



# Land use and climate change – new approaches to integrate climate adaptation into stakeholder processes

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# Agenda

- Introduction
- Challenges
  - under a land use perspective
  - under a planning perspective
- Approach 1: stakeholder involvement
- Approach 2: Data-based decision support
- Conclusions

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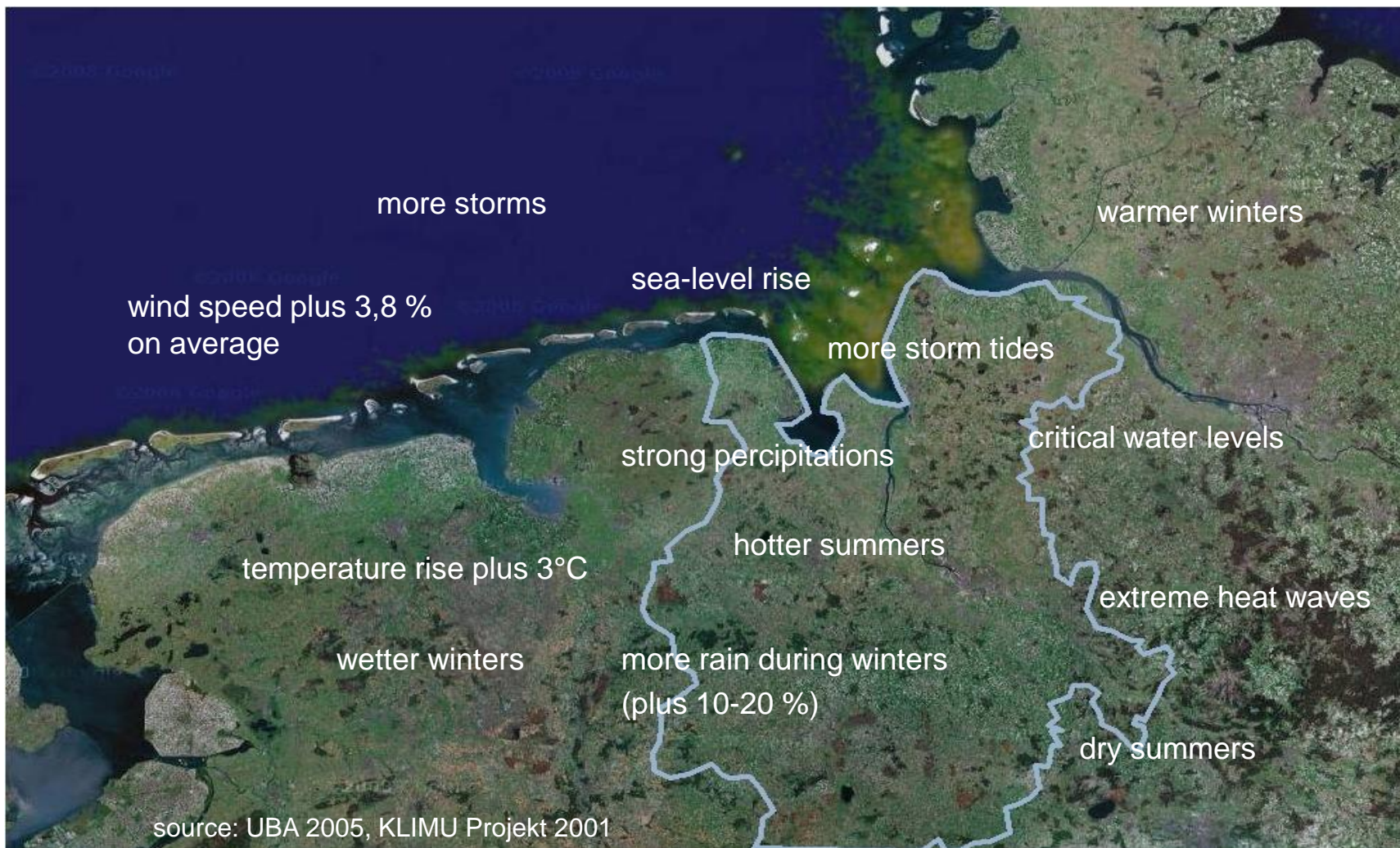
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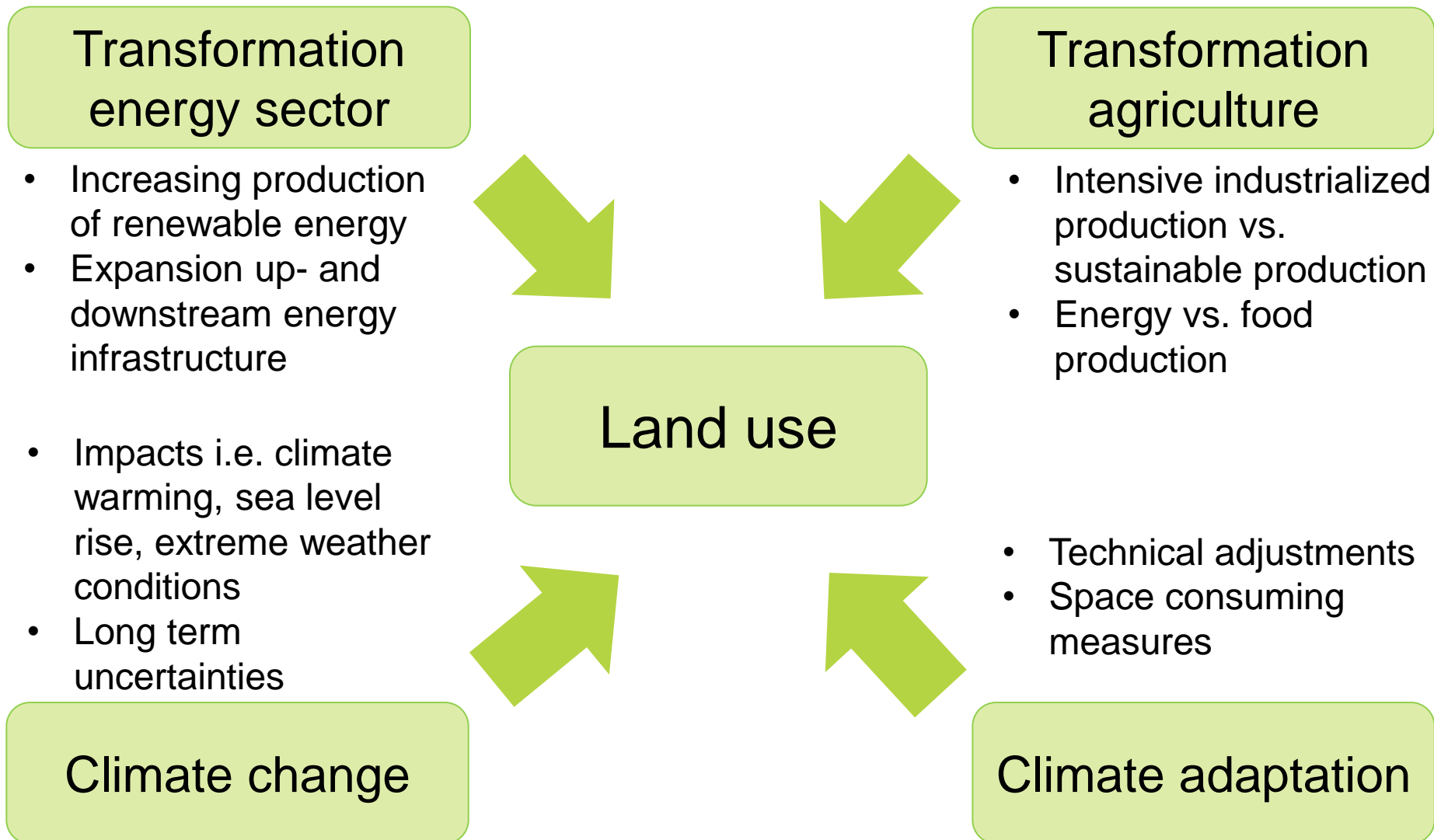
# Climate impacts until 2100



