

Scenarier i IPCC AR6:

Samfunn -> **Utslipp** -> Klimaendringer -> Konsekvenser

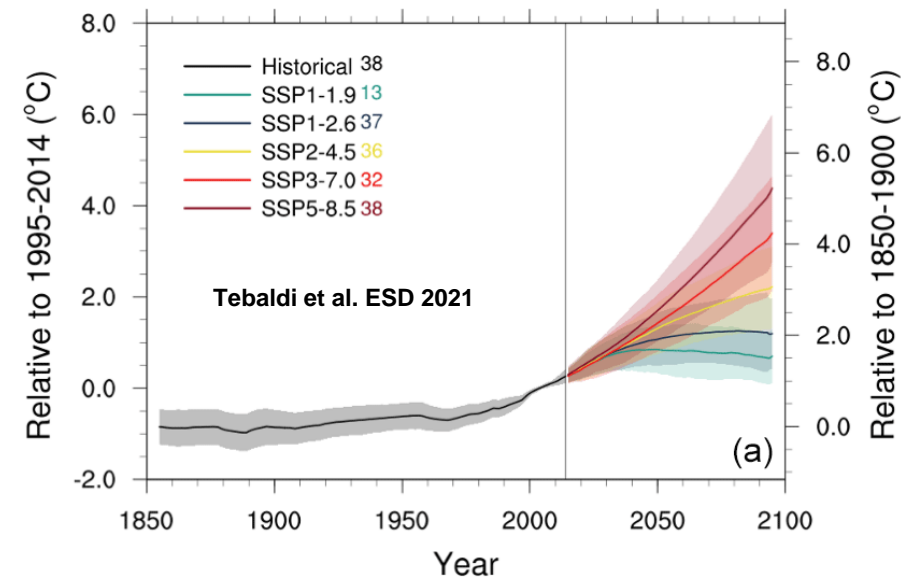
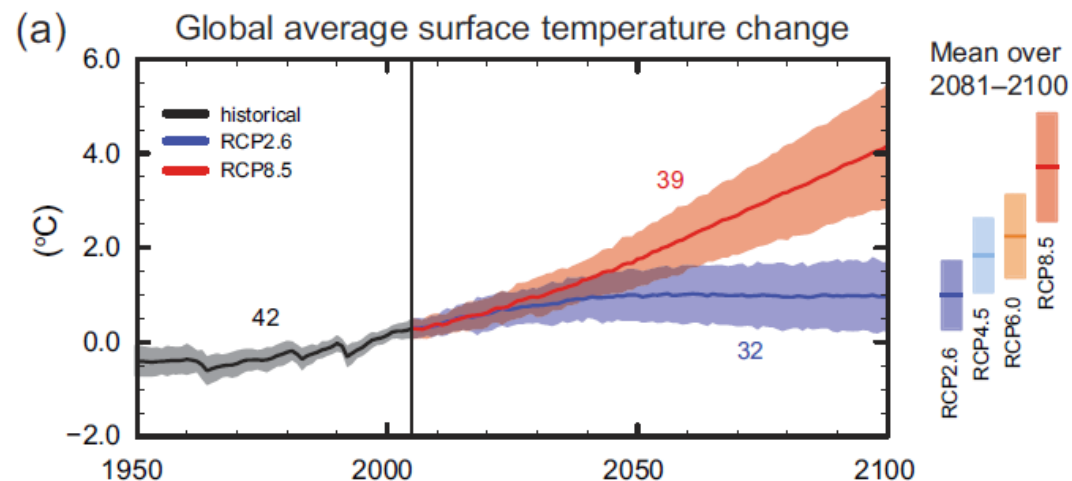
Arbeidsgruppe 3
(2022)

AR5 WG1 SPM

Arbeidsgruppe 1
(2021)

Arbeidsgruppe 2
(2022)

AR6 (NB: Ikke fra rapporten!)



Arbeidsgruppe 1 vurderer de framskrivingene som finnes i faglitteraturen, uten hensyn til om de er «sannsynlige» eller ikke. Dette inkluderer et utvalg av SSP-scenariene, som også brukes i de andre arbeidsgruppene.

