



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH



Representative Agricultural Pathways for Europe

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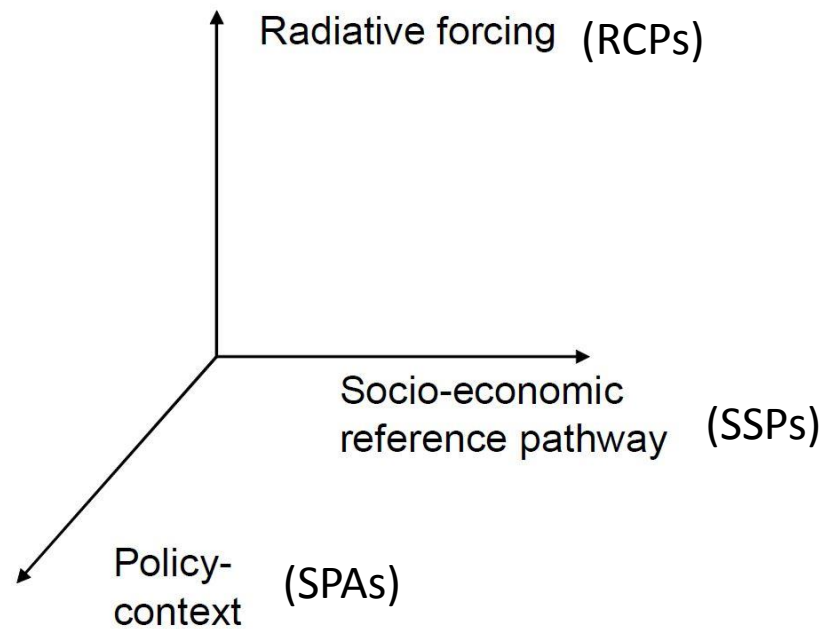
A short summary of SSPs

The new scenarios have three elements:

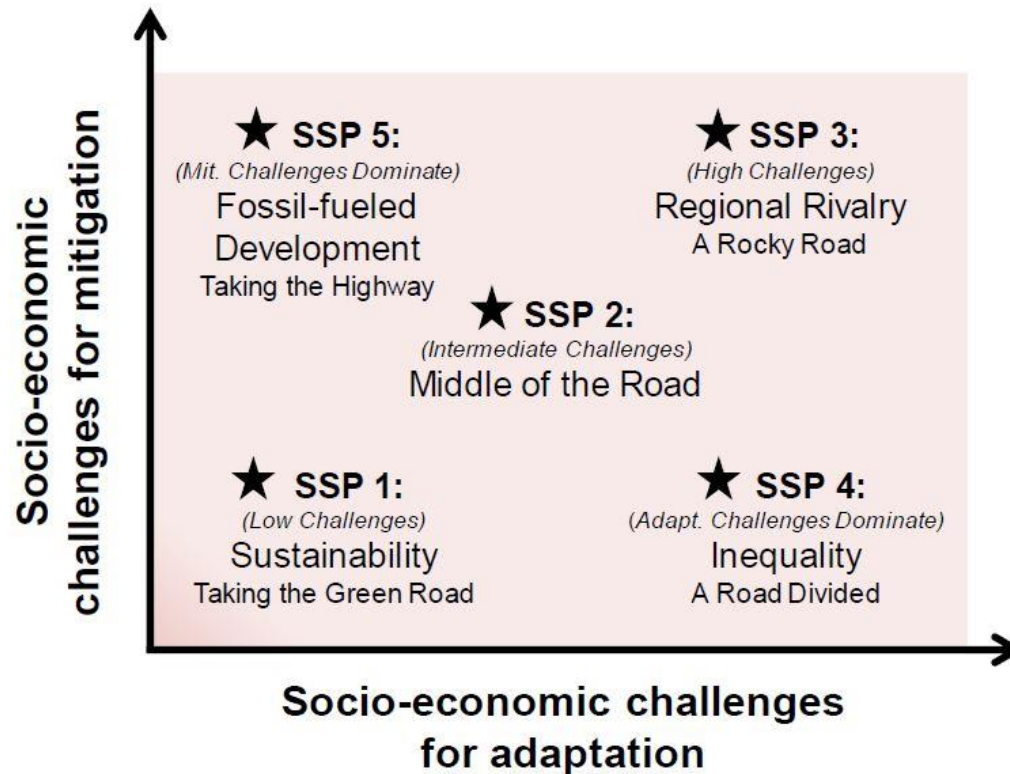
RCP = Representative Concentration Pathways → Climate Scenarios

