

Science-Stakeholder based Adaptation Research gaining pace

Experiences and theoretical considerations from Sweden's Forestry Sector

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Mistra - SWEdish Research Programme on Climate, Impacts and Adaptation

- 8 year interdisciplinary programme (2008-2015) combining climate, economic, and ecological modelling, and analysis of adaptation processes
- Five research partners (SMHI, Lund university, SEI, IIES, MISU)
- Swedish focus, case study approach
- Science for practice & policy support



Adaptation research in Phase 1 (2008-2011)

- **Aim:** To understand what factors determine the success of adaptation and what stakeholders can do to overcome barriers to adapting
- **Three work packages:**
 - Stakeholder mapping and climate risk perception
 - Social learning on adaptation
 - Policy analysis and integration
- ..and **two case studies:** Stockholm region (horizontal), Swedish forestry sector (vertical)

Science-based stakeholder dialogues

(Welp et al. 2006)

- Promote exchange of knowledge and experience between practitioners and researchers
- Create a platform for mutual learning
- Identify socially relevant research questions
- provide a 'reality check'
- Incorporate ethical and value considerations in assessments
- Access stakeholders' knowledge, achieve process of co-production of knowledge

Mistra-SWECIA dialogues

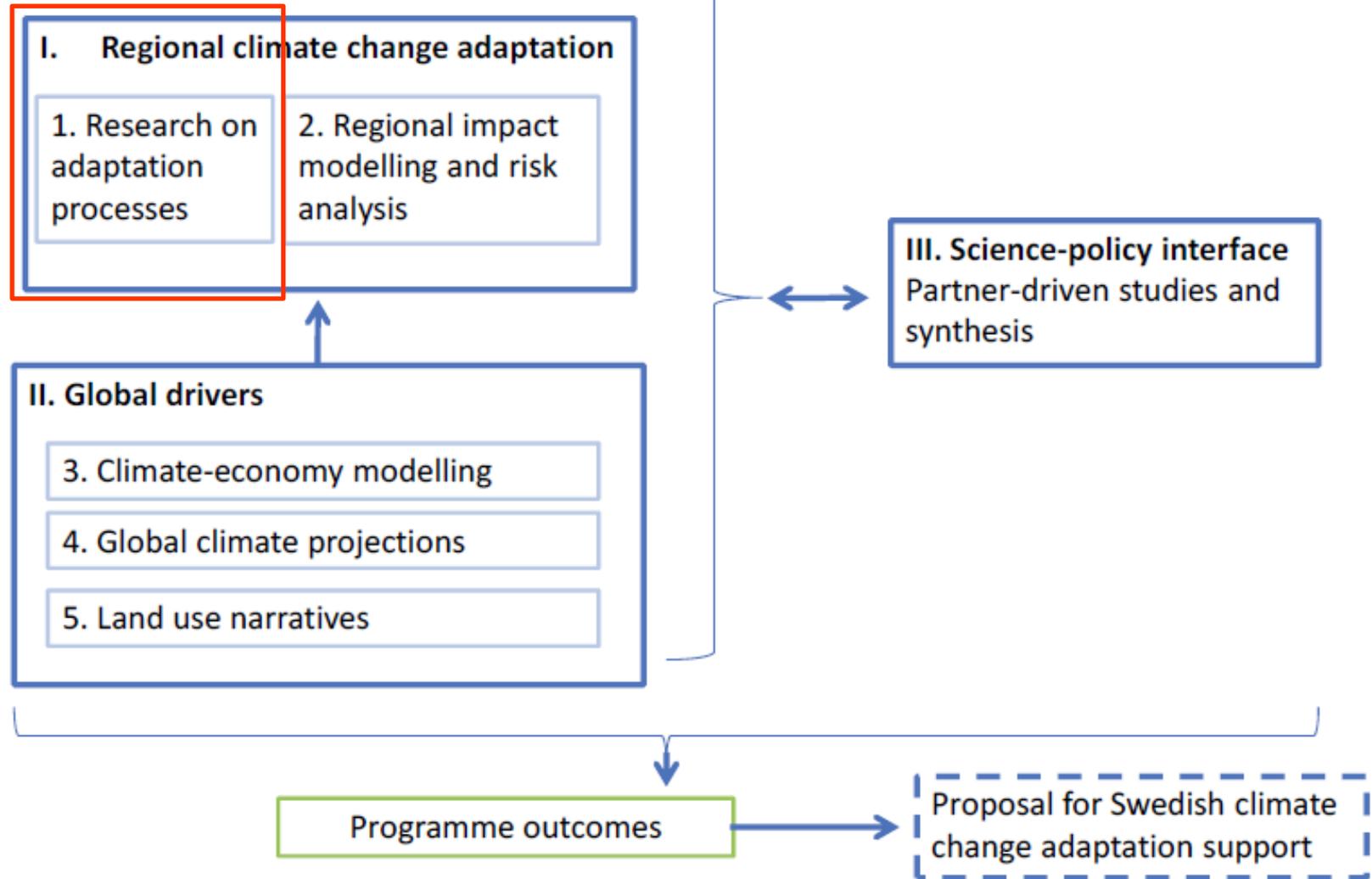
- Explore stakeholder values, preferences and risk perceptions re climate change adaptation
- Explorative approach, guide to relevant research questions, enables us to tailor research methods to user needs
- Promote learning between knowledge producers and users and foster networks (better understand stakeholder knowledge needs and use of scientific knowledge)
- Provide feedback on research results to stakeholders, support decision-making and adaptation action