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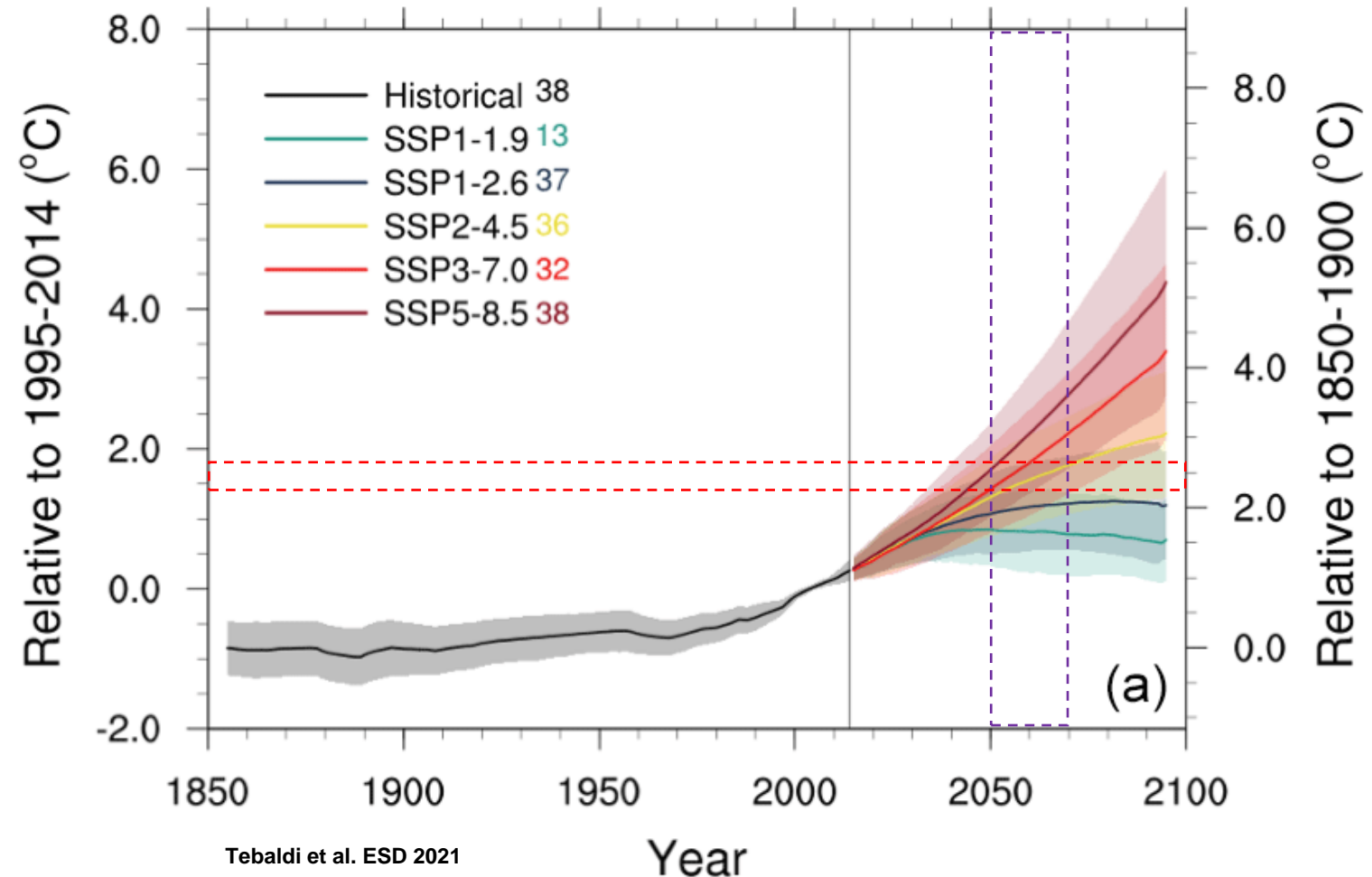
Arbeidsgruppe 3
(2022)

Arbeidsgruppe 1
(2021)

Arbeidsgruppe 2
(2022)

To måter scenarier kan brukes til å vurdere hva som skjer i klimaet som følge av utslipp:

- Sammenligne endringene på et gitt tidspunkt
- Sammenligne endringene ved samme nivå av oppvarming (Global Warming Level)



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Arbeidsgruppe 3
(2022)

Arbeidsgruppe 1
(2021)

Arbeidsgruppe 2
(2022)

Scenarionavn som vil bli brukt i AR6 WG1:

SSPX-Y.Z

SSP: Shared Socioeconomic Pathway

X: Hvilken SSP? (1-5)

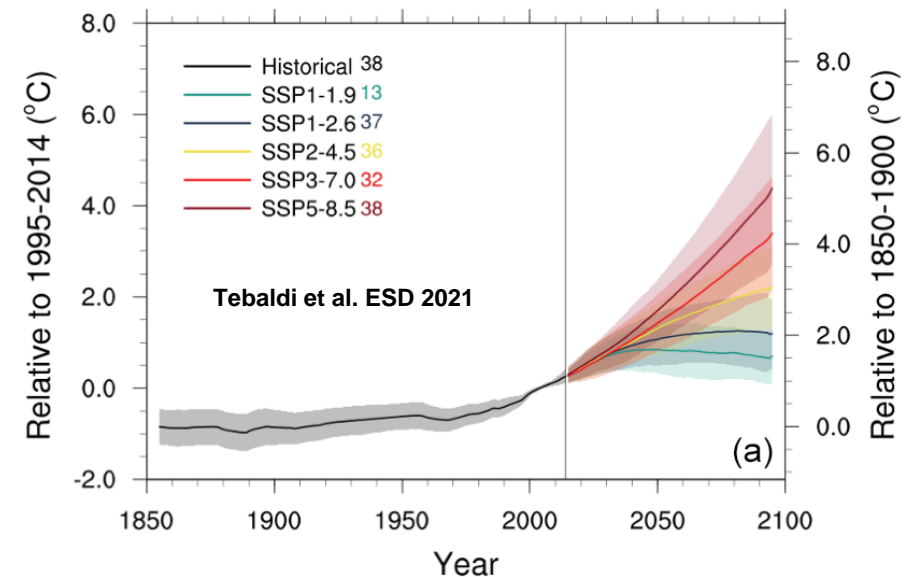
Y.Z: Omtrent klimapåvirkning ved slutten av århundret (strålingspådriv)

Eksempler fra litteraturen:

SSP1-2.6

SSP5-8.5

NB: Finnes også mange andre typer scenarier i faglitteraturen, som blir tatt med dersom forfatterne vurderer dem som relevante



