



AUSTRALIAN-GERMAN  
CLIMATE &   
ENERGY COLLEGE

## **Co-producing climate policy: negative emissions, land-use and sustainable futures**

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Kate Dooley

A crisis of expertise? Legitimacy and the challenge of policymaking  
MSOG, Feb 15, 2018

# Paris Agreement

- Art. 2.1 Temperature objective – limiting warming to well below 2° C and pursuing efforts for 1.5° C
- Art. 4.1 Long-term goal - balance sources and sinks
- Competing demands for land to meet already agreed and potentially competing societal goals, including not threatening food production (SDG 2); water use (SDG 6) biodiversity protection and forests (SDG 15)

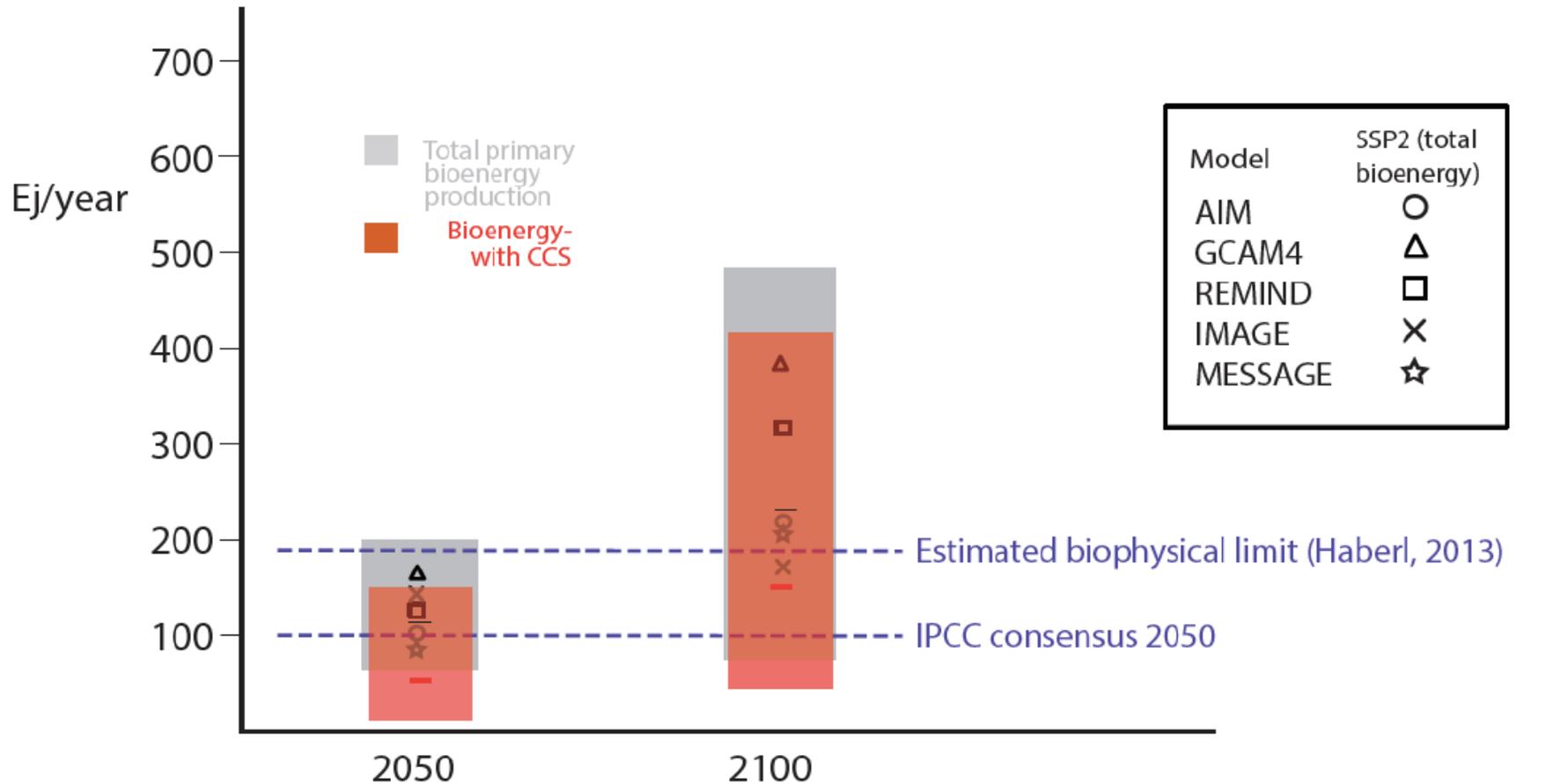


- Global climate models frame climate problem in technocratic terms (Shackley, Wynne, Demeritt)
- Integrated Assessment Models (IAMs) combine economic and social assumptions to achieve cost-optimal mitigation outcomes
  - originally designed for exploratory research, now applied as decision-making tools (Girod & Flueler)
- Regulatory science - a negotiated and constructed model of scientific knowledge, where boundary-work is critical to the authority of scientific knowledge
- Interactional branch of co-production - how knowledge is constructed, contested and legitimized

