EU-level assessments and scenarios

Hermann Lotze-Campen and the MACSUR team
Key policy-relevant questions

• What is the future of agricultural prices?

• How will agricultural production and food consumption evolve?

• How will climate change impacts and mitigation affect…
  – Prices
  – Land use
  – Trade
  – Undernourishment
Shared Socio-economic Pathways (SSP)

- **SSP5 - Fossil-fueled Development**
  - Population: low
  - GDP: high
  - Trade: globalized

- **SSP3 - Regional Rivalry**
  - Population: high
  - GDP: low
  - Trade: fragmented

- **SSP2 - Middle of the Road**
  - Population: medium
  - GDP: medium
  - Trade: regionalized

- **SSP1 - Sustainability**
  - Population: low
  - GDP: medium
  - Trade: globalized

- **SSP4 - Inequality**
  - Population: medium
  - GDP: low
  - Trade: globalized

O’Neil et al. GEC 2015
Combining SSPs with Representative Concentration Pathways (RCP)

<table>
<thead>
<tr>
<th>Climate</th>
<th>SSP1</th>
<th>SSP2</th>
<th>SSP3</th>
<th>SSP4</th>
<th>SSP5</th>
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<td>RCP 8.5</td>
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<td>RCP 6.0</td>
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<td>RCP 2.6</td>
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- Arrows indicate the direction of combining SSPs with RCPs.
Quantitative inputs: Population & GDP

Based on IIASA 2015:
https://secure.iiasa.ac.at/web-apps/ene/SspDb
Climate induced changes in agricultural prices by 2050

Von Lampe et al., Ag.Econ. 2014

http://www.agmip.org/global-economics-team/

Nelson et al., PNAS, 2014
Climate change impacts for Europe
(difference compared to baseline)

Frank et al., EAAE 2014; http://ageconsearch.umn.edu/bitstream/183025/2/Frank-
Climate_change_impacts_on_European_agriculture-224_a.pdf
European aggregate often masks large regional differences

Regional agricultural income [% change from baseline], CAPRI model, 2030, SRES A1B

Few comparisons across sectors

Ciscar et al., PNAS 2011: 2080s, comparative static analysis
Assessing the risk of hunger

Hasegawa et al., ERL 2015
Access AgMIP Global Economics results at DataM on the web