Nina Witoszek and Atle Midttun

Sustainability for the 21st Century: Overcoming Limitations to Creative Response to Climate Challenge

Project Description

Background

The emergency of the climate challenge constitutes the main background for this study. Most existing reports on the subject have been formulated at a fairly general level and focused on the natural sciences and macroeconomic outlooks (Stern 2006; IPCC 2007). This project addresses the need of exploring in more detail the implications of the climate challenge for both developed and developing countries. Further, it aims at adding cultural, political and economical dimensions to the existing, predominantly techno-economic analysis.

The project develops a previous pilot study "Sustainability for the 21 Century: A Humanist Agenda," undertaken by a group of international researchers with a basis at SUM, Oslo University. The SUM study (led by Nina Witoszek) was in 2007 financed by the Norwegian Ministry of Foreign Affairs and the Ministry of the Environment. The results of the group's research were presented at the side event of the CSD conference of the United Nations on 8 May 2007 (Witoszek 2007). The positive reception at the UN encourages us to take our ideas further and to undertake a more thorough, conceptual and theoretical elaboration of the project. This will be done by linking our study to the problematique of innovation and anchoring it in an extended global stakeholders' dialogue. The project will combine the study of the effects and perceptions of environmental challenges and the exploration of a new, emerging paradigm of sustainable development. This is a pioneering study, involving a multidisciplinary challenge, cross cultural perspectives, and a novel conceptual and theoretical approach. The complex nature of staging a major societal transformation to meet the climate challenge, however, requires a multidimensional approach.

State of the Arts

There have been numerous natural science studies, culminating with the IPCC reports, that explore the geological/ecological/biological/meteorological issues concerning climate change (e.g. IPCC 2001; 2007). Further, there have also been attempts to estimate macroeconomic effects of the change (Stern Review 2007), and to specify viable technological options (e.g. OECD/IEA's reports). Finally, there exists a rich political science research on international

climate conventions and policies. However, this literature has only begun to address the subject from all the interdisciplinary and comparative perspectives necessary to understand the scope of mitigating the climate challenge.[1] There is, therefore, a need to bring the pieces together in a broader analysis and relate them to the agenda of sustainable development today. As has been observed, the three pillars of sustainability (ecological, social and economic) "live parallel lives" and still wait to be linked in a meaningful way. [2]

The concept of "creative adaptation" as used in this study is a comprehensive term that designates both "management" at the techno-economic and political levels, as well as more spontaneous communicative and symbolic process in the domain of culture (cf. education, media, religious belief, the arts, etc).

Analytical Framework

The creative adaptation to the climate challenge implies a comprehensive transformation that goes beyond incremental change in single sectors. It involves fundamental and interrelated changes in technology, organisation, institutions and culture. Furthermore, the sheer variety of economic, institutional and cultural contexts implies that creative adaptation to climate change draws on widely different resources and takes on different features depending on location. The project seeks to address these analytical challenges by combining an overarching comparative approach with innovation theory, governance theory and cultural semiotics. It conducts a comparative analysis across locations in the **rich West (Oslo, Norway),** the poorer South **(Accra, Ghana)** and the expanding East **(Guangzhou, China).** The theoretical and comparative complexity is channelled empirically by stakeholder-dialogues in these three locations. For each location the project will focus on how the stakeholders in their respective organisational fields understand their commercial and technological options, build alliances and mobilise power, conceptually/culturally frame the climate challenge, and formulate strategies to solve it (or fail to do so). The semiotics of cultural adaptation (eg. values, patterns of thought, founding myths, religious belief) will be systematically analysed for each location. An expert panel of natural scientists will be involved in defining the specifics of the climate challenge for each location, and in evaluating the carrying capacity of the local stakeholder strategies.

---

[1] Cf. the University of Cologne's programme *Acacia – Arid climate, adaptation and cultural innovation in Africa,* or the British Tyndall Centre's *Building resilience to climate change: what are the limits to adaptation?*
[2] "Sustainability for the 21 Century: A Humanist Agenda". Side event of CSD-conference at the United Nations in New York, 8 May 2007.

