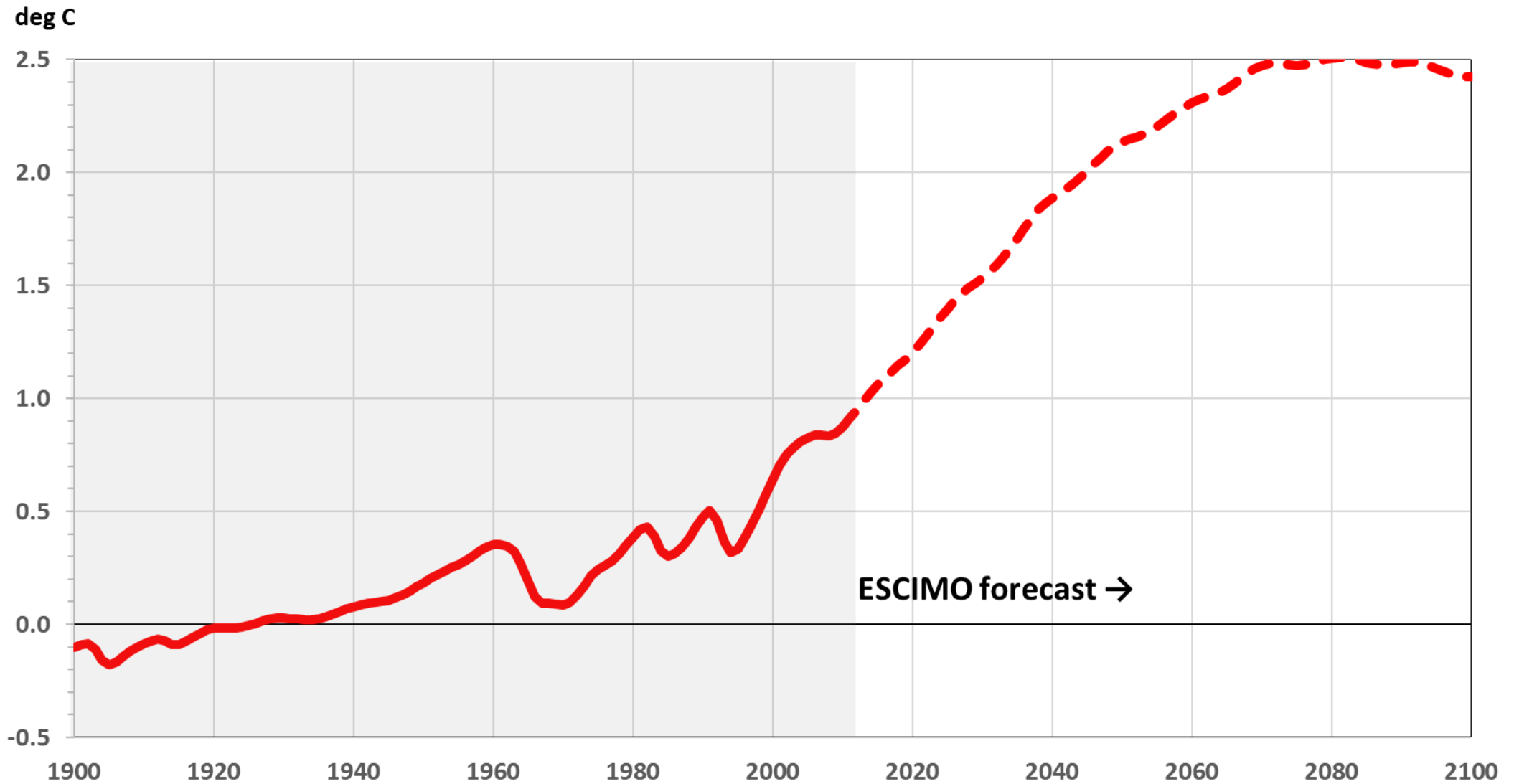
Another pessimistic run from *Limits* - Pollution crisis