SSP = Shared Socioeconomic Pathways → Socioeconomic Scenarios

SPA = Shared climate Policy Assumptions → Strategies and Policy Action



The 5 SSPs



Variables in 6 broad categories determine SSPs

- Demographics
- Human development
- Economy & Lifestyle
- Policy & Institutions
- Technology
- Environment & Natural resources

EU-RAPs are extended SSPs

- For many applications, „extended SSPs“ are likely to be required, containing additional and more detailed information for particular **regions** and **sectors**
- Extended SSPs should use assumptions that are consistent with the basic SSPs, but should support analysis that goes beyond the key variables

O'Neill et al. 2015, GEC

Developing the EU-RAPs

1. Define the objective
2. Identify key elements
3. Combine key elements

Adapted from O'Neill et al. 2015, GEC



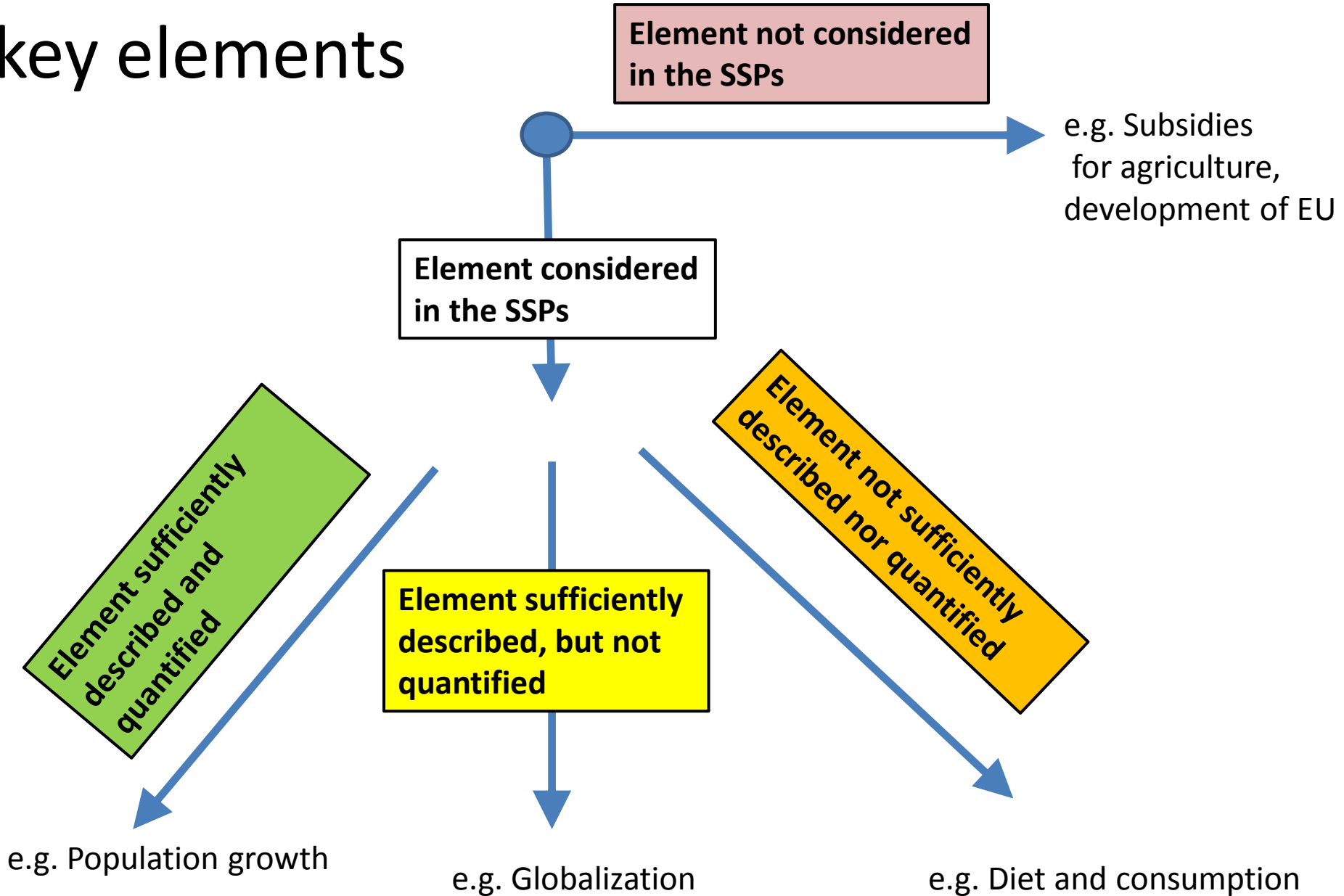
1. Objective



Provide a description of future conditions that are relevant for the analysis of agriculture in Europe

1. Provide qualitative definition of **European** and **agricultural** specific pathways
2. Implement this pathways into agro-economic models (e. g. MAgPIE, CAPRI)

2. Identify key elements



Key element: Development of the EU

EU-SSP1:

- Further integration of European financial, fiscal and agricultural policies.
- Integration of new countries into the EU.

EU-SSP2:

- Middle of the road scenario.
- The EU will remain and continue to struggle.
- There will be EU-policies, but with a trend to decentralization.

Based on
Kok et al. 2015



EU-SSP3

- A fragmented and divided Europe with strong regional rivalry and conflict.
- Eventually the EU will break down.

EU-SSP4

- The EU will consist of a small number of rich countries and become an important economic player.
- Poorer countries will drop out and become even poorer.

EU-SSP5

- Europe regains its leading position in the global economy.
- Strong EU, with focus on policies related to human and social capital, neglecting environmental protection.

