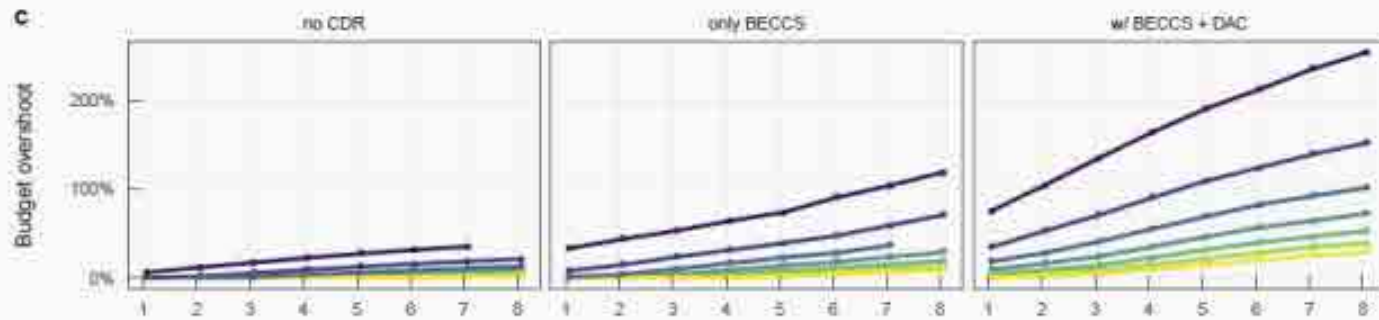
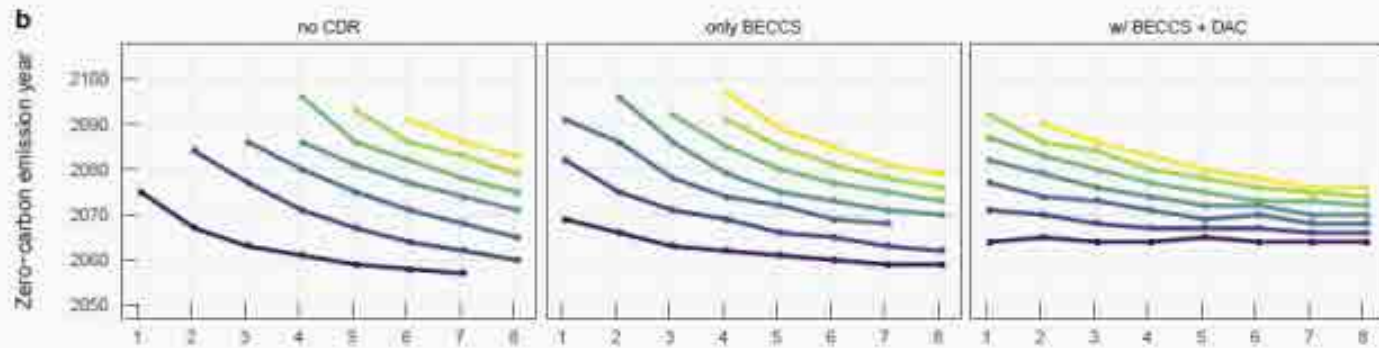
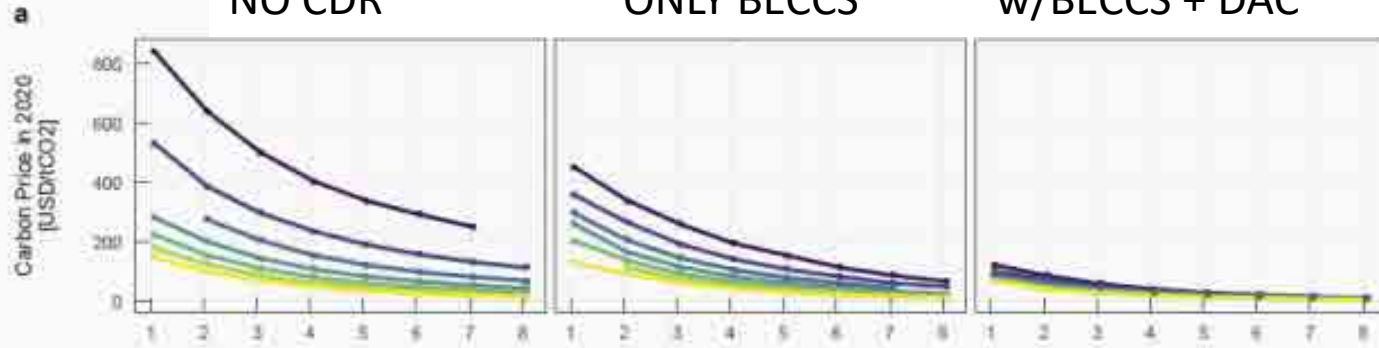