# Shared Socio-economic Pathways (SSPs)

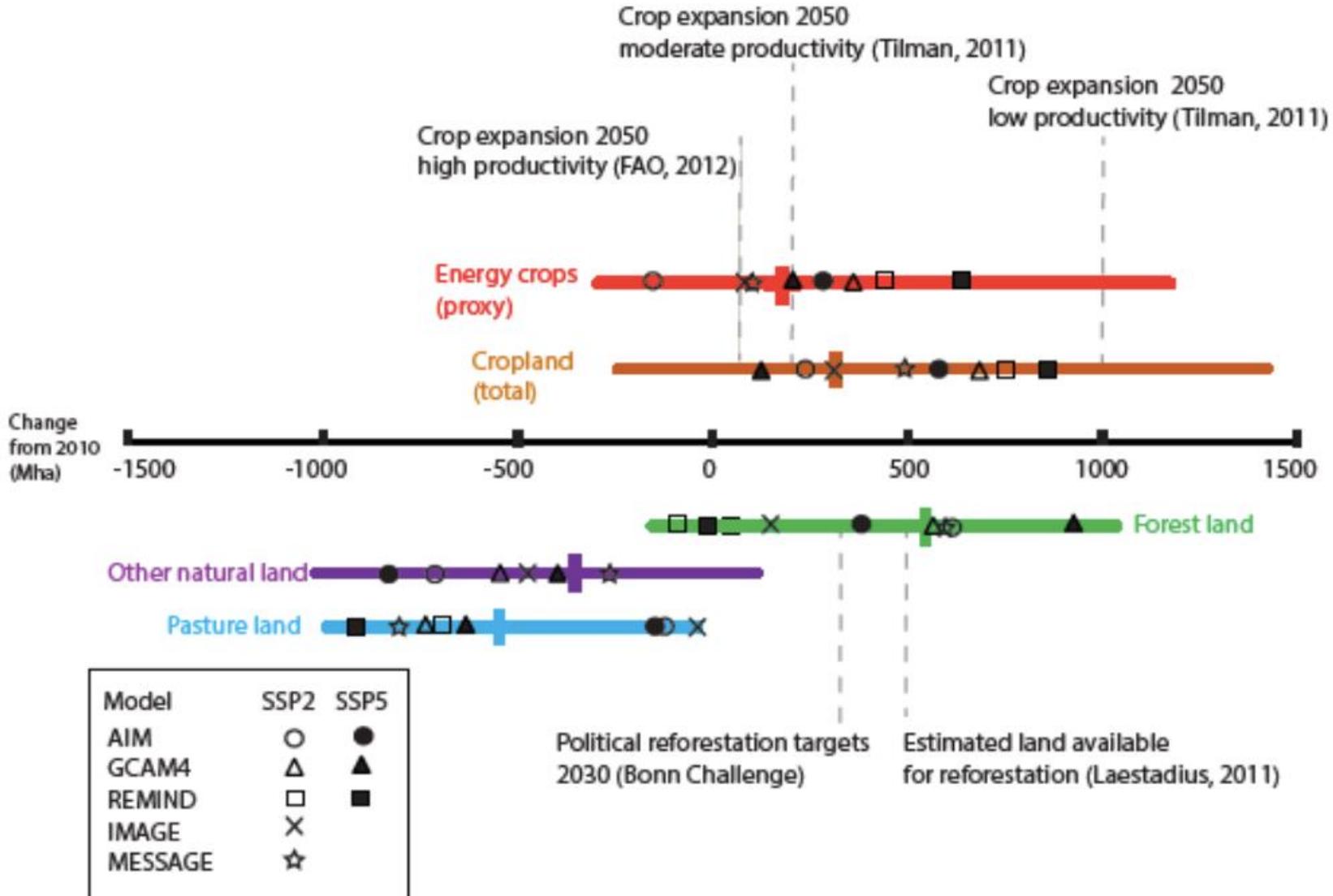
	SSP1 Sustainability	SSP2 Middle of the road	SSP3 Regional rivalry	SSP4 Inequality	SSP5 Fossil fueled development
Land-use characteristics of SSPs.	Strong regulation to avoid env. trade-offs High ag. productivity, low food-consumption. Land-use sector included in climate mitigation policies	Medium regulation, deforestation rate declines slowly. Medium improvements in productivity, medium consumption levels, including meat. Partial land-sector inclusion in delayed global climate action.	Limited regulation, continued deforestation and low agricultural productivity development. Reduced global trade. Delayed climate action with minimal land-sector inclusion.	Low land-use regulation in poorer countries leads to high deforestation rates. High inequality in consumption levels. Immediate climate action with limited inclusion of the land-sector.	Medium regulation, slow decline in deforestation rates. High agricultural intensification. Material-intensive consumption and high meat diets. High global trade. Delayed climate action with full inclusion of land-sector.
RCP2.6 scenarios analysed	GCAM4 AIM REMIND-MAGPIE IMAGE MESSAGE	GCAM4 AIM REMIND-MAGPIE IMAGE MESSAGE	No scenario run from any model achieved RCP2.6	GCAM4 AIM	GCAM4 AIM REMIND-MAGPIE

# Scale of bioenergy use



Primary bioenergy demand (total and with CCS) in 2050 and 2100 for SSP RCP2.6

# Scale of land-use change



- **Uncertainty** - empirical uncertainty dealt with in model assumptions through expert judgement
- **Feasibility** - model outputs do not 'imply' real-world feasibility. Policy experts concerned over implementability of the scale of bioenergy and land-use change assumed
- **Constraints** - 'unscientific' to introduce constraints to achieve a desired output
- **Responsibility** - complexities and trade-offs 'lost in translation' between modelling and policy worlds

- Modeled outputs risk overestimating the availability of productive land for mitigation by excluding consideration of social goals
- Modelers engaged in boundary work to ensure authority and legitimacy of results
- Uptake of results in policy context signals an acceptance of large-scale NETs, without any critical policy or public debate over potential impacts and lock-in effects
- ‘Serviceable truth’ – a state of knowledge that satisfies tests of scientific acceptability, and supports reasoned decision-making (Jasanoff)

Thank you!

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