

Climate change and behavioral changes :

Evolutionary adaptations or emergency management?



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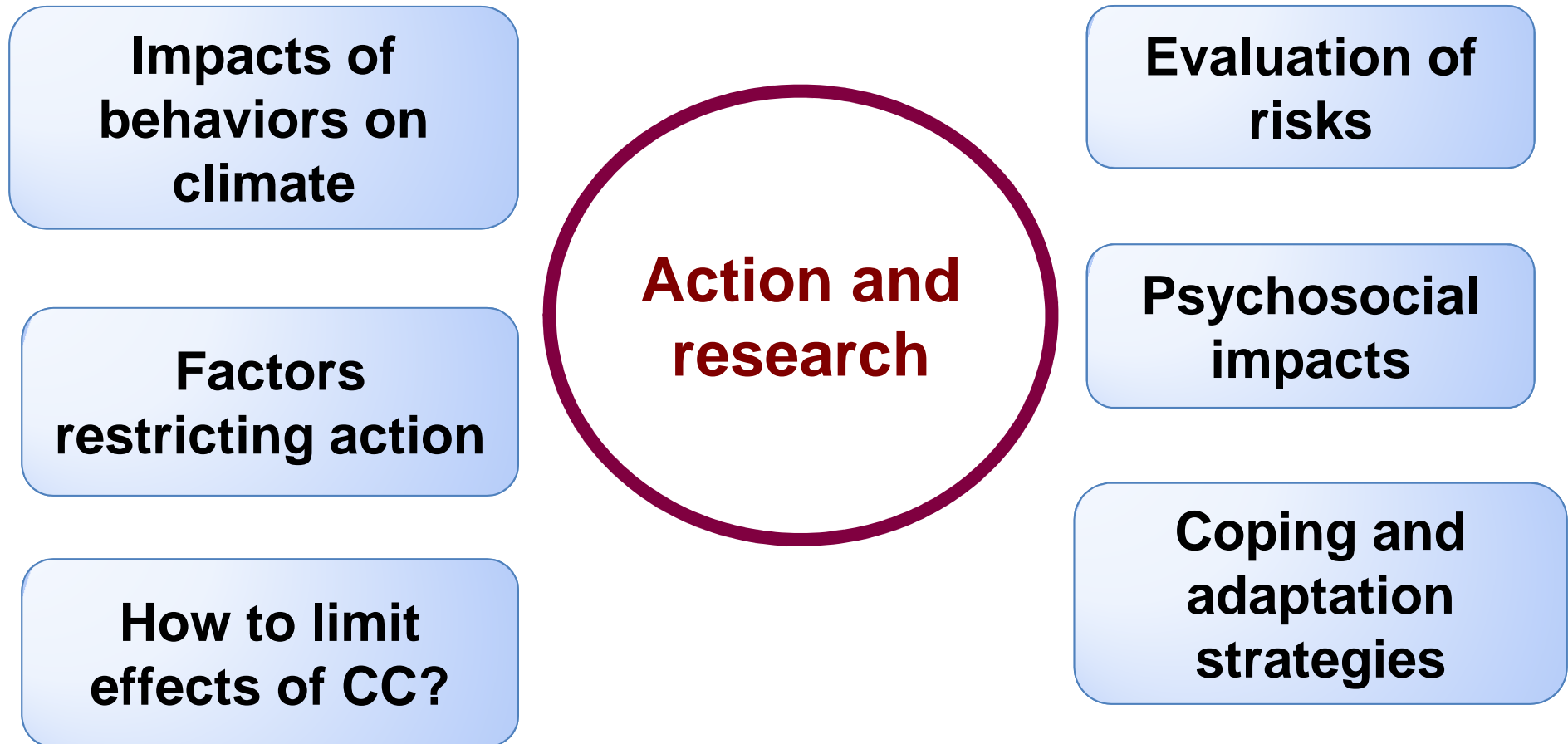
The topic of climate change

Scientific and popular interests and controversies:


- All the ecosystems are concerned
- Numerous factors of change; Anthropogenic origins
- Uncertainty
- Wrong interpretations and indicators
(i.e. climate/meteorology)



Psychology and climate change



From Swim et al. (APA, 2009)



2 main directions for studying links between climate change and human activity

**Behaviors
(causes)**



Ressources, pollution...

Possibilities of mitigation

**Risks
(consequences)**



Perception, representation

Consequences (disasters,
ecosystems...)