# Results: NETs availability

NO CDR

ONLY BECCS

w/BECCS + DAC



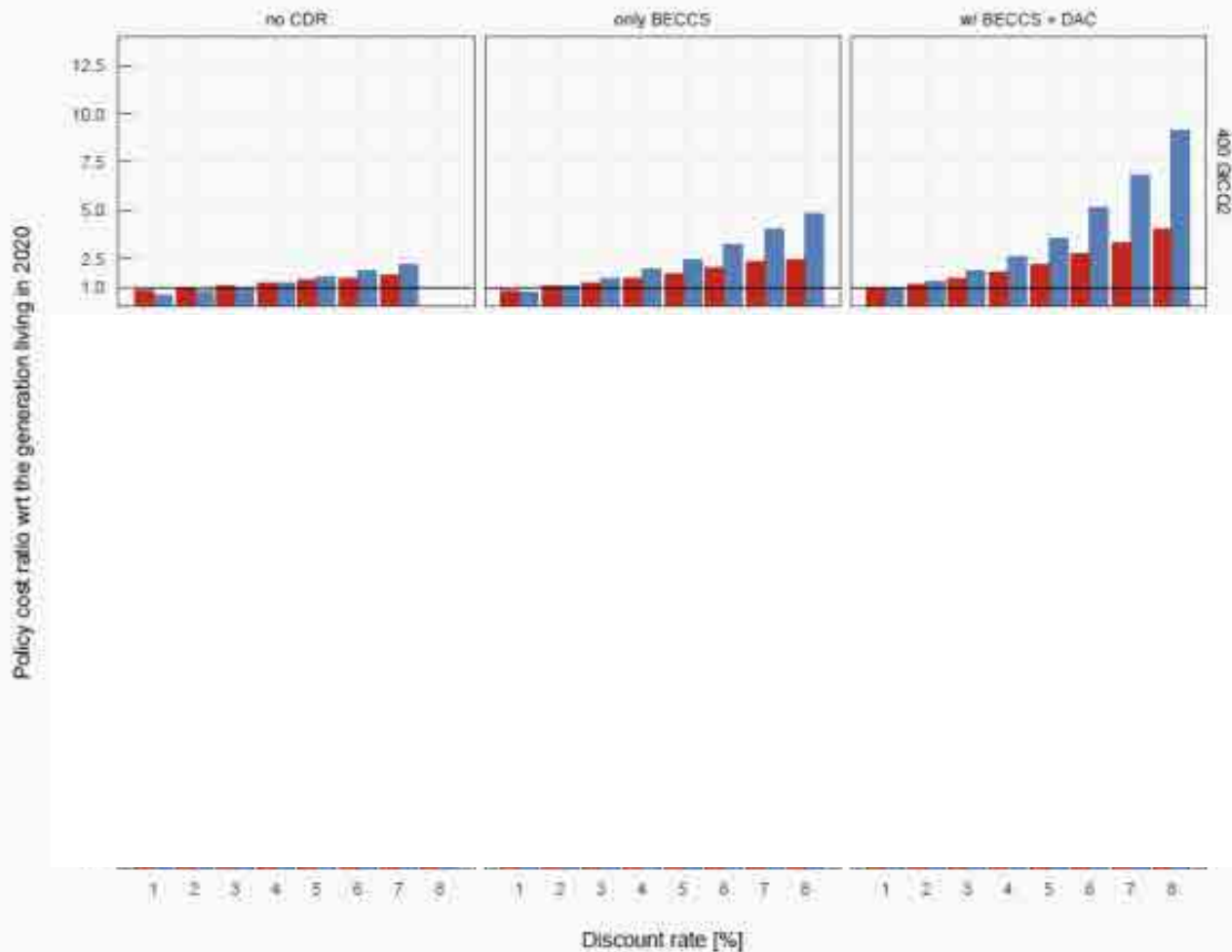
Carbon Price

