



Bergen Summer Research School

› Global Development Challenges

Climate, Environment and Energy

22 June- 3 July 2009

Course 4: Psychological and Social Science Perspectives on Climate Change

Disciplines: Psychology, Public Policy, Political Science

Course Leaders

- **Gisela Böhm** (coordinator), Professor, DICE-Lab, UiB
- **Daniel Hanß**, Ph.D. Stipendiat, DICE-Lab, UiB
- **Tom Backer Johnsen**, Associate Professor, DICE-Lab, UiB
- **Erling Moxnes**, Professor, System Dynamics Group, UiB

Invited Course Leaders

- **Ann Bostrom**, Associate Professor and Associate Dean For Research, Evans School of Public Affairs, University of Washington
- **Robert O`Connor**, Professor, PennState University, and Program Director for Decision, Risk and Management Sciences, NSF

General Theme and Objectives of the Course

The aim of this course is to familiarize the participants with the current state of theory, research, and methods in the study of human perception and behavior in the field of climate change. Approaches within psychology and the social sciences that investigate the role of individual actions in addressing climate change will be explored and related to the different research perspectives of the course participants.

Humans are in manifold ways involved in the issues of climate change, environment, and energy. The anthropocentric contribution to greenhouse gases is the most important factor that affects climate change. However, humans not only cause the problem, they also suffer from the consequences (e.g., the human health and economic effects of extreme weather events and increasing temperatures). Furthermore, it is humans who have the capacity and responsibility to address and master the problem. Thus, humans take on diverse roles with respect to climate change: They are perpetrators, victims, and managers.

Given the prevailing and complex involvement of humans in the problem of climate change, it is important to understand the role of the individual in bringing about and managing climate change. A large part of the anthropogenic contribution to greenhouse gas emissions is due to individual behaviors, such as car driving and energy consumption, that accumulate on a collective, societal level. Changing individual behaviors that contribute to climate change requires developing new technologies as well as a political environment that not only supports the continuous development of such technologies but also encourages individual decision makers such as managers and consumers to adopt such technologies. In a similar manner, politics rely on public support of climate protection programs in order to successfully implement their policies – be they preventive, mitigative, or adaptive.

Past experience has demonstrated that technological and political solutions are not successful if they are not accepted and supported by the public. One prominent example is Volkswagen's failed attempt to profitably market the Lupo 3L (the first car in series production consuming as little as 3 liters of fuel per 100 kilometers). For both industry and politics the anticipated acceptance provides a reason for developing new technologies and policies in the first place.

Technologies and policy measures fail when they ignore public knowledge, perceptions, values, attitudes, or decisions. Therefore, it is important to understand how people perceive and handle risks such as climate change. As the individual is embedded in social and cultural structures and risk management involves political and communicative processes, studying the role of human perceptions and behaviors in the context of climate change requires an interdisciplinary perspective that allows reflecting the individual, social, cultural, and political levels of human responses to climate change. The composition of the group of course leaders provides such an interdisciplinary perspective as the members come from psychology, system dynamics research, the social sciences, and political science.

Course Topics

Public perception of climate change: Climate change differs from other types of risk in a number of ways, most notably in its complexity. Climate change is complex not only with respect to the involved natural processes but also regarding the number and diversity of involved actors and social perspectives. How does this complexity affect people's understanding and their reactions to the phenomenon? This part of the course covers the current state of research concerning questions such as (a) What do people know about climate change and what is their understanding of the involved processes? (b) How do people emotionally react to climate change, for example, do they feel threatened? (c) What is their general attitude towards climate

change? (d) How do they handle conflicts between egocentric and collective interests or between interests of different groups of people? (e) What are the implications of these questions for behavior and behavioral change?

Managing complexity and dynamic systems: There are numerous examples of overutilization of renewable resources. The tragedy of the commons is usually blamed for these events. However, laboratory experiments show that mismanagement can also take place with private property rights or public control. The reason is the complexity of dynamic systems with their stock and flow structure, feedback loops, nonlinearities, delays, and uncertainties. With regard to climate change, people are likely to favor insufficient abatements that do not render the results they desire. Moreover, and for similar reasons, people are not likely to favor efficient policies that could reduce mitigation costs considerably.