Central Research Questions

Some of our central research questions are: What are the factors that trigger diverse responses to the climate challenge? How do various societies stage a complex transformation to face the climate challenge, or apparently fail to do so? Who are the major instigators and directors of creative adaptation strategies and what are the opposing forces? How does one forge an alliance of actors with resources that allow to embark on creative adaptation, and why would one possibly not succeed? What are the new governance structures (if any) emerging and supervising the process of creative adaptation? How does creative entrepreneurship arise to foster clean technologies for tomorrow's sustainable development, and how may it be blocked? What are the niches of sustainable development? How do the respective societies scale up sustainable technologies from niches to mainstream practice - or fail to do so? What are the cultural determinants influencing the different responses to the climate challenge in all three cases? What are mechanisms (and who are the authors) of peaceful adaptation and what are the triggers of conflictual situations? What possible challenges and opportunities are provided by international agents (multinational companies and international institutions)?

As indicated above, the creative adaptation approach builds on **three complementary pillars:** 1) Innovation in entrepreneurship, business- and technology development; 2) Innovation in governance and regulation; 3) Innovation in culture.

1. Innovation in entrepreneurship, business- and technology development

The climate challenge will, as we see it, demand qualitative transitions to new technologies and business models. The business/commercial dimension of the project will therefore take a dynamic entrepreneurial perspective. Following Abernathy and Utterback (1975), the project will focus on both product and process innovation, emphasising the need to couple technological invention with viable business models. However, the study will also explore the extended social embeddedness of climate-specific innovation, drawing on literature that emphasises the interdependence of innovation in technologies and business models and institutions and social practices (Freeman 1987; Lundvall 1992; Edquist 1997). The central question is how public policies, regulatory interventions, and the development of niche markets interplay with business strategies and consumer patterns to support an industrial move towards (or away from) climate-specific solutions.

The willingness to stage innovation incentives for clean technology is likely to vary extensively among the three locations in this study. An argument frequently advanced is that the developing world is more interested in catching up with Western economical standards

rather than with climate changes. The project will explore the pervasiveness of such attitudes, particularly in the two developing countries. However, it will also explore the possibility of clean technology becoming a part of the attractive growth formula in the developing world. The project will also explore how clean technology solutions may imply a return to traditional practices of a more ecologically sustainable character. (Bio-fuels, passive solar technologies and collective transport are only some examples). The focus will be on the local distinctiveness of entrepreneurship and technological/commercial responses.

While some systems innovation literature has tended to emphasise the regional and national embeddedness, other versions have stressed the sectoral or technological systems dimension (Malerba 2004; Carlsson and Stankievitz 1995). This literature alerts us to the possibility of international intra-sectoral technology-transfers. Given the extensive operations of multinational companies, intergovernmental development programmes and institutions, a central focus of the project will therefore also be on how climate-specific sectoral technologies may be diffused across national borders.

Whether locally initiated or internationally diffused, technological change and entrepreneurship that drives it may imply extensive social mobilisation and/or conflict. Adding on an actor-network perspective (Latour 1991; Callon 1999) to the project will allow us to explore social mobilisation and potential confrontation triggered by climate-specific technological solutions. This implies focusing on how entrepreneurship involves the development of new "programmes" (concepts, theories, technologies and institutions) on how actors are "enrolled", and on how frontiers between the new "programmes" and conflicting "anti-programmes" arise and unfold.

Innovation in Politics and Governance

A transition to climate-friendly technologies may entail coordinating considerable social adjustment and institutional change both in developed and developing countries and may hence challenge major stakeholders. In exploring the governance challenges that follow, the project will draw on an extensive literature focusing on power, challenge and conflict as elements of institutional change (Burns and Dietz 1992; Burns and Flam 1987; March and Olsen 1989; North 1990; Ostrom 1990; Powell and DiMaggio 1991). The notion of **governance rather than government** is here consciously chosen, indicating that the coordination of the transition process is likely to have a polyarchic, i.e. mixed actor, multipolar and multi-layered, polycentric character (Martinelli 2007). Central research questions for each of our three locations are: to what extent and in which form responses to

the climate challenge are and can be purposefully coordinated, and how such coordination relates to existing institutional orders? A significant shift in technological and economic approaches to climate issues may have to imply a de-institutionalization of old coordination regimes in parallel with the institutionalization of the new one (Midttun 1988).