Zero carbon year

Budget overshoot

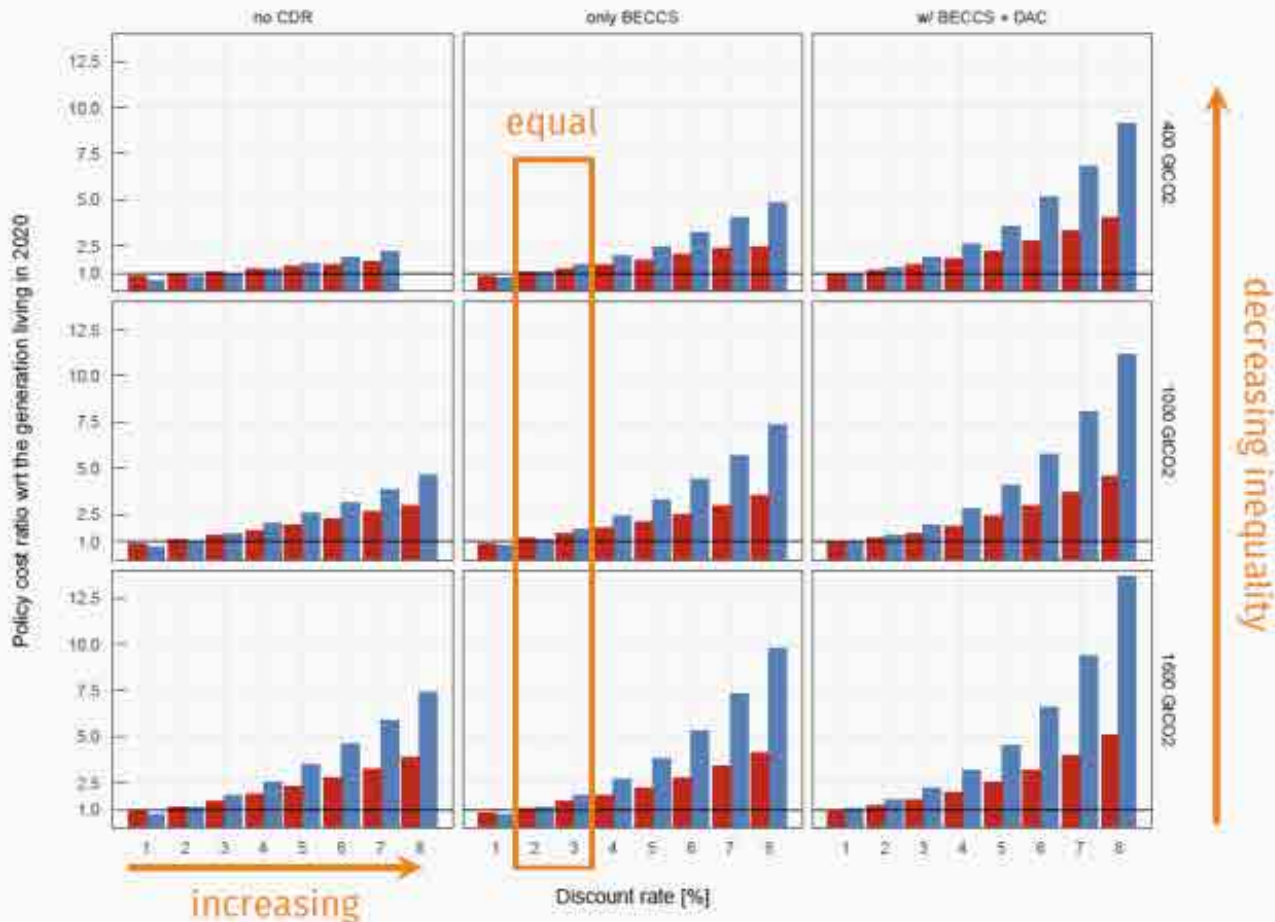
# Results: Policy costs and Intergenerational equity