This part of the course combines insights from system dynamics and cognitive psychology. Simple classroom experiments give “hands-on experience” with the challenging problems and simple models are used to analyze experimental results as well as real world observations. Revised models imply policy change.

Risk communication with respect to climate change and its consequences: Climate change risk communication efforts have increased dramatically in the last decade. They now cover the gamut from labels and signs and a wide range of other print materials, to websites, television advertisements, and popular films, to public deliberations and conferences. While awareness and attitudes are changing as a result, the specific effects of climate change risk communications depend on content and design elements, social context, and prior beliefs and attitudes. This part of the course introduces current climate change risk communication products, processes, and research, and gives students experience applying what we know about risk perception and communication to design and evaluate climate change communications. This part of the course will also examine IPCC treatment of risk communication and the role of risk communication in climate change policies.

Determinants of individual sustainable behavior: Fostering sustainable lifestyles is a crucial factor for attenuating climate change. This requires a change of mind by individual consumers as well as on the part of political and industrial decision makers. One of the major obstacles in fostering sustainable lifestyles is that unsustainable behavior is often strongly habitual and therefore difficult to change. Another difficulty arises from the fact that the environmental benefits of sustainable behaviors are usually delayed so that they become salient only when people adopt a long-term perspective.

In this part of the course the participants will learn about the current state of research on the determinants of individual sustainable behavior. Moreover, different approaches to behavioral change will be presented and discussed. Different scientific backgrounds of the participants will allow for taking diverse perspectives on the challenge of fostering sustainable lifestyles.

Determinants of policy support and political action: Individuals may address climate change by changing their habits and behaviors in a way that reduces greenhouse gas emissions (e.g., reducing car driving or energy consumption) or by political actions and supporting government efforts. These two approaches to addressing climate change differ in their motivations and sources. This part of the course explores these different determinants of the willingness to address climate change. It focuses on the factors that influence political actions and policy support and covers the current research on the question of how variables such as risk perceptions, knowledge, environmental beliefs, environmental values, and demographic factors are related to the willingness to address climate change.

The psychometric paradigm and factor analysis: The psychometric paradigm is one of the most prevalent research paradigms for studying the mental representation and public perception of risks. The general procedure is to ask respondents to judge a number of risks on various dimensions and analyze these judgments via factor analysis. A standard set of judgmental dimensions has been established in risk research. This part of the course presents the psychometric paradigm and the specifics of applying it to environmental risks in general and climate change in particular. Furthermore, it is pointed out how students may use this technique in their individual research.

Schedule

Note: The following schedule lists only the activities of this course. Notice the plenary events and other BSRS activities!

Tuesday, June 23

- **14.00 – 16.00:** Introduction to course and overview of topics / activities; introduction of course leaders and participants; organizational matters.
- **Evening:** Get-together

Wednesday, June 24

- **9.00 – 11.00:** Lecture on climate science (Sigbjørn Grønås, Geophysical institute, UiB)
- **11:30 - 12:15:** Lecture on public perception of climate change (Gisela Böhm, Ann Bostrom)
- **12:15 – 13:00:** Lecture and demonstrations on managing complexity and dynamic systems (Erling Moxnes)

Thursday, June 25

- **14.00 – 16.00:** Lecture and demonstrations on managing complexity and dynamic systems cont'd (Erling Moxnes)

Friday, June 26

- **11.30 – 13.00:** Lecture on risk communication and public policy (Ann Bostrom, Robert O' Connor)
- **14.00 – 16.00:** Group work on risk communication

Monday, June 29

- **11.30 – 13.00:** Presentation of group work results on risk communication
- **14.00 – 16.00:** Lecture on determinants of sustainable behavior and policy support (Daniel Hanss, Robert O'Connor, Gisela Böhm)