From Swim et al. (APA, 2009)



Climate change and perceived risks

- **Uncertainty of effects**
- **Difficulties in perceiving impacts of CC (especially in the short term)**
- **Identification of a « global » problem rather than a local one**
 - A general concept which is not linked to the daily reality
 - Interpretations of specific events (ex: disasters)
 - Mediatic representation : stereotypic, non appropriated, mainly associated to « global warming »
 - Use of proximal indicators (meteorology, seasons, biodiversity)



From perception to action

Complexity of the phenomenon → difficulty of comprehension

- Answers face to public policies, especially on terms of acceptability and attribution of the responsibilities ("*Fat cat*" syndrom)
- Social dilemmas (inutility of action?)
- Social norms (Is the norm of the occidental way of life compatible with ecological behaviors?)
- Perception of risk: augmentation of the motivation for auto-protection (Floyd & Rogers, 2000)



Consequences of the over- or under-evaluation of risk

Alarmism

Irrealistic optimism

Denial

Deresponsabilisation



Difficulties in decision making

Expectation of official instructions for action

Non adoption of prevention behaviors

Wrong comprehension

Rumors...



Farmers: a population directly concerned

- **Human-use system:** direct impact of climate change on farming activities (drought, seasonal lags, *etc.*)
- **Modification of the activity:** needs to produce and to preserve the ecosystem in the same time
- **Ecological practices:** non associated to climate change questions



Objectives of a psychosocial approach

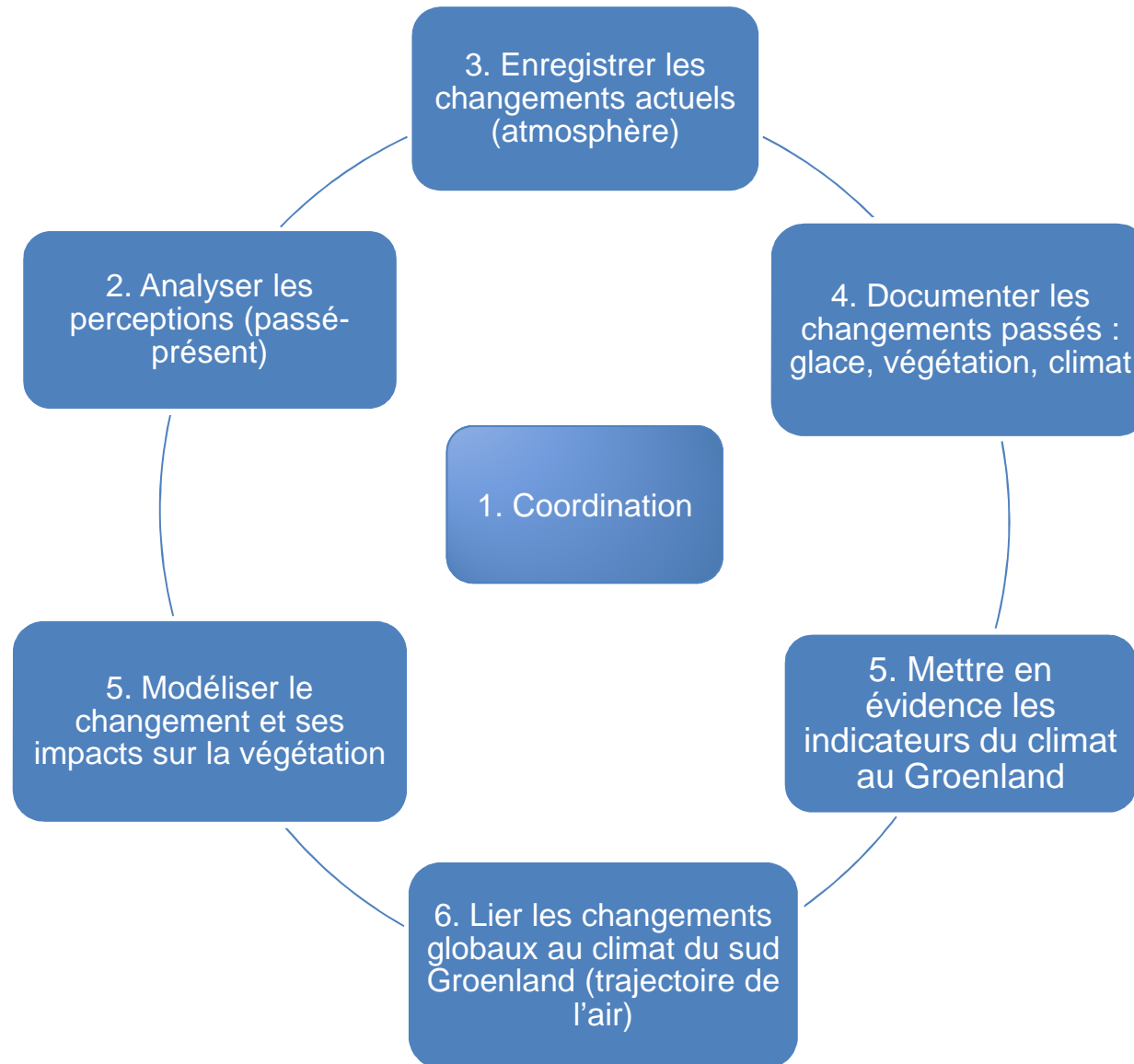
- To analyse the **perception of climat and the representation of climate change** : Risk? Preoccupation?
- To measure **changes in cultural activities**
- To study **adaptive possibilities** and anticipatory capacities of farmers face to climate change
- To propose an **intercultural comparison** (France/Greenland)