Comparison of climate policy costs (as % of GDP) over 3 generations:  
2020–2050 (=1) 2050–2080 ■ 2080–2110 ■



# Results: Policy costs and Intergenerational equity

Comparison of climate policy costs (as % of GDP) over 3 generations: : :  
 2020–2050 (=1) 2050–2080 ■ 2080–2110 ■



For 2–3%, efforts is equally distributed across generations

# Lessons Learnt

## **DP-IAMs should use lower and scenario dependent discount rates**

- to ensure inter-generation equity;
- to be consistent with cost-benefit analysis normative choice for 2° C like policies

## **Using a normative time discounting limits the role of NETs:**

- being more ambitious in its early stage
- avoiding deeply negative carbon intensities

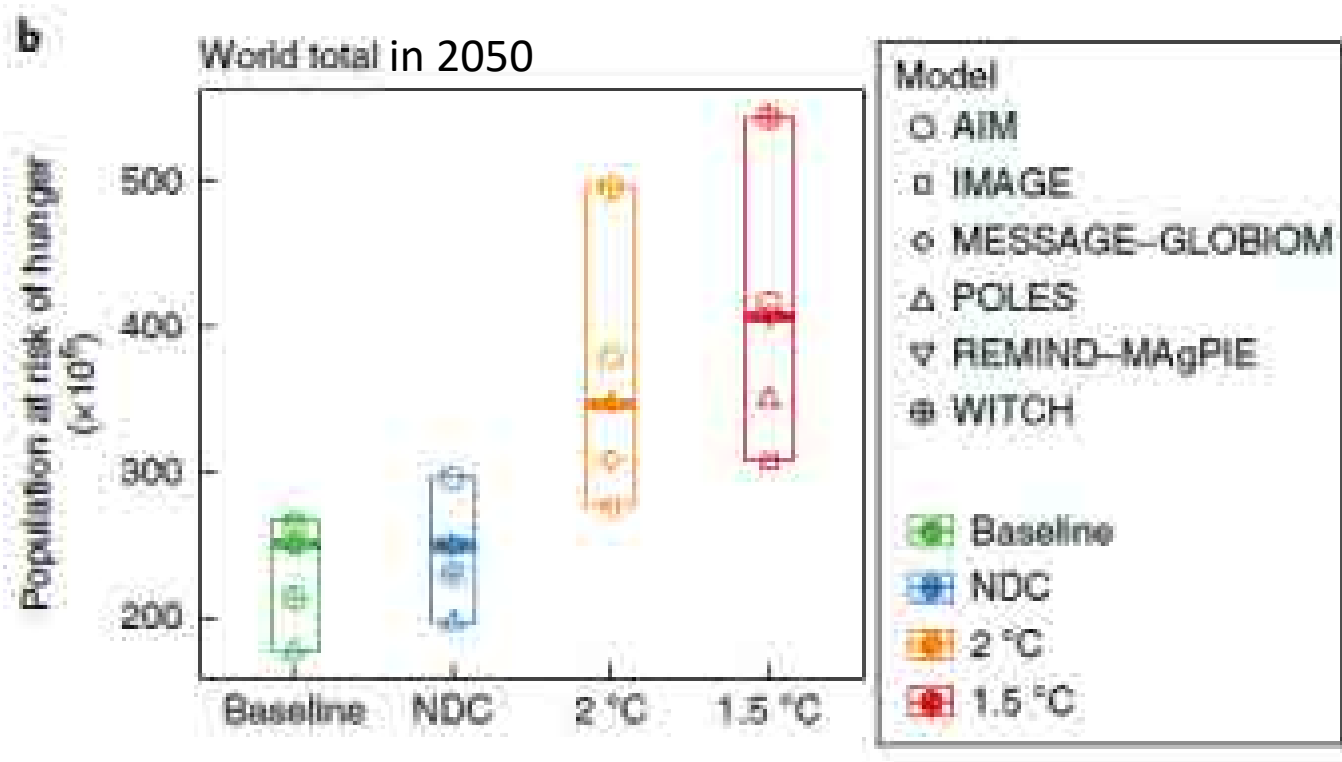
## **Changing the discount rate from 5% to 2% and given a 1000 GtCO<sub>2</sub> budget would**