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# Challenges facing climate change and adaptation: land use perspective



## Transformation energy sector

- Increasing production of renewable energy
- Expansion up- and downstream energy infrastructure
- Impacts i.e. climate warming, sea level rise, extreme weather conditions
- Long term uncertainties

## Transformation agriculture

- Intensive industrialized production vs. sustainable production
- Energy vs. food production
- Technical adjustments
- Space consuming measures

## Land use

## Climate change

## Climate adaptation



# Challenges facing climate change and adaptation: planning perspective



- understanding and managing complexity and uncertainty is greatest challenge
- Traditional linear planning and decision making methods are unlikely to be effective
- Mismatches between long-term uncertainties and short time planning horizons cause problems for climate adaptation measures

# Stakeholder involvement

- Establish dialogue
- Interactive exchange
- Shared vision statement „Auricher Erklärung“
- Regional and supra-regional communication on the political agenda
- Regional process will be continued



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# Indicator based decision support



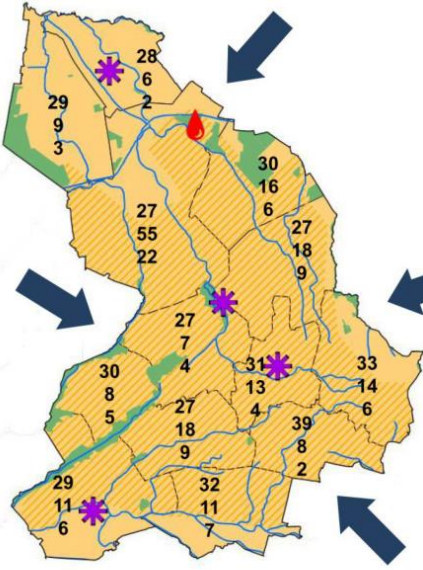
**Intended land use change**

*has impacts on*

**ES1 Soil productivity**  
 31 Crop yield average  
 183 # biogas plants  
 87 Installed MW

**ES2 Water**  
 Rivers  
 Evaluation of nitrate pollution in ground water  
 Consulting area nitrate reduction  
 Examples of water shortage

**ES3 Landscape and recreation**  
 Nature protection areas, quality, fragmentation  
 Tourism/recreation hotspots  
 # of citizens initiative against biogas plants/ loss of cultural landscape



**Indicator Climate Change**

*under the terms of*

**Indicator Stakeholder Situation**

**Decision support**

# Conclusions

- Regional stakeholders decide about land use → central players for regional development and adaptation to climate change
- Uncertainty of climate change impacts and increasing land use demands create a new challenge
- Regional stakeholders need support to reduce and integrate this complexity into land use decisions
- Indicator based decision support combined with the system of ecosystem services can be a solution to analyze and support land use decisions

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# Thank you!

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