Coordination of climate-specific innovation on a global scale is both complex and multifaceted. As pointed out by Martinelli (2007) and many others, the contemporary world is characterized by the contradiction between growing economic and technological interdependence and social interconnectedness on the one hand, and increasing political fragmentation and cultural heterogeneity on the other. This leads to a problem of governance due to the lack of institutions and processes that regulate, guide, and integrate global activities. The project of sustainable development provides a clear example of such lack of governance. Taking various models of international governance ranging from the state-centered model of the neo-realist paradigm (Gilpin 2001) to various models of democratic global governance (Held 1999; Martinelli 2004) as a point of departure, the project will explore innovative forms of governance and regulations that are related to climate change in Norway, Ghana and China. The project will also discuss emerging governance practices from a normative political theory perspective. How are new and old coalitions and power structures mobilized and legitimized vis a vis each other? Do new responses to the climate challenge also foster new forms of political engagement and political justification? (Schmitter 2000; Schmitter 2007).

The Cultural Dimension

By highlighting the importance of culture in our project, we wish to bring on board the historical dimension of the studied societies, their traditions, representations of the "Other", dominant religious belief, and models of cultural heroes. The recent "cultural turn" in the social sciences has focused on the ways in which culture and religion modify society's tolerance of risk, contribute to economic success or failure, and provide codes of behavior that underlie political action (e.g. Putnam 1993; Fukuyama 1995; Huntington 1998; Landes 1999). As has been amply demonstrated, distinct cultural and religious values – apart from geography, climate, wars and colonial domination – have contributed to the ways in which social communities have collapsed or flourished (Heinberg 1996, Jostingmeier 2005; Diamond 2006). In our case, the cultural dimension poses a challenge to the co-evolution theory: culture follows its own, non-rational logic of development (e.g. society's search for meaning) and is often "out of tact" with the political and commercial realms (Bell 1979).

Further, we wish to revisit the systemic studies of cultural innovation that were once developed by the Tartu school of semiotics led by Yurij Lotman (Lotman et al 1975; Lotman 1990). Three main tenets of the Tartu approach could still prove useful in our present context: 1) Each community establishes a law-forming centre of culture, genetically deriving from the mythological nucleus, and which reconstructs the world as something ordered; 2) The mechanism of culture is a system which transforms the "chaotic" outer sphere into the an inner "cosmos": disorganization into organization, ignoramuses into initiates, entropy into information; 3) The most creative processes in a culture take place in the boundary area between culture and the outer space. This interplay leads to a situation where an "oppositional" or "marginal" system moves to the centre and imparts much more energy than the former centre.

This systemic approach to culture as the sphere of innovation has several implications for the study of creative adaptation. In the West, for the most part of the 20th century, environmental concerns have been treated as part of the cultural margin ("non-culture") and lumped together with "spirituality", alternative lifestyles and New Age. The perception of the environment as a sphere of "non-culture" has made education for sustainability into a daunting task. One of the challenges in this study will be to propose the ways in which sustainable development can be "upgraded" into the cultural centre. In the case of China and Ghana, the task will be to identify the respective native cultural centre – and dominant worldview – and to seek those elements on the cultural "margins" which can be mobilized as symbolic generators of a sustainable future. Pertinent questions in all three cases will be: How do respective dominant cultural traditions influence perceptions and constructions of climate change (As irrelevant? A luxury problem? A government's "headache?" A punishment? As a positive challenge/ potential source of profit? As a Western conspiracy?) How do cultural agents (literature, film, media representations) respond to climate change reports (e.g. passivity, conflict, or mobilization)? What are the niches of creativity at the individual and social level? Who are the drivers of change and resistance (Religion? Media? Communal initiatives?) What forces mobilize civil society? What has been the impact of the climate change on the narratives and ideas proposed in the agenda of sustainable development?

Research Design

The project will explore the shaping of responses to the global climate challenge in three locations: Norway, Ghana and China. The chosen countries represent three socio-political configurations that span some of the variety of the globe: the rich West, the poor South and

the rapidly expanding East. In each location our research group has established a strong research partner that has been working with the group earlier. In China our post-doc. coordinator will be Dr Wang Jin in the Sociology Department at Sun Yat-Sen University, Guangzhou. In Ghana it will be Dr. Audrey Gadzkpo of the University of Accra. In addition, the core research group will also collaborate with the relevant Norwegian institutions (Nettverk for Asiastudier, Christian Michelsens Institutt, NORAD).