Research on adaptation process: Phase 1

FOCUS GROUP DISCUSSIONS		
Focus group 1: Orientation and exploration of climate-related and non-climate-related risks	Focus group 2: Discussion of scientific knowledge about climate change impacts and adaptation	Focus group 3: Discussion of barriers and opportunities for adaptation
STAKEHOLDER WORKSHOP		
Exchange of experiences and knowledge between stakeholders		
FOLLOW-UP INTERVIEWS		
Individual reflections on climate change adaptation Self-reported learning		

- Total of 27 forestry stakeholders (forest owners and forestry professionals), divided into four groups, participated in three meetings each, or 12 altogether
- Participants from two counties, with different experience with extreme events, climate conditions, ownership structure

Mistra-SWECIA Phase II (2012-2015)



Research on adaptation process Phase 2

- Research on the factors that promote and hinder adaptation
- Features of social networks and the role of leadership (collaborations, leadership, knowledge transfer, resource allocations across the stakeholder landscape)
- Identify what knowledge is required by stakeholders, and how best communicated , how used.
- Study learning outcomes of the participatory process
- Improve & inform model development on climate impacts and land-use (ABM)
- Combined qualitative and quantitative methods and model developments

Research on adaptation process: Phase 2

FOCUS GROUP DISCUSSIONS		
Focus group 1: Orientation and exploration of climate-related and <u>non-climate</u> -related risks	Focus group 2: Discussion of <u>new</u> scientific knowledge about climate change impacts and adaptation	Focus group 3: Discussion of social networks, decision making strategies and science communication
FOLLOW-UP INTERVIEWS		
Individual reflections on climate change adaptation Self-reported learning		
STAKEHOLDER WORKSHOP		
Exchange of experiences and knowledge between stakeholders Use and discussion of Agent Based Model		

- Total of 45 forest owners, divided into seven groups, participated in three meetings each, or 21 altogether
- Participants came from four different counties, with different experience with extreme events, climate conditions, ownership structure

Research on adaptation processes: Phase 2

SURVEY FOCUS GROUP PARTICIPANTS	
At the beginning of the first focus group discussion	
After the end of the last focus group discussion	
SURVEY FOREST OWNERS	
3000 average forest owners	3000 forest owners who had participated in climate change communication
SURVEY FORESTRY PROFESSIONALS	
1000 forestry professionals	

- Questionnaire re perception & experience with climate- and weather-related risks, adaptive capacity, efficacy of adaptation measures, socio-economic factors
- Ex-ante and ex-post questionnaire for participants designed to measure learning and change in level of engagement with CCA, social network analysis
- Questionnaire to forest owners to measure difference between “average” forest owners and forest owners that have received information and training in CCA by the Swedish Forestry Agency