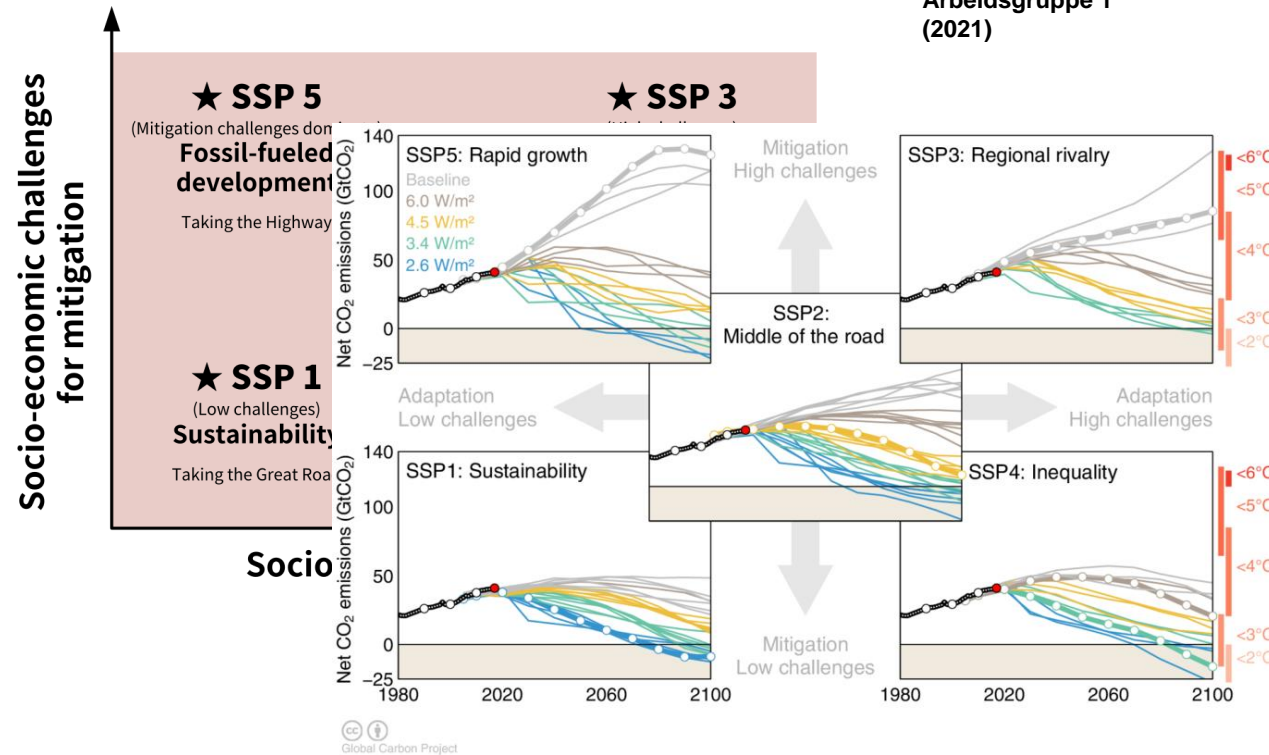
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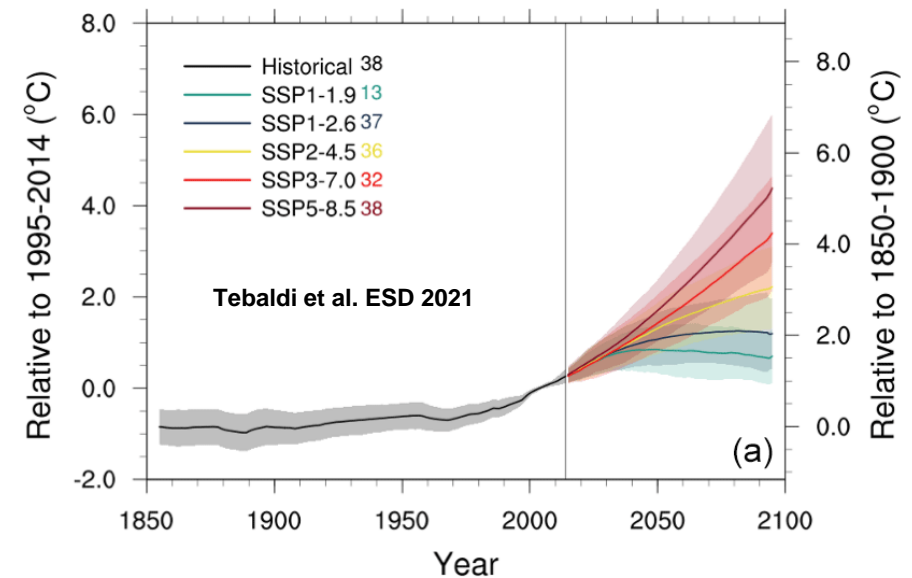
Arbeidsgruppe 3
(2022)

Arbeidsgruppe 1
(2021)

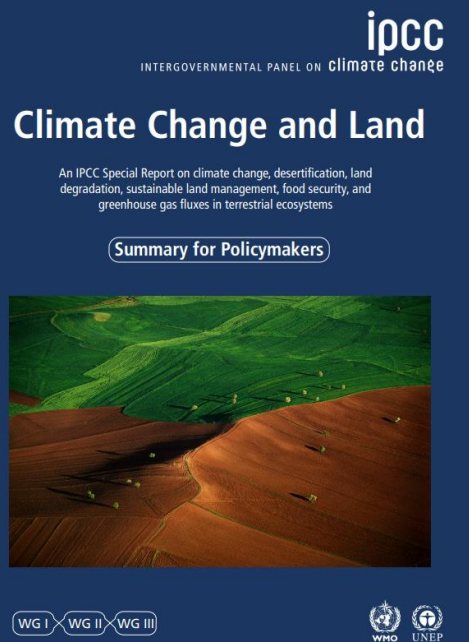
Arbeidsgruppe 2
(2022)



AR6 (NB: Ikke fra rapporten!)



Arbeidsgruppe 1 vurderer de framskrivingene som finnes i faglitteraturen, uten hensyn til om de er «sannsynlige» eller ikke. Dette inkluderer et utvalg av SSP-scenariene, som også brukes i de andre arbeidsgruppene.



God gjennomgang (ikke fra IPCC):
<https://www.carbonbrief.org/explainer-how-shared-socioeconomic-pathways-explore-future-climate-change>

Box SPM. 1 | Shared Socio-economic Pathways (SSPs)

In this report the implications of future socio-economic development on climate change mitigation, adaptation and land-use are explored using shared socio-economic pathways (SSPs). The SSPs span a range of challenges to climate change mitigation and adaptation.