Tuesday, June 30

- **14.00 – 15.00:** Lecture on psychometric paradigm (Ann Bostrom, Gisela Böhm)
- **15.00 – 16.00:** Presentation of empirical project

Wednesday, July 1, 9 - 13

- **9.00 – 13.00:** Design, procedure, analysis, and reporting of empirical project (Daniel Hanss, Gisela Böhm, Tom Backer Johnsen)

Thursday, July 2

- **9.00 – 13.00:** Ethical and methodological challenges of climate research

Friday, July 3

- **9.00 – 13.00:** Evaluation of BSRS and course (organized centrally by BSRS & UiB Pedagogic)

Prerequisites

Proficiency in the English language is required. Students should have solid knowledge of empirical social science research methods.

ECTS, Procedure

The course is composed of lectures, group work, student presentations, and self-directed learning.

Students are expected to conduct a small empirical project as part of the course and hand in a research report. This empirical project is on a common research question so that participants benefit from the unique opportunity which the summer school provides to integrate their international and interdisciplinary perspectives. The topic of this common research is public perception of climate change. Further details will be provided at the start of the summer school.

About 250 hours of work is required (10 ECTS). This includes preparation of the required reading list, all Bergen Summer Research School activities (this course plus plenary activities), conducting the empirical project, and writing the research report.

Reading

The literature will be provided on My Space / Mi Side. For each topic, a selection of mandatory and option readings will be provided.

Course Leaders

Gisela Böhm is Professor for Psychometrics and Research Methods and head of the Bergen Laboratory for the Study of Decision, Intuition, Consciousness, and Emotion (DICE-Lab) at the University of Bergen's (UiB) Faculty of Psychology. Her research centers on the question of how people perceive risks. Global environmental risks such as climate change have been a major focus of her research, including people's knowledge about climate change, their emotional reactions to climate change and its consequences, and the role of ethical considerations in shaping responses to climate change. See www.dice-lab.org and www.gisela-boehm.de.

Ann Bostrom is Associate Professor and Associate Dean for Research in the Daniel J. Evans School of Public Affairs at the University of Washington. Her research interests include how people understand and make decisions about risks, and how to improve risk communications to support decision making. She is particularly interested in mental models of hazardous processes and how they influence decisions about risk. Currently she has research projects on extreme weather event warning decisions; global climate change perception, communication and decision making; seismic risk perceptions and decision making in port systems; and parental decision making about their children's environmental health. See <http://evans.washington.edu/faculty-staff/bios/current-ag/bostrom>.

Daniel Hanß is Ph.D. student at the Faculty of Psychology, UiB, and member of DICE-Lab. He has a strong background in attitude and marketing research. His current work and doctoral thesis focus on the determinants of sustainable behavior in everyday consumer decisions. See www.dice-lab.org.

Tom Backer Johnsen is Associate Professor for Psychometrics and Research Methods at the Faculty of Psychology, UiB, and member of DICE-Lab. His work centers on complex multivariate statistical data analysis, the programming language R, and web-based research methodology. One of his major fields of interest is network analysis. See www.dice-lab.org.

Erling Moxnes is Professor in System Dynamics at the Faculty of Social Sciences, UiB. His background is in interdisciplinary model-based policy design applied to economics, natural resource management, and education. Using laboratory experiments of dynamic systems, he has contributed to the literature on misperceptions of such systems, notably climate change and fisheries. See <http://www.ifi.uib.no/staff/erling/>.

Robert O'Connor is Professor Emeritus of Political Science at Penn State University and director of the National Science Foundation's Decision, Risk and Management Sciences Program. He chairs the Risk Communication Section of the Society for Risk Analysis. Robert O'Connor's research interests focus on the relationship of risk perceptions, social, and cultural factors to behavioral intentions and risk management. His most recent work centers on public perceptions of cumulative, uncertain long-term risks, of technologies perceived as risky, and of risk communications conveyed by agencies. See http://www.environment.psu.edu/faculty/faculty_results_detail.asp?faculty_id=57.