- double today carbon price (from 21 to 55\$/tCO<sub>2</sub>);
- 1/2 carbon budget overshoot (-300 GtCO<sub>2</sub> NETs).

# Multidimensional implications of climate policies

CD Links Consortium

# Pricing GHGs in the land use sector



ARTICLES

<https://doi.org/10.1038/s41893-019-0286-2>

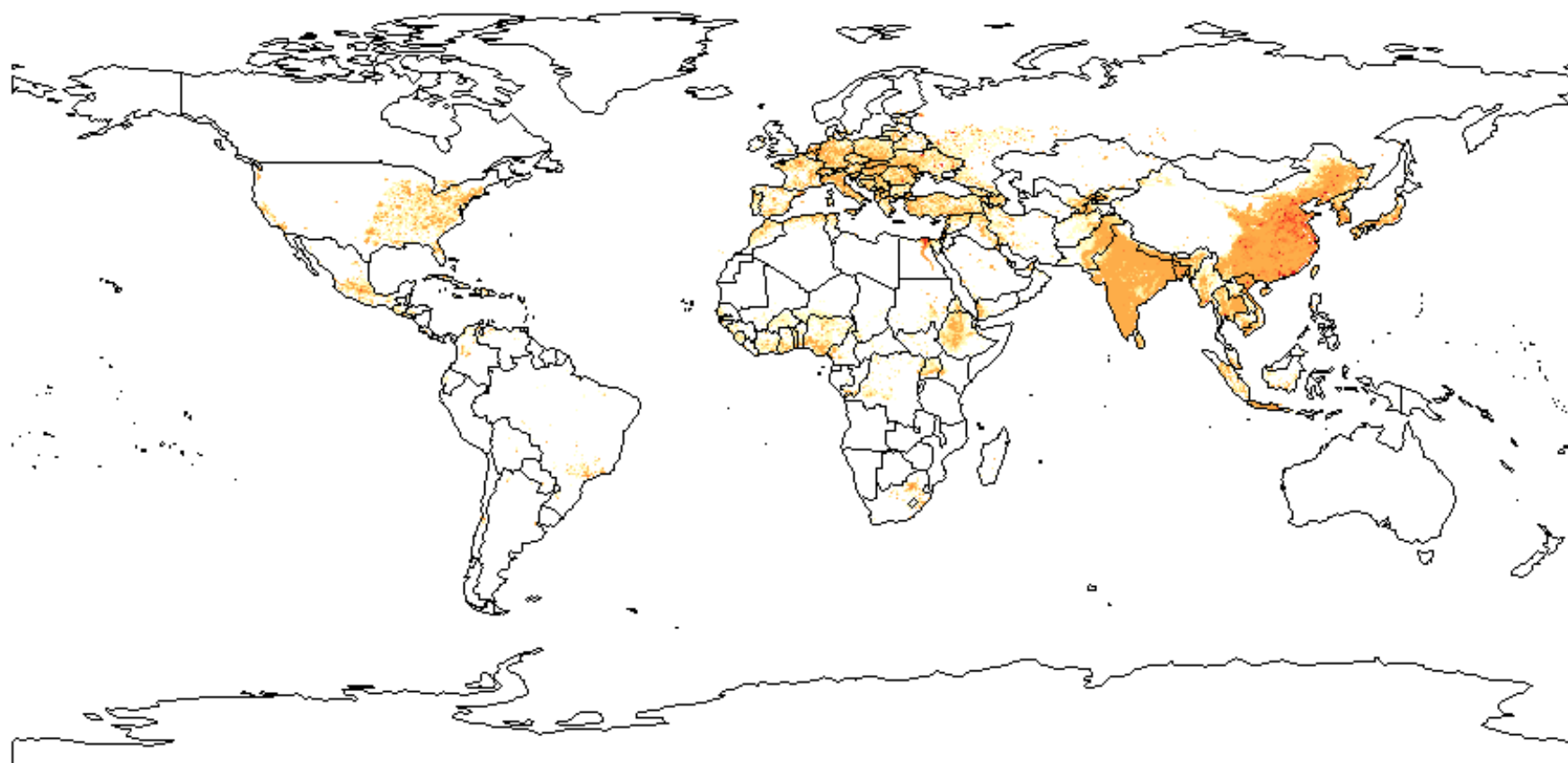
nature  
sustainability

## A multi-model assessment of food security implications of climate change mitigation

Shinichiro Fujimori<sup>1,2,3\*</sup>, Tomoko Hasegawa<sup>2,3,4</sup>, Volker Krey<sup>5</sup>, Keywan Riahi<sup>3,5</sup>, Christoph Bertram<sup>6</sup>, Benjamin Leon Bodirsky<sup>6</sup>, Valentina Bosetti<sup>7,8</sup>, Jessica Callen<sup>9</sup>, Jacques Després<sup>9</sup>, Jonathan Doelman<sup>10</sup>, Laurent Drouet<sup>7</sup>, Johannes Emmerling<sup>7</sup>, Stefan Frank<sup>11</sup>, Oliver Fricko<sup>3</sup>, Petr Havlik<sup>3</sup>, Florian Humpenöder<sup>6</sup>, Jason F. L. Koopman<sup>11</sup>, Hans van Meijl<sup>11</sup>, Yuki Ochi<sup>12</sup>, Alexander Popp<sup>6</sup>, Andreas Schmitz<sup>3</sup>, Kiyoshi Takahashi<sup>3</sup> and Detlef van Vuuren<sup>10,13</sup>