- SSP1 includes a peak and decline in population (~7 billion in 2100), high income and reduced inequalities, effective land-use regulation, less resource intensive consumption, including food produced in low-GHG emission systems and lower food waste, free trade and environmentally-friendly technologies and lifestyles. Relative to other pathways, SSP1 has low challenges to mitigation and low challenges to adaptation (i.e., high adaptive capacity).
- SSP2 includes medium population growth (~9 billion in 2100), medium income, technological progress, production and consumption patterns are a continuation of past trends, and only a gradual reduction in inequality occurs. Relative to other pathways, SSP2 has medium challenges to mitigation and medium challenges to adaptation (i.e., medium adaptive capacity).
- SSP3 includes high population growth (~13 billion in 2100), low income and continued inequalities, material-intensive consumption and production, barriers to trade, and slow rates of technological change. Relative to other pathways, SSP3 has high challenges to mitigation and high challenges to adaptation (i.e., low adaptive capacity).
- SSP4 includes medium population growth (~9 billion in 2100), medium income, but significant inequality within and across regions. Relative to other pathways, SSP4 has low challenges to mitigation, but high challenges to adaptation (i.e., low adaptive capacity).
- SSP5 includes a peak and decline in population (~7 billion in 2100), high income, reduced inequalities, and free trade. This pathway includes resource-intensive production, consumption and lifestyles. Relative to other pathways, SSP5 has high challenges to mitigation, but low challenges to adaptation (i.e., high adaptive capacity).
- The SSPs can be combined with Representative Concentration Pathways (RCPs) which imply different levels of mitigation, with implications for adaptation. Therefore, SSPs can be consistent with different levels of global mean surface temperature rise as projected by different SSP-RCP combinations. However, some SSP-RCP combinations are not possible; for instance RCP2.6 and lower levels of future global mean surface temperature rise (e.g., 1.5°C) are not possible in SSP3 in modelled pathways. {1.2.2, 6.1.4, Cross-Chapter Box 1 in Chapter 1, Cross-Chapter Box 9 in Chapter 6}

Climate Change and Land

An IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems

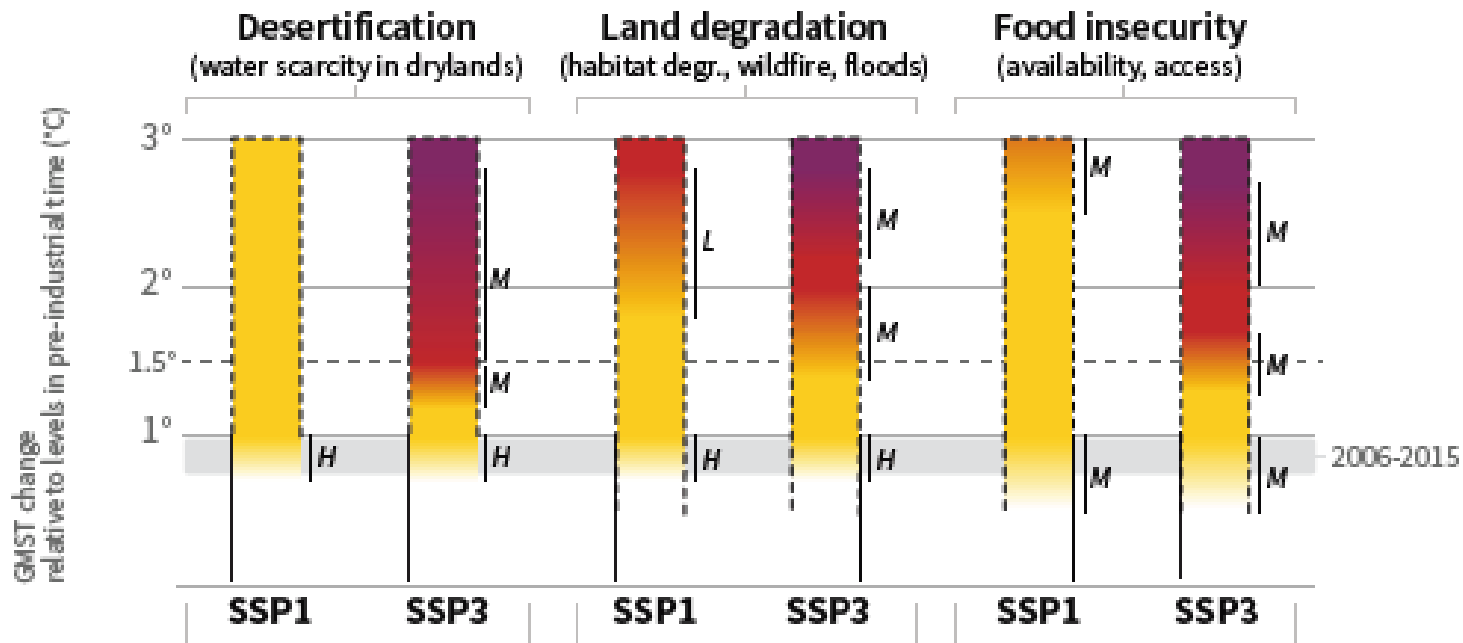
Summary for Policymakers



WG I WG II WG III



B. Different socioeconomic pathways affect levels of climate related risks



Socio-economic choices can reduce or exacerbate climate related risks as well as influence the rate of temperature increase. The **SSP1** pathway illustrates a world with low population growth, high income and reduced inequalities, food produced in low GHG emission systems, effective land use regulation and high adaptive capacity. The **SSP3** pathway has the opposite trends. Risks are lower in SSP1 compared with SSP3 given the same level of GMST increase.

Mest i Arbeidsgruppe 2, om konsekvenser og klimatilpasning, men Arbeidsgruppe 1 presenterer det fysiske grunnlaget for forskjellene.