An important empirical basis of the project involve dialogues with Norwegian, Chinese and Ghaneian stakeholders representing the industry, trade unions, politicians, civil society organizations, media, etc. The dialogues will be initiated at an early phase and will be followed up throughout the project period so as to gather information on the evolution of viewpoints, strategies and approaches over time. The main objective is to investigate how stakeholders in different organisational fields relate to the climate challenge in several arenas, such as networks, politics, administration, commerce and culture. The stakeholder dialogues will cover both the actors' current opinions and strategies and their views on future strategies, alliances and solutions.

To complement and prepare for the stakeholder dialogues, the project will conduct systematic analysis of media (for cognitive framing and cultural background) and of statistical and other existing sources of information (for basic substantive knowledge) on technologies, markets, and institutions. The project team will secure basic updating on the current natural scientific premises of the climate challenge. It will establish an expert panel of four natural scientists that will give input throughout the project period on likely scenarios and implications for the three natural habitats in focus. The group includes: Dr. Hans Amundsen/ NASA, prof. James Lovelock, SUM/Devon; prof. Jørgen Randers/BI; and Prof. Jan Fuglestvedt/ CICERO. This panel will be involved in evaluating the carrying capacity of the local stakeholder strategies.

The project will have **three sources of data** in each participating country in the three areas of innovation[3] (i.e.business activity, governance and regulation, and cultural domain): (1 Reports from research groups, government agencies, and private associations; (2 Interviews with key actors in each of the three areas; 3) Focus groups. These will be complemented with interviews with key participants and informants. The focus groups encompass: 1) **A business focus group** established on the basis of suggestions of business journalists, consultants, and researchers in business schools. They will identify highly entrepreneurial firms that have

---

[3] Earlier studies using these methods have been conducted by Burns and Midttun, and some of the research results appear in Baumgartner and Burns (1984), Woodward et al (1994).

already innovated or are planning to innovate ways to reduce emissions and deal with climate change. Emphasis will be put on indigenous enterprises, but if lacking these, foreign enterprises will also be contacted. In the case of absence of these, the questions will be why there is no initiative here yet, what are the barriers, risks, etc; **2) A sample focus group** will be established to discuss innovation in the area of *governance and politics*. The research team will identify government agencies, politicians, NGOs, and community groups that have been innovative in mobilizing people, applying pressure, initiating new policies and programs – and overcoming political resistance; 3) In the *area of culture*, the research team will identify persons or groups (in literature, film, mass media, religious communities, museums, and national parks) who have taken initiatives to raise consciousness, to change people's beliefs, values and lifestyles. The data collected will be used to address both conceptual challenges and the main research questions. [4]

Literature

Abernathy, J. M. & Utterback, J.M. (1975): *"A Dynamic Model of Product and Process Innovation"*. Omega, vol. de no 6.

Baumgarter, T and T.R. Burns (1984) *Transitions to alternative energy systems: entrepreneurs, new technologies, and social change*. Boulder: Westview Press.

Bell, Daniel (1996): *The Cultural Contradictions of Capitalism*. New York: Basic Books.

Burns, T. R. & Flam, H. (1987): *The Shaping of Social Organization*. London: Sage Publications.

Burns, T. R. & Dietz, T. (1992): *"Cultural Evolution: Social Rule Systems, Selection, and Human Agency"*. International Sociology, vol. 7, no 2.

Callon, M. (1999): "Actor-network theory – the market test" in Law, J & Hassard, J. (Eds.): *Actor Network Theory and After*. Oxford: Blackwell Publishers.

Carlsson, B. & Stankievitz, R. (1995): *"On the nature, function and composition of technological systems"* in Carlsson, B. (Ed): *Technological systems and Economic Performance*. Dordrecht: Kluwer.

Diamond, Jared (2005): *Collapse: How Societies Choose to Succeed*. New York: Penguin Books.

Edquist, C. (Ed.) (1997): *Systems of Innovation: Tehcnologies, Institutions and Organizations*. London: Pinter.

Freeman, C. (1987): *Technology Policy and Economic Performance: Lessons from Japan*. London: Pinter.