Research on adaptation process: Phase 2

AGENT BASED MODEL

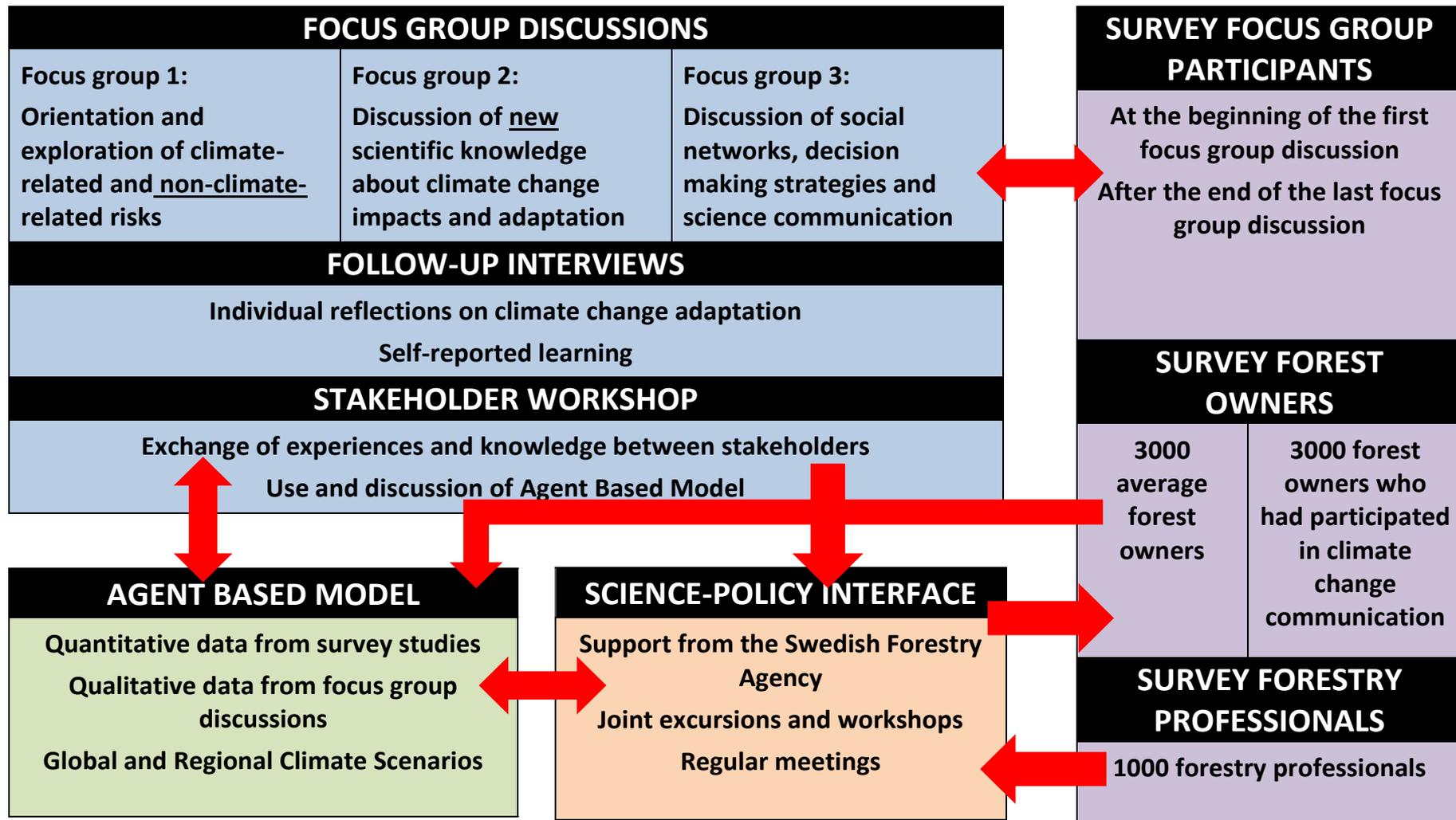
Quantitative data from survey studies
Qualitative data from focus group discussions
Global and Regional Climate Scenarios

SCIENCE-POLICY INTERFACE

Support from the Swedish Forestry Agency
Joint excursions and workshops
Regular meetings

- Agent Based Model will be able to model land use change in Sweden under different climate and economic scenarios
- Will draw from quantitative data from the survey and qualitative data from the focus groups
- The Swedish Forestry Agency, county boards, other research organizations and forestry companies involved in development of survey and the ABM

Research on adaptation process: Phase 2



Theoretical implications

- Adaptation research needs to become more interactive and practice-orientated to create greater stakeholder engagement
- Science-stakeholder based adaptation research should address social barriers to adaptation, incl factors affecting the perceptions of credibility of climate science, severity of climate risks and efficacy of adaptation measures.
- This calls for the development of user-oriented climate change communication strategies that build upon insights into these barriers and that convey a sense of self-efficacy to stakeholders.

Theoretical implications

- Future research should engage both scientists and stakeholders in, and study the process of, co-production of knowledge and knowledge integration.
- The research design should include multiple steps giving scientists and stakeholders' time and space for co-evaluating the research process and findings
- This interactive, reflective approach helps build mutual trust, fosters empowerment and social capital of stakeholders in the longer term.
- Combined quant/qual approaches for more robust analysis of social networks, knowledge integration & learning resulting from adaptation research and actions. Important for understanding drivers behind societal transformations.

THANK YOU!

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