IPCC Working Group I report outline

Scenario description

Chapter 1: Framing, context, methods

Chapter 2: Changing state of the climate system

Chapter 3: Human influence on the climate system

Chapter 4: Future global climate: scenario-based projections and near-term information

Chapter 5: Global carbon and other biogeochemical cycles and feedbacks

Chapter 6: Short-lived climate forcers

Chapter 7: The Earth's energy budget, climate feedbacks, and climate sensitivity

Chapter 8: Water cycle changes

Chapter 9: Ocean, cryosphere, and sea level change

Chapter 10: Linking global to regional climate change

Chapter 11: Weather and climate extreme events in a changing climate

Chapter 12: Climate change information for regional impact and for risk assessment

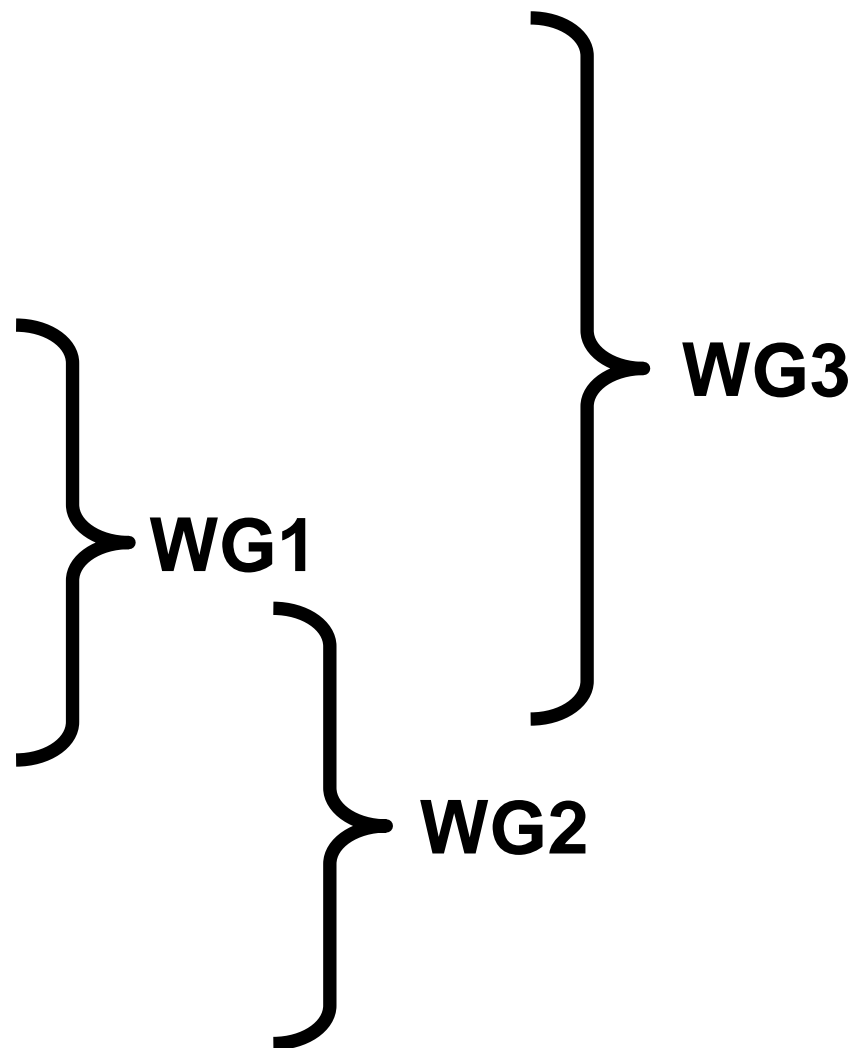
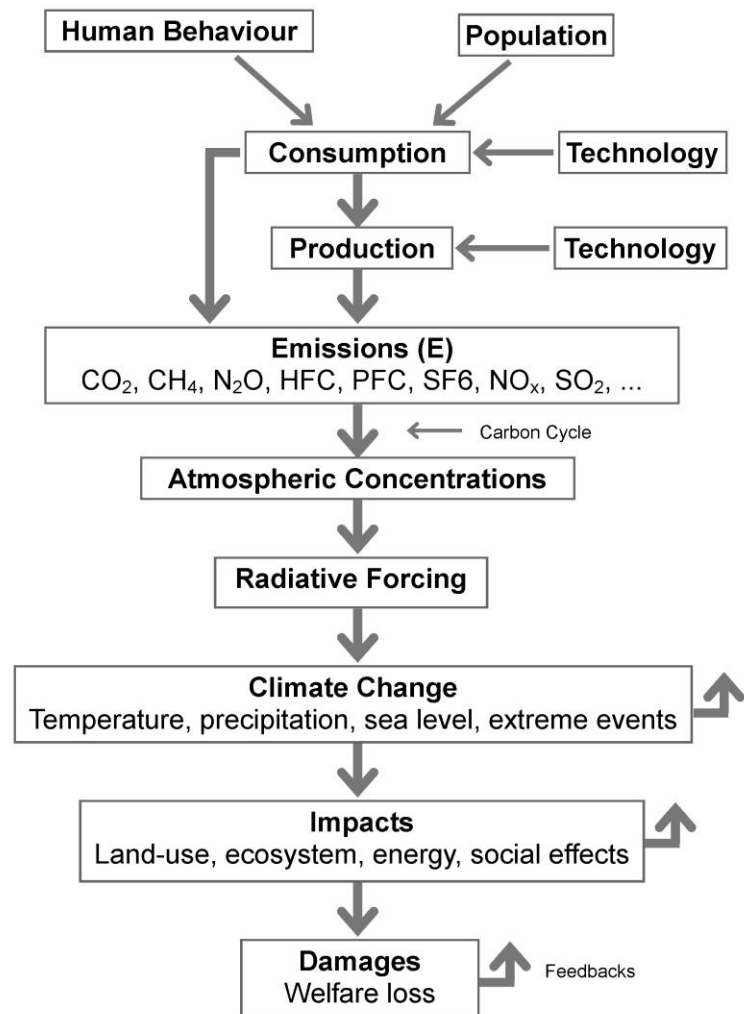
Atlas of Regional Climate Information