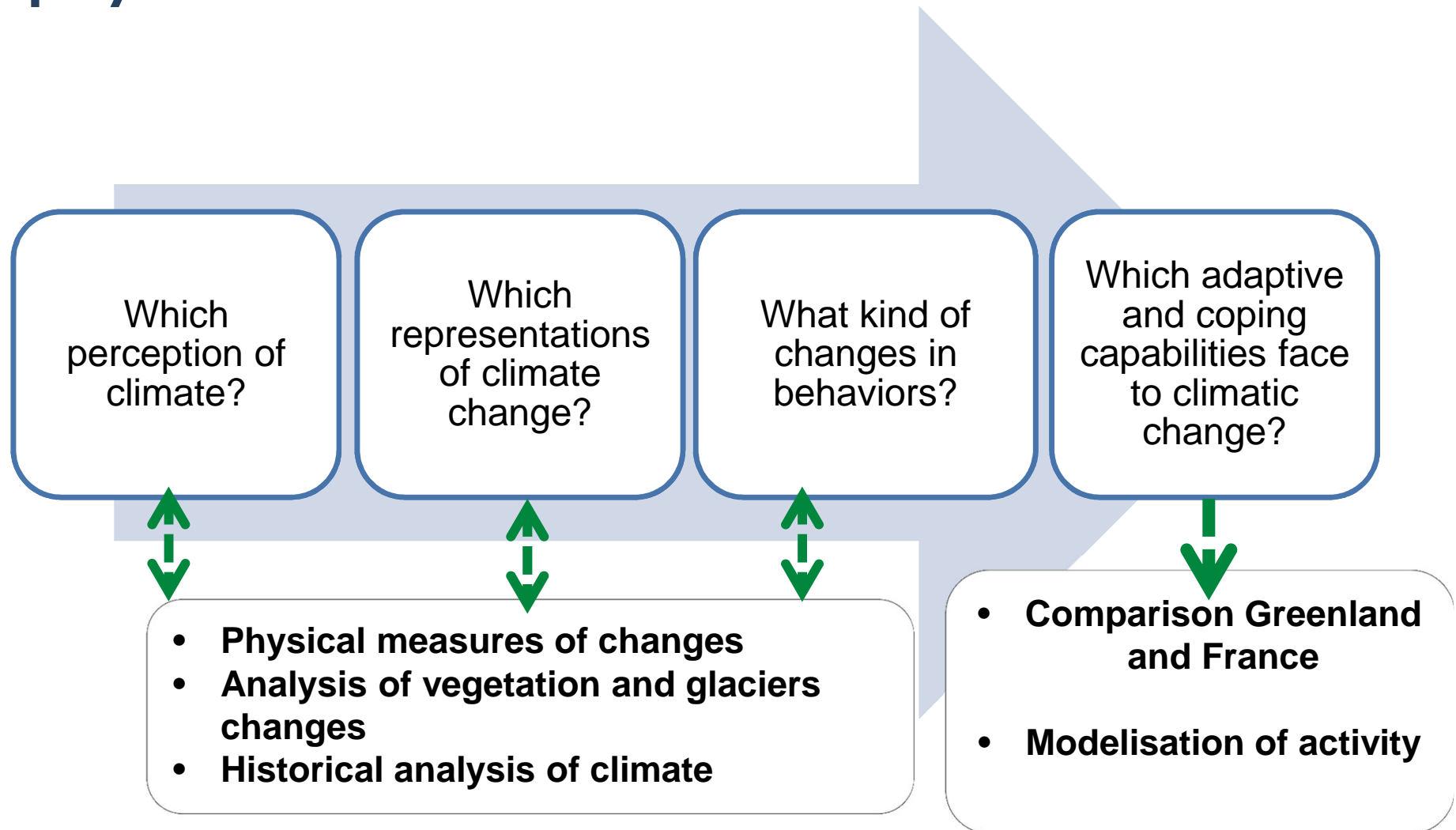
Context of the study

- Greenland is the part of the World where effects of climate change are the most perceptible
 - ANR « Green Greenland »: interdisciplinary research program (climatology, history, social psychology, ...)
- Focus on cultural activities in South Greenland