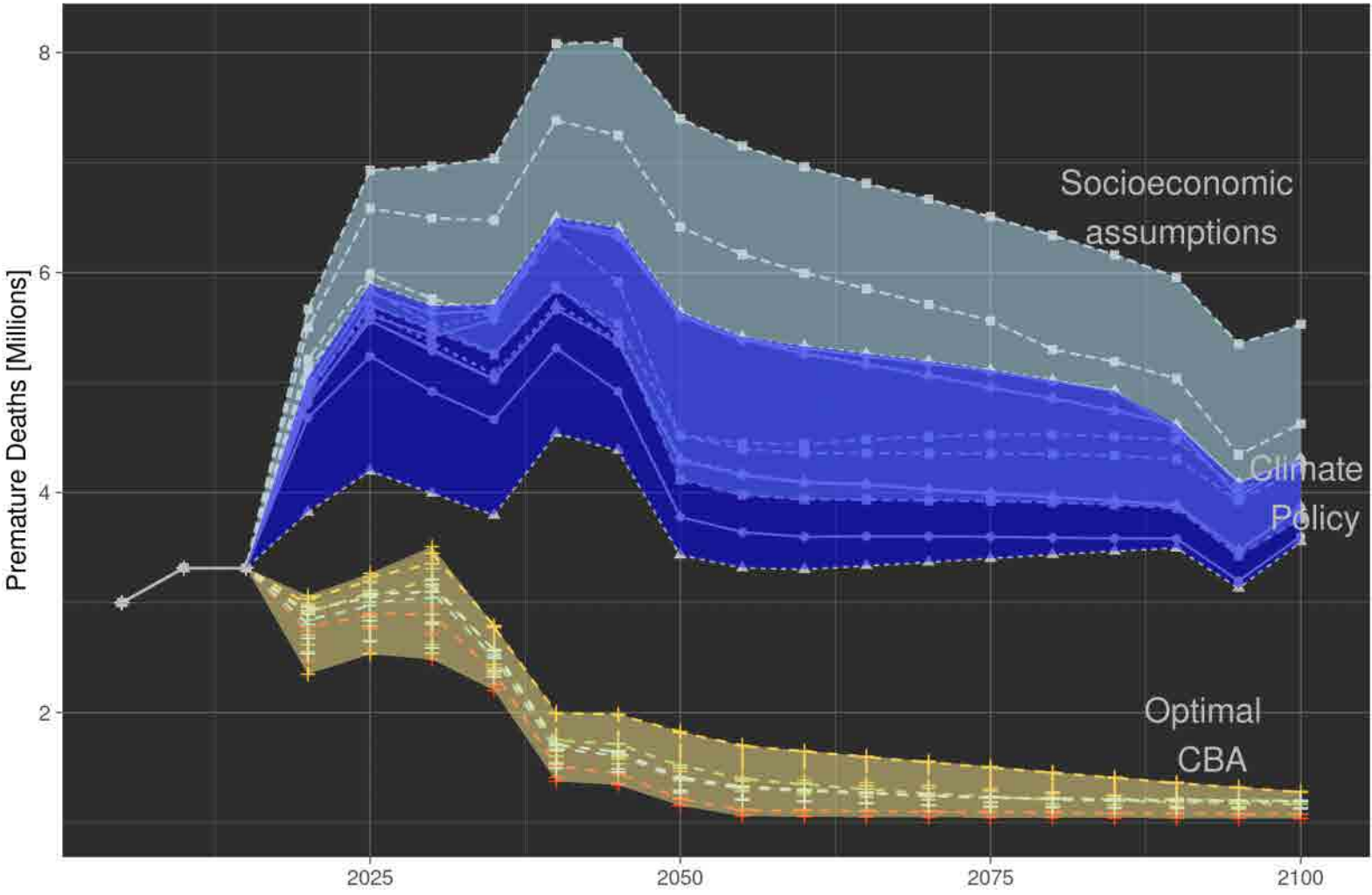
# Avoided deaths from better air quality due to moderate climate mitigation in 2030