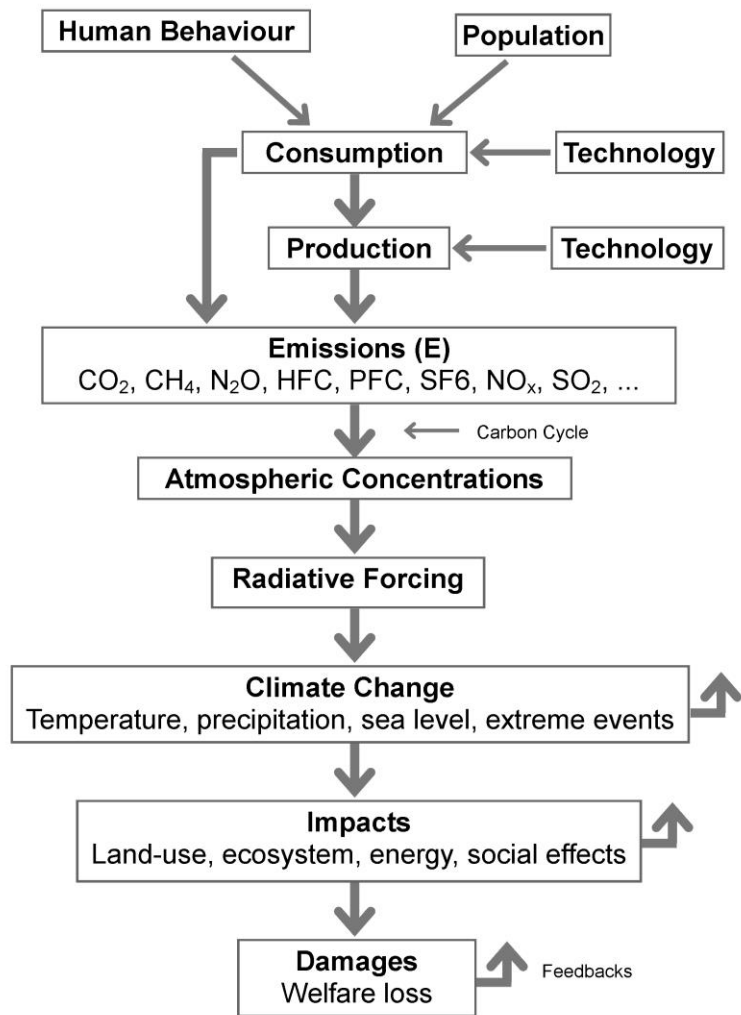
Scenario usage

Outline of WG III AR6 (*March 2022*)

Framing (1 chapter)
1. Introduction and framing
High-level assessment of emission trends, drivers and pathways (3 chapters)
2. Emissions trends and drivers
3. Mitigation pathways compatible with long-term goals
4. Mitigation and development pathways in the near- to mid-term
Sectoral chapters (8 chapters)
5: Demand, services and social aspects of mitigation
6: Energy systems
7. Agriculture, Forestry, and Other Land Uses
8. Urban systems and other settlements
12. Cross sectoral perspectives
9. Buildings
10. Transport
11. Industry
Institutional drivers (2 chapters)
13. National and sub-national policies and institutions
14. International cooperation
Financial and technological drivers (2 chapters)
15. Investment and finance
16. Innovation, technology development and transfer
Synthesis (1 chapter)
17. Accelerating the transition in the context of sustainable development