Man-made emissions of greenhouse gases

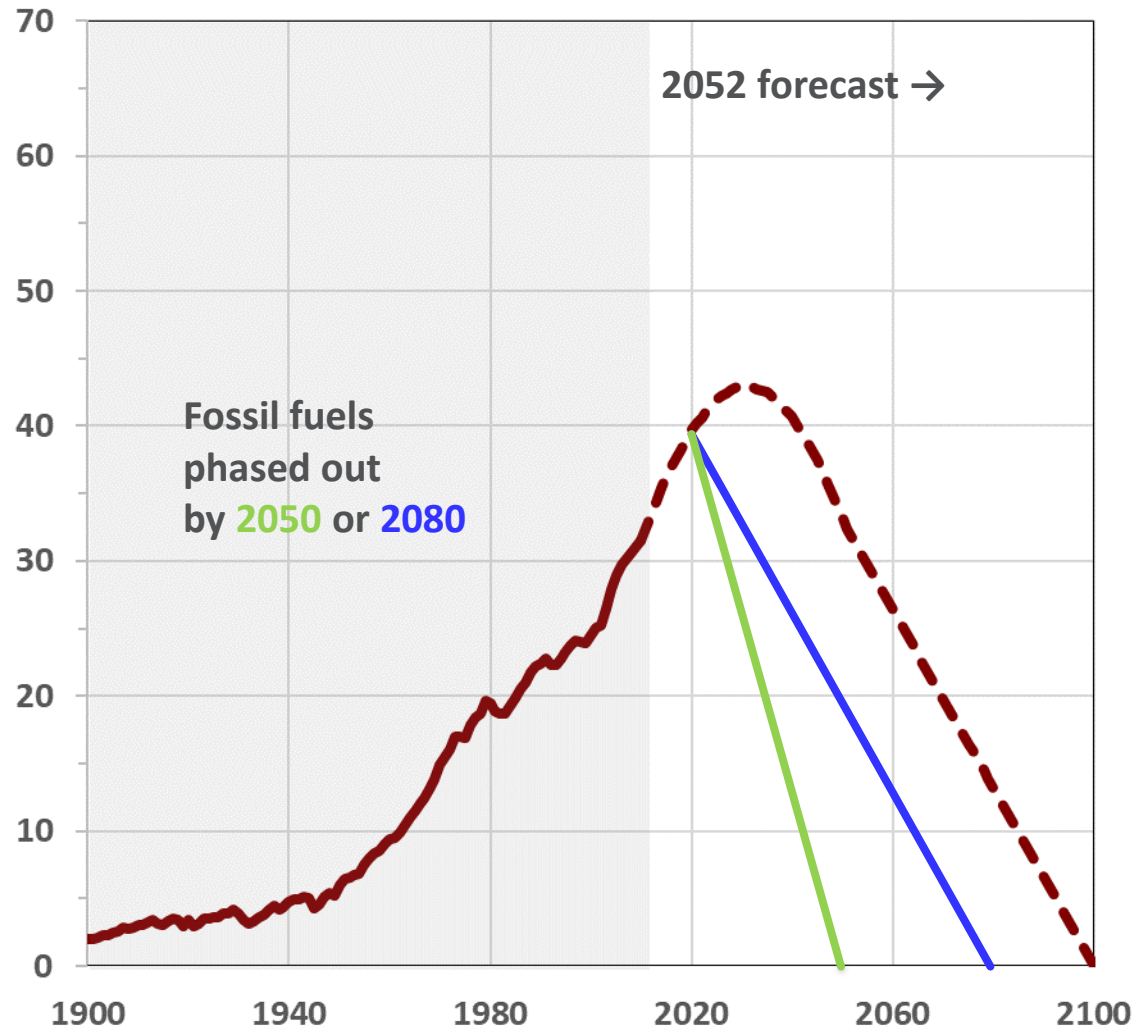


Temperature increase relative to 1850

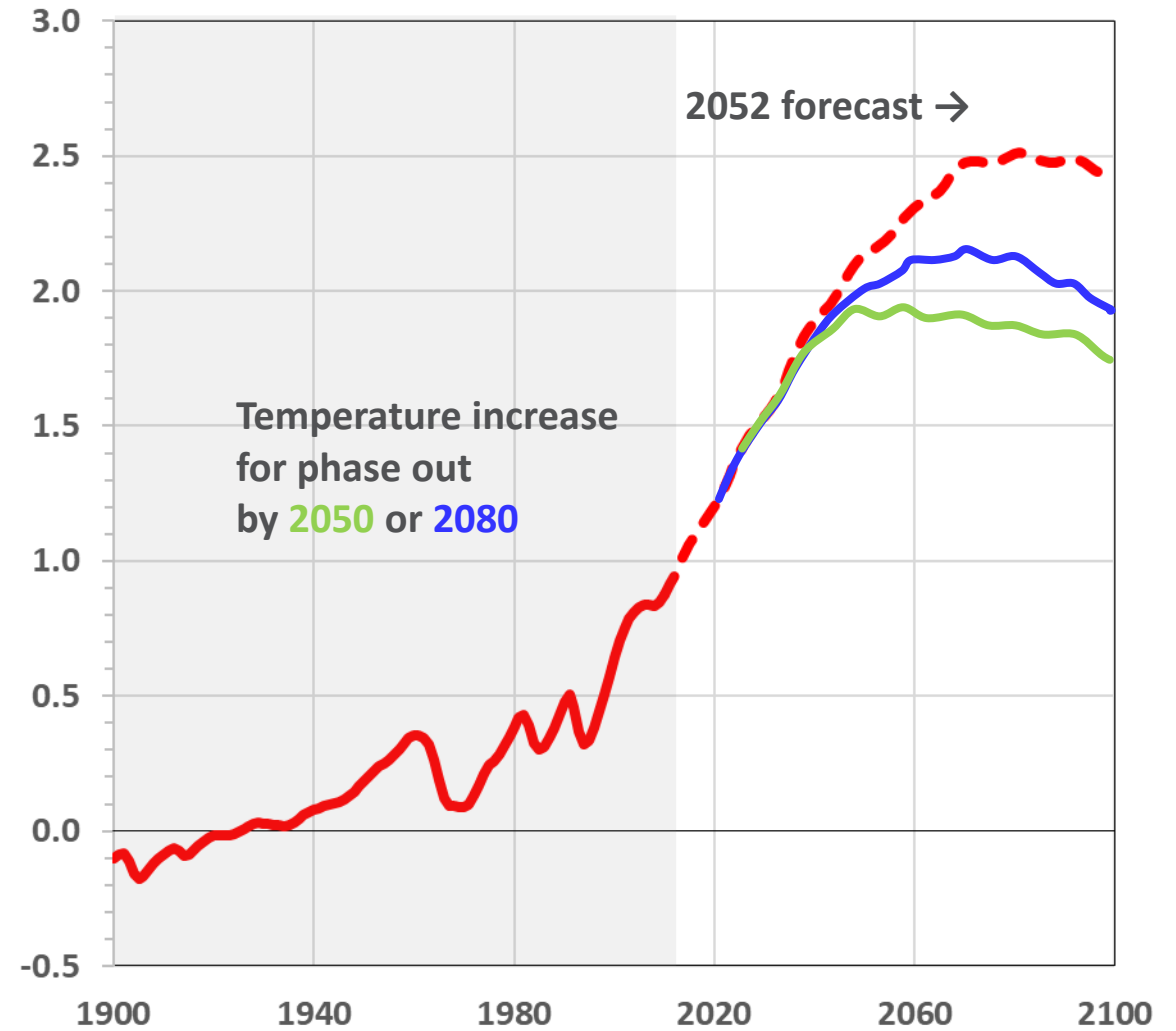


The effect of phasing out fossil fuels by 2080 and 2050

GtCO₂ per year



deg C



It is time to act!



**Phase out
fossil fuels
by 2050!**