Structure of the project



A psychosocial approach connected with physical data



- *50 sheep farms in South Greenland*

- *A « recent » activity (100 years)*



*Mainly a forage
agriculture*





Methods

2 steps:

- **Semi-directive interviews with farmers** and governmental institutions in charge of agriculture
- **Questionnaire:** to precise the analysis of the strategy and the comparison with French farmers

Step 1

21 semi-directive interviews with Greenlandic farmers

- Representations of climate
- Perception of changes (environmental indicators)
- Perceived environmental quality
- Evolution of farming activities





First results

Positive changes	« like the warm; opportunity for vegetables; hope... »
Warming	« Warm summers; Getting warmer; Hot weather... »
Drought	« Land so dry; Definitely getting dry... »
Perception of climate change	« summer changes; weather changes; climate changes; global changes »
Lack of rain and snow	« No rain; No more ice in the fjord; No snow... »
Negative consequences	« No much grass; Very difficult now; lambs are smaller... »

Diversification of cultures





Perceptions of climate change

- Less snow and rain (71%)
- Warming: first perceived as positive, then as negative (67%)
- More frequent and violent storms (38%)
- Snow: Later in the winter (38%)
- Recurrent droughts (29%)
- Not enough ice (24%) → mobility problems

Drought







Perceived environmental modifications

- Pests appeared with recurrent droughts(48%)
 - links with Task 4 = the sedimentation analysis shows the presence of Chironomus (larvae, especially temperature markers)
- Less fishes in the fjords (29%)
- Changes in species of fishes (14%)



Perceived environmental quality

- No consensus on soil quality : good (48%) vs. bad(38%)
- Problems of quantity of water (38%)
- Good quality of water (38%)



Evolution of farming activities

- Invest in irrigation systems (43%)
- Easier and faster labour thanks to technology (33%)
→ Links with task 4 = accelerated erosion since 1980
- Test of new and different kinds of cultures (33%)
- Need to purchase additional food for sheeps (24%)



***Towards crops and
culture
diversification***

***(pictures: experimental farm
in Qaqortoq)***





Consequences of climate change

- **Economic consequences:**
 - Less forage → significant investment
 - Less lambs → financial loss
- **Environmental consequences** : empty lakes; too many seals; fewer whales; fewer fish
- **Sanitary consequences** : inappropriate feeding sheep; problems of dietary diversity
- **Social consequences** : less travel; no projection in the future



Changes in farming activities

- Optimism related to adaptability of Inuit people (43%)
- Hope that it won't get worst/ drought (38%)
- Uncertainty (24%)
- Fear/ pessimistic perception of the future (24%)



Data from other situations

En Arctique:

- **Comparison with Inuit activity in Nunavik (Canada): changing in environmental conditions since 20/30 years.** Mainly data from fishing and hunting (Berkes et al., 2001; Furgal et al., 2002)
- Activities of hunters and fishermen in West Greenland (Ford et al., 2012)



Data from other situations

- **Farming activities of himalayan & tibetan communities** (Chaudhary et al., 2011; Byg et al., 2009)
- **Comparison with French farmers** (Sérès, 2010):
 - Uncertainty
 - Adaptation strategies: « to influence » or « to do with it »?



Farming adaptation strategies

- **« To influence » = to examine different possibilities in order to make decisions**
 - Structural adaptation
 - **Decisions for the future as professionals**
 - Important changes
- **« To do with it » = changes without strategy**
 - Continuous evolution
 - **Decisions for the future of the farm**
 - Possibility to go back



Perception of risks and decision making

**Risks linked to climate
change**



**Long term projection?
Uncertainty**

**Risks linked to structural
adaptation**



**Short term
Concrete problems**

→ Links with environmental sciences

Towards a sustainable farming activity?

Greenland farmer's climate perception	Objective context	Consequences
No long-time perspective	If comparing to Canada, we should consider that warming will continue	<i>Bad adaptation strategies:</i> -Economic difficulties - Investment will be obsolete because of the lack of water in lakes in future - Social problems
Adaptation (strategy of irrigation)	Lack of water (lakes in Canada are getting empty)	
Confidence in nature and in the future	Impossibility to forecast evolution of climate	