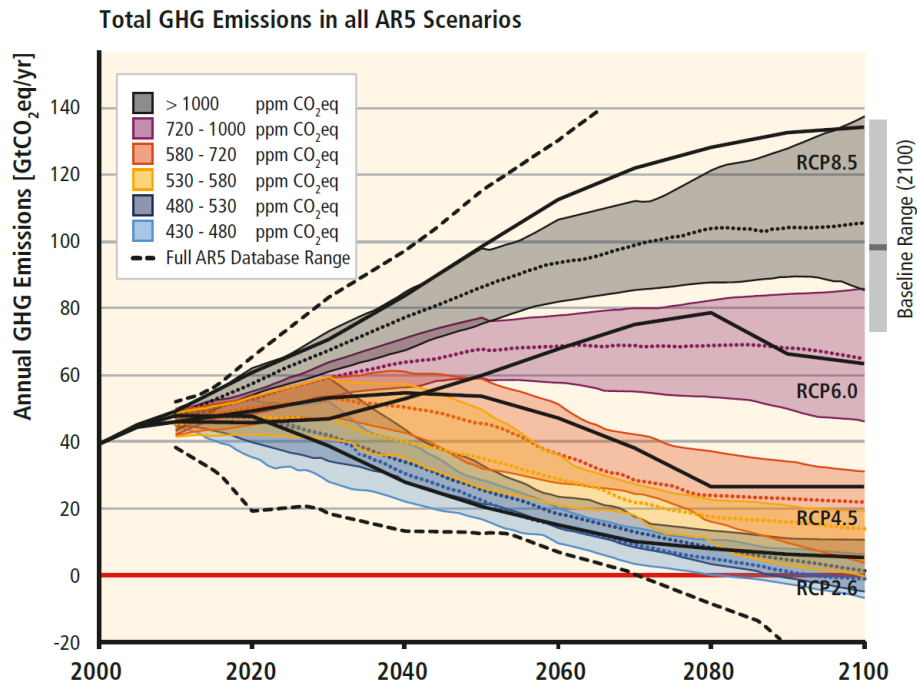




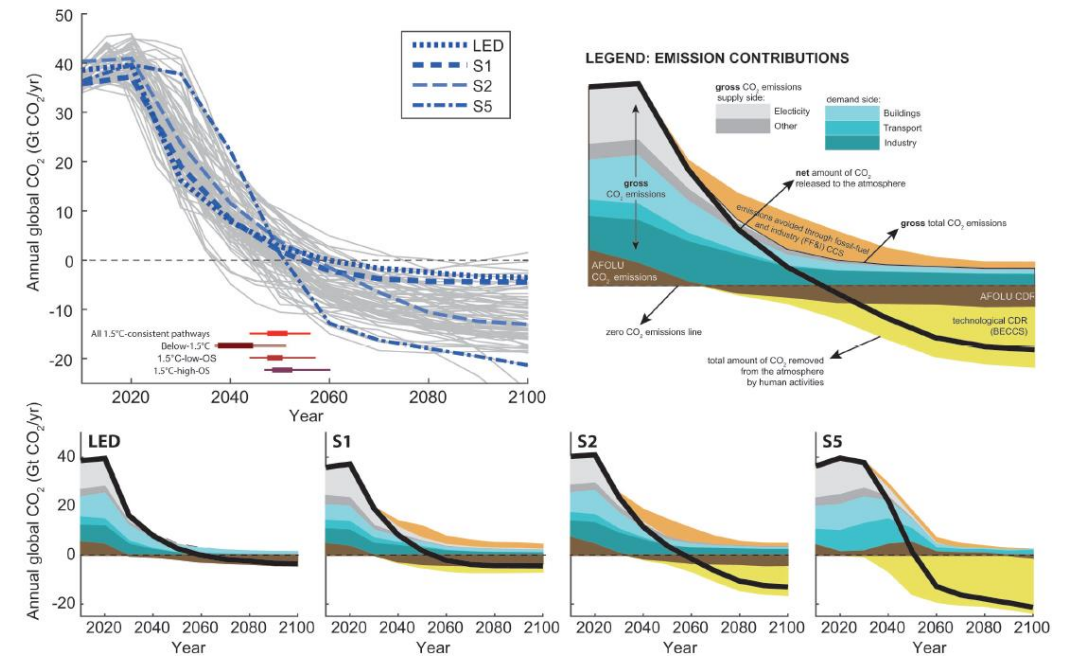


Scenarios in WG3

AR5 – Full Assessment >1200 scenarios

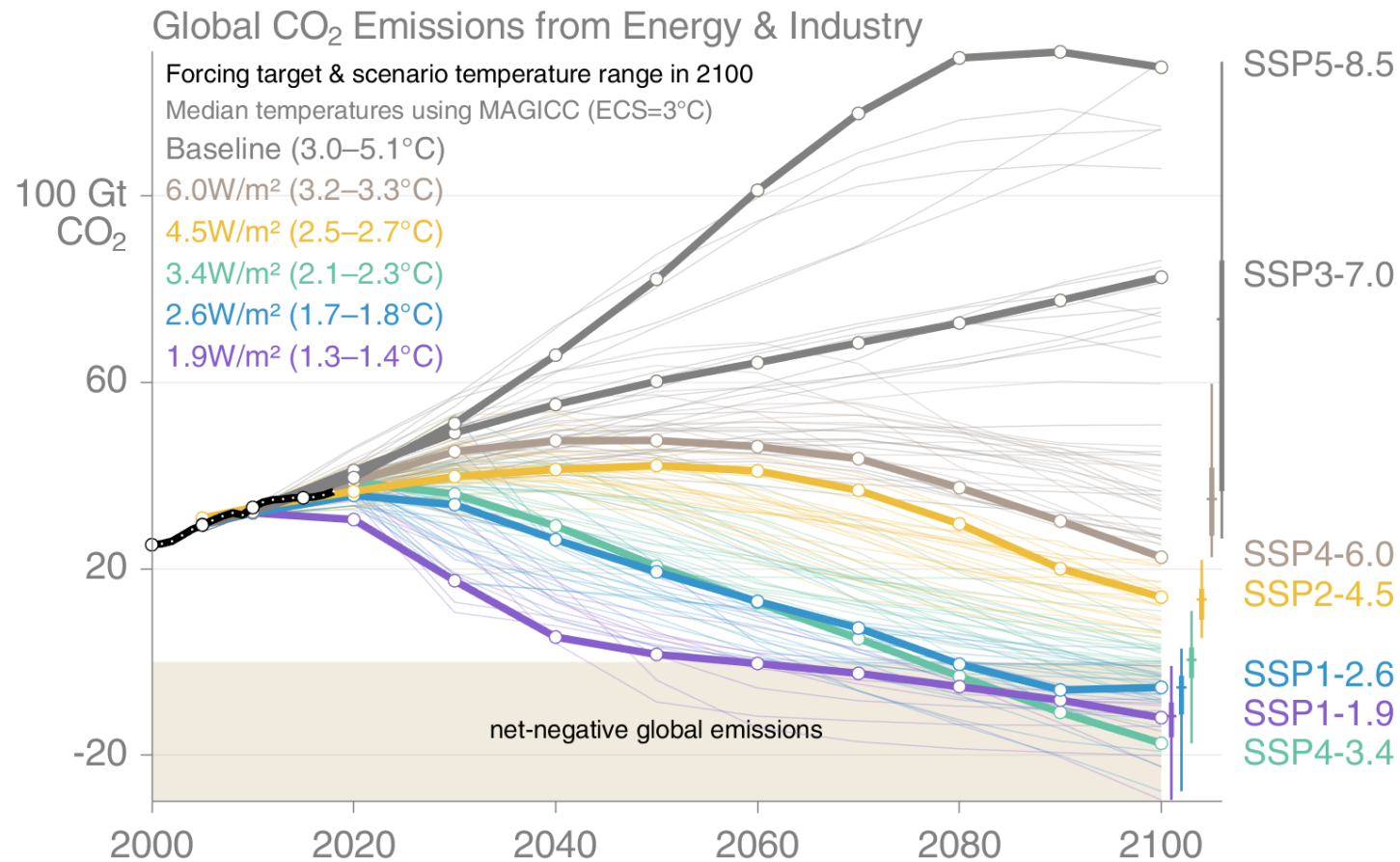


SR15 – 1.5°C focus >400 scenarios, ~90 are 1.5°C scenarios (on figure)



SSPs – One of many (~150 scenarios out of >1000s)

Many new scenarios published since SSPs



© Peters_Glen • Data: Riahi et al (2017), Rogelj et al (2018), SSP Database (version 2)

Key questions (AR5/SR15)