---

[4] Each focus group will discuss the following questions: (a) What is a good example of an innovation (business idea, technology; governance and regulation; cultural idea or value) relating to dealing with climate change. If there are no examples, why not? What could be done? Who would or should do it? In the case of an identifiable innovation:(b) who was the agent or agents that pushed for the introduction of the innovation, developing it, and establishing a "platform" or "market" for it. What was their professional and institutional anchorings? (c.)What expertise did they mobilize (knowledge and skills in conceptualizing and designing the technology) including their own.(d) What have the change agents had for visions and how they might find "users", "recipients", "customers." What were their conceptions of beneficiaries and how to reach them. (e) Typically, innovation requires the mobilization of human and material resources. How was this done, who was involved. (f) To what extent have powerful vested interests supported or opposed (or in the hypothetical case likely to oppose) the innovation. Who were these? What were their institutional positions. How was opposition – whether based on vested interests or nay-saying -- been countered or neutralized in the realization of the innovation.(g) To what extent did the change agents have to try restructure existing laws, policies, norms and even laws (or to avoid them) as well as relevant institutional arrangements?

Fukuyama, Francis (1995): *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.

Gilpin, R. (2001): *Global Political Economy: Understanding the International Economic Order*. Princeton: Princeton University Press.

Heinberg, Richard (1996): *A New Covenant with Nature: Notes on the End of Civilization and the Renewal of Culture*. Wheaton: Quest Books.

Held, D. & McGrew, A. (Eds.) (2002): *Governing Globalization*. Cambridge: Polity Press.

Huntington, Samuel P. (1998): *The Clash of Civilization and the Remaking of World Order*. New York: Simon & Schuster.

Jostingmeier, Bernd (Ed.) (2005): *Cross-cultural Innovation: results of the 8th European Conference on Creativity and Innovation*. Wiesbaden: Deutscher Universitats-Verlag.

Landes, David (1999): *The Wealth and Poverty of Nations: Why some are so Rich and some so Poor*. London: Little, Brown and Co.

Latour, B. (1991): *"Technology is society Made Durable"* in Law, J. (Ed.): *A Sociology of Monsters: Essays on Power, Technology and Domination*. London: Routledge.

Lotman, Yuri (Ed.) (1975): *Theses on the Semiotic Study of Culture*. Lisse: The Peter Ridder Press.

Lotman, Y. & Umberto, E. (1990): *Universe of the Mind.* London: Tauris.

Lundvall, B.Å (Ed.) (1992): *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter.

Malerba, F. (Ed) (2004): *Sectoral Systems of Innovation*. Cambridge: Cambridge University Press.

March, J. R. & Olsen. J. P. (1989): *Rediscovering Institutions: The Organizational Basis of Politics*. New York: Free Press.

Martinelli, Alberto (2004): *La democrazia globale*. Milano: Università Bocconi editore.

Martinelli, Alberto (2007): "*Sustainable Governance*". Working paper, Centre for Development and the Environment, University of Oslo.

Midttun, Atle (1988): "The Negotiated Political Economy of a Heavy Industrial Sector: The Norwegian Hydropower Complex in the 1970's and 1980's". *Scandinavian political Studies*. Vol. 11, no. 2.

Midttun, Atle (2007): "Corporate (Social) Responsibility as an Arena for Partnered Governance: From the Business to the Public Policy Case". Paper presented at *International Association for Business in Society*, Florence June 2007.

North, N.C. (1990): *Institutions, Institutional Change, and Economic Performance.* Cambridge: Cambridge University Press.

Ostrom, E. (1990): *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge: Cambridge University Press.

Powell, W. W. & DiMaggio, P. J. (Eds.) (1991): *The New Institutionalism in Organizational Analysis.* Chicago: Chicago University Press.

Putnam, R., Leonardi, R. & Nanetti, R. (1993): *Making Democracy Work: Civic Traditions in Modern Italy.* Princeton: Princeton University Press.

Schmitter, Philippe (2000): *How to Democratize the European Union – and Why Bother?* Lanham: Rowman and Littlefield.

Schmitter, Philippe (2007): *Toward a New Political Strategy for Sustainable Development, or: The Politics of Sustainability.* Working Paper, Centre for Development and the Environment, University of Oslo.

Witoszek, Nina (2007): "*Sustainable Development for the 21st Century: Do we Need a New Story?*" Working paper, Centre for Development and the Environment, University of Oslo.

Witoszek, Nina (2007): *Sustainability for the 21st Century: Writing Chapter 14 of "Our Common Future".* Report. The Royal Norwegian Ministry of Foreign Affairs.

Woodward, Alie. et al. *Municipal entrepreneurship and energy policy : a five nation study of politics, innovation, and social change*