INDC\_ALL vs BAU-FLE in 2030



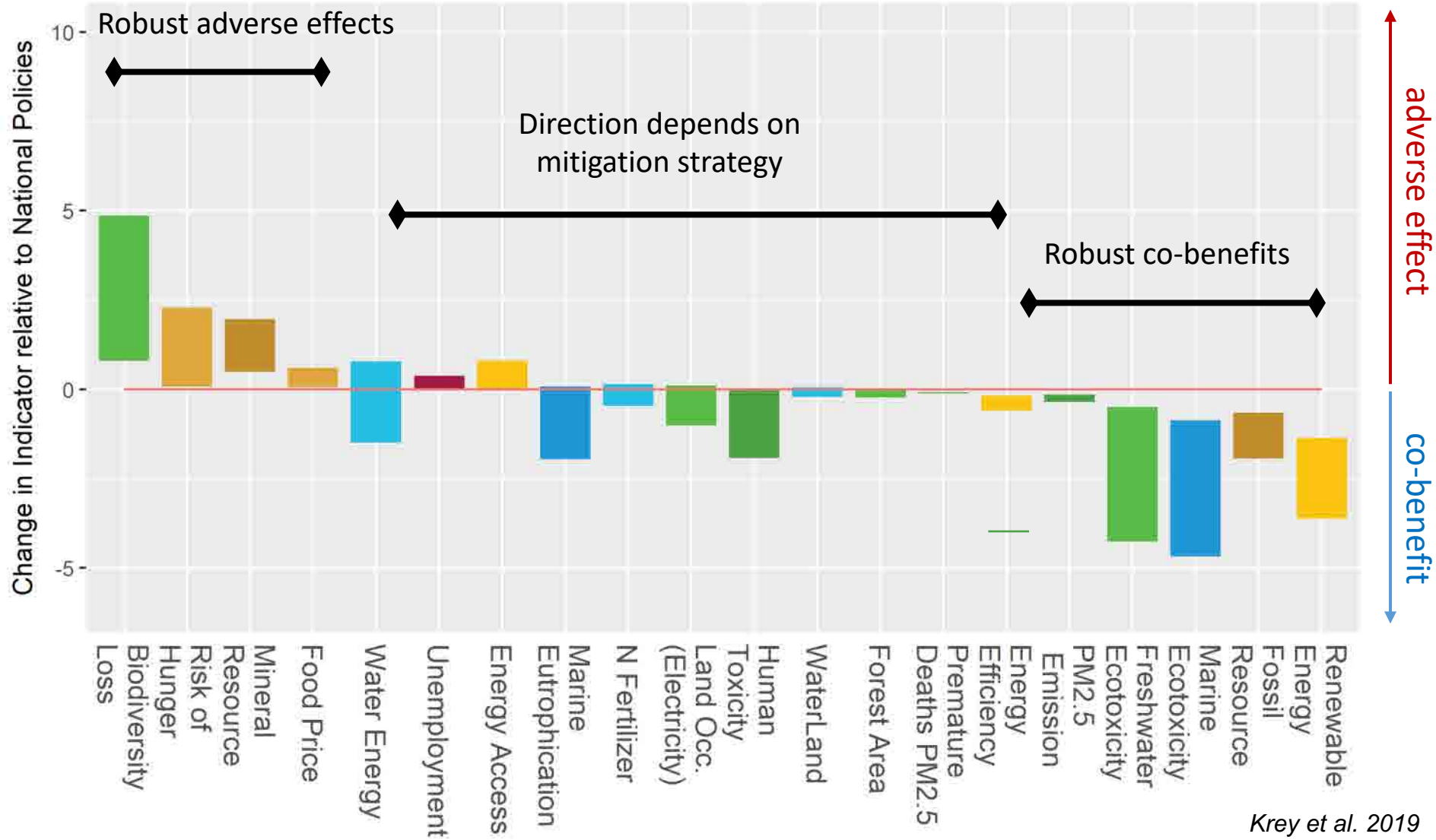
# Climate policies not enough to solve air pollution

ssp ssp1 ssp2 ssp3 ssp4 ssp5 Policy 15c 2c bau cba





# Synergies and trade-offs 2°C Mitigation on other SDGs



# What have we learnt

- There is a multiplicity of **synergic effects** with other societal goals, but also major **tradeoffs**
- Better understanding of these synergies/tradeoffs can help shape **better policies**
- Results can be very misleading if avoided climate change impacts are not integrated in the analysis

# Discussion

- Cost Benefit Integrated Assessment modelling (now to be enhanced with new, empirically founded climate damage functions) and
- Process-based Integrated Assessment modelling should start talking again.

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Thank you!