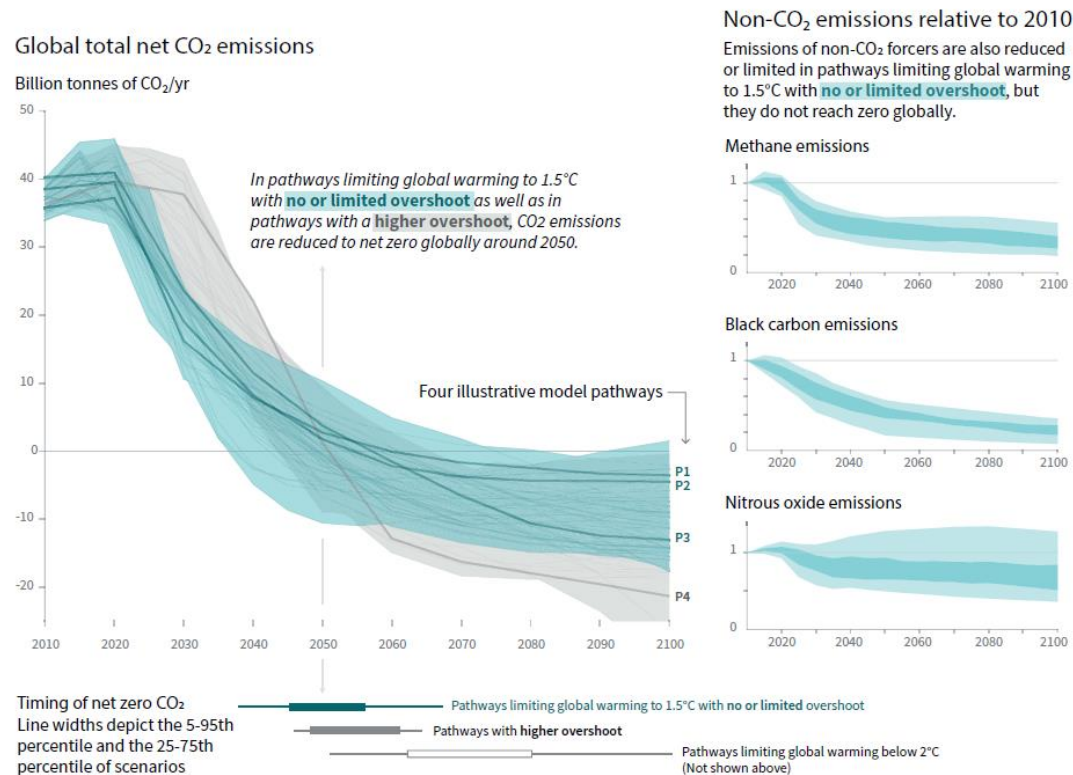
- What are the near-term & future choices that define transformation pathways? (AR5)
- What are the key decision making outcomes of different transformation pathways? (AR5)
- How will actions taken today influence the options that might be available in the future? (AR5)
- What role do CO₂ & non-CO₂ emissions play in aggressive mitigation scenarios? (e.g., from SR15)

Key aspects

- Scenarios in IPCC reports are generally '***backcasts***'
 - E.g., what is a cost-effective way of meeting a climate target?
- Integrated Assessment Models used for quantification
 - IAMs are complex models of the energy, land, & economics, but have simplified components (e.g., highly stylised policy, ...)
- Scenarios give the *main contours* for mitigation
 - Other models, tools, or approaches needed for sectors & countries (c.f., chapter structure of WG3)

Example use of scenarios

SR15 – CO₂ versus non-CO₂

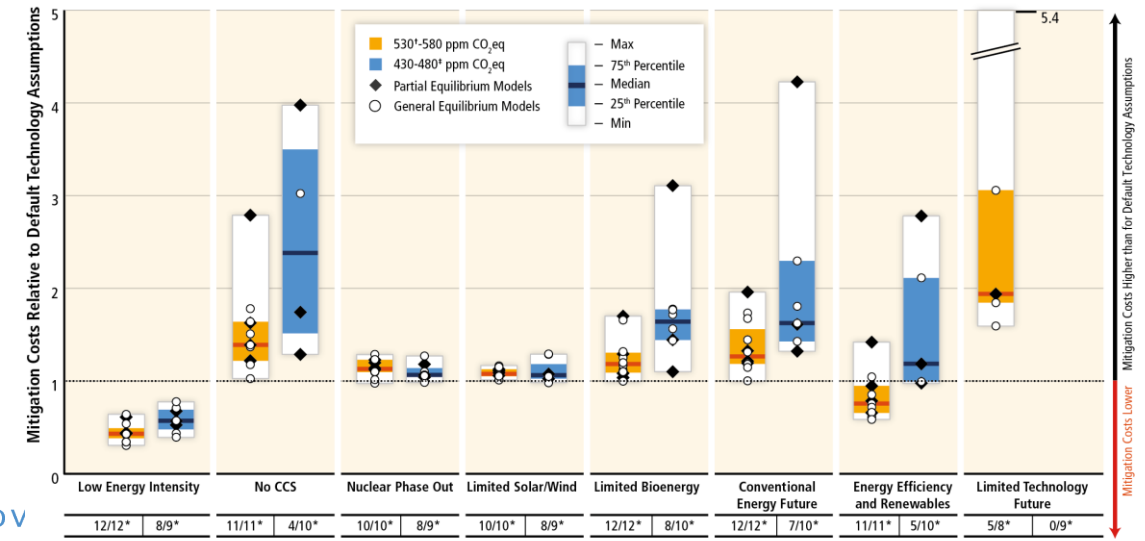


SR15 – Effects of Delay

D. Strengthening the Global Response in the Context of Sustainable Development and Efforts to Eradicate Poverty

- D.1 Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the Paris Agreement would lead to global greenhouse gas emissions¹⁸ in 2030 of 52–58 GtCO₂eq yr⁻¹ (*medium confidence*). **Pathways reflecting these ambitions would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030 (*high confidence*).** Avoiding overshoot and reliance on future large-scale deployment of carbon dioxide removal (CDR) can only be achieved if global CO₂ emissions start to decline well before 2030 (*high confidence*). {1.2, 2.3, 3.3, 3.4, 4.2, 4.4, Cross-Chapter Box 11 in Chapter 4}

AR5 – Technology Limits



Takk for oppmerksomheten

Spørsmål?