Key element: Agriculture

SSP Elements	Relevant for the objective	SSP1	SSP2	SSP3	SSP4	SSP5
Demographics						
Population growth	<i>Global agricultural demand</i>	Relatively low	Medium	High (LIC) Low (MIC, HIC)	Relatively High (LIC) Low (MIC, HIC)	Relatively low
Economy and lifestyle						
Growth of GDP per capita	<i>Global agricultural demand</i>	High (LIC, MIC) Low (HIC)	Medium	Slow	Medium (LIC, MIC) Low (LIC)	High

Element sufficiently described and quantified	Element sufficiently described, but not quantified
Element not sufficiently described or quantified	Element not considered in the SSPs

Key element: Agriculture

SSP Elements	Relevant for the objective	SSP1	SSP2	SSP3	SSP4	SSP5
<i>Economy and lifestyle</i>						
International trade (Result of globalization)	<i>Spatial distribution of production in- and outside Europe</i>	Moderate	Moderate	Strongly constrained	Moderate	High
Globalization (WTO-Doha round and bilateral trade agreements, and preference for regional production)		Connected markets, regional production	Semi-open globalized economy	De-globalizing, regional security	Moderate	High, with regional specialization in production



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Key element: Agriculture

SSP Elements	Relevant for the objective	SSP1	SSP2	SSP3	SSP4	SSP5
<i>Economy and lifestyle</i>						
Consumption and diet	<i>Overall agricultural demand and regional distribution of production</i>	Low meat diets, first in HIC <i>specification: also low waste, and overall per capita consumption</i>	Medium meat consumption <i>specification: medium waste, per capita consumption</i>	 <i>specification: High meat and per capita consumption in HIC, MIC; Low meat and pc consumption in LIC; high was everywhere</i>	High per capita consumption in HIC, low per capita consumption in LIW, MIC <i>specification: high meat consumption in HIC, MIC; low meat consumption in LIC; high waste, everywhere</i>	High meat consumption <i>specification: high waste, Per capita consumption</i>



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Key element: Agriculture

SSP Elements	Indicator for	SSP1	SSP2	SSP3	SSP4	SSP5
<i>Policies & Institutions</i>						
Environmental Policy	<i>Relevant for European and domestic environmental policies</i>	Improved management of local and global issues	??	Low priority for environmental issues	Focus on local environment in MICs, HICs; little attention to vulnerable areas or global issues	Focus on local environment
Policy orientation	<i>Relevant for CAP and nat. policies</i>	Strong focus on sustainable development	Weak focus on sustainable development	No focus on sustainable development	Strong focus in HIC, MIC; no focus in LIC	Weak focus on sustainable development
Institutions	<i>Relevant for CAP and nat. policies</i>	Effective	Medium effective	Not effective	Effective only in HIC, MIC	Effective
European and domestic agricultural policy (CAP)	<i>Agricultural production in Europe</i>	To be discussed later				



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Key element: Agriculture

SSP Elements	Indicator for	SSP1	SSP2	SSP3	SSP4	SSP5
<i>Technology</i>						
Development	<i>Increases in productivity</i>	Rapid	Medium	Slow	Rapid in HIC, MIC, Low in LIC	Rapid

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Key element: Agriculture

SSP Elements	Indicator for	SSP1	SSP2	SSP3	SSP4	SSP5
<i>Environmental & Natural Resources</i>						
Land use (Forest protection, nature conservation)	<i>Agricultural land expansion</i>	Strong regulations	Medium regulations	Hardly any regulations	Hardly any regulations (MI, HI): Lack of regulation (LI)	Medium regulations

Element sufficiently described and quantified	Element sufficiently described, but not quantified
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Combining EU-SSPs and the CAP

- EU-RAP1: Strong CAP, strong focus on environmental regulation (e.g. greening), no producer support (direct payments).
- EU-RAP2: BAU
- EU-RAP3: EU breaks up, rich countries support farmers with national subsidies, poor countries do not, no CAP.
- EU-RAP4: In the remaining small and rich EU, a strong CAP. In the singled out poor countries – no CAP, no domestic subsidies.
- EU-RAP5: Free market world, strong institutions, strong EU. No CAP.

SSP Elements	Indicator for	EU-RAP1	EU-RAP2	EU-RAP3	EU-RAP4	EU-RAP5
<i>Policies & Institutions</i>						
European agricultural policy (CAP)	<i>Agricultural production in Europe</i>	Strong CAP	Middle of the road	None	Strong CAP in EU, none in rest of Europe	None
Basic Payment Scheme (Pillar I)	<i>Agricultural production in Europe</i>	None	As currently	None	Strong in EU, none in the rest of Europe	None
Greening (Pillar I)	<i>Agricultural area, production, SI measures</i>	Strong focus	As currently	None	Exists in EU, not in the rest of Europe	None
Disaster funds (Pillar I)	<i>Agricultural production in Europe</i>	Exists	As currently	None	Strong in EU, none in the rest of Europe	None
Rural development scheme (Pillar II)	<i>Promotion of SI measures</i>	Exists, shift to sust. issues	As currently	None	Exist in EU, not in the rest of Europe	None
Part of Pillar II that goes to the environment	<i>Agricultural production in Europe</i>	Large	As currently	None	Exist in EU, not in the rest of Europe	None
National agricultural policy	<i>Agricultural production in Europe</i>	No domestic policies	Weak domestic policies	Strong domestic policies in HIC	No domestic policies in EU, weak agr.pol in the rest of Eur.	No domestic policies

Thank you!



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Outlook

- Combining the EU-RAPs with SPAs and RCPs (following the Lotze-Campen et al.)
- Iterating the assumptions with different project partners
- Quantifying the assumption and implementing them in CAPRI, MAgPIE, ...

Regional focus: Europe-specific SSPs

developed in the FP7 project IMPRESSIONS:

EU-SSP1: We Are the World

EU-SSP3: Icarus

EU-SSP4: Riders on the Storm

EU-SSP5: Fossil-fuelled development

Instead of challenges to mitigation and adaptation, the key uncertainties identified were carbon intensity per unit GDP and inequality

