Dimensions of Limits to Environmental Management:
Reections Drawing on Recent Scholarship in the Field of Science and Technology Studies

Ingmar Lippert[1]
Augsburg University

1 Introduction

This paper addresses the limits to environmental management in an explorative approach. I argue, first, that limits identified in recent studies of environmental management can be well read in a realist mode. Second, however, a reading with the lenses of performativity and enactment enables us to recognise two kinds of limits of the realist reading: the limiting entities can be reconstructed as enactments and in their performativity; and the construction of the realist limits reading can be opened up to give floor for a more interventionist reading. Finally, this text questions the mode of research enabling "us"[2] to serve emancipatory reconfigurations. Overall this paper has a shared agenda of on the one hand spelling out and generalising the dimensions of limits to environmental managements and on the other of reflecting critically about our engagements with management practices.

Underlying this discussion are critical theoretical (and, too little, practical) engagements with the hegemonic practices of environmental management as ecological modernisation. What does this mean? I am using the concept of environmental management (now) to refer to all kinds of directed engagements of humans with environments in which humans (by all kinds of techniques and technologies) aim to alter the trajectory of environmental change. The ecological modernisation mode of environmental management refers to practices of environmental management which can be conceptualised as partially overlapping with the discourse of environmental management which arose since the 1980s, spreading from Western European countries globally.

We have spelt out the critique of both the conceptions of ecological modernisation as well as the limits of Ecological Modernisation Theory (EMT) elsewhere.[3] Here is a brief summary: Humans have practiced forms of environmental management for a long time, thousands of years (Boesrup 1988), and the impacts of these forms of management, including unintended consequences, on local and regional scale were easily identified. While the hegemonic narrative about environmental movements locates global environmental change and risks in the very recent past (like risks of climate change and nuclear catastrophes), the detrimental environmental consequences (at global scale) of specific patterns of human intervention in nature were perceived already over a hundred years ago (Grove 1996): scientists and nation-states had been informed about global climate change. Obviously, if I may make this simplistic point, the combination of expertise and modern governments did not result in the kind of societal engagements with its environments which we are looking for. Rather, the engagement we find is subordinated to capitalist dynamics. The discourse of sustainable development is precisely part of this subordination; this is what I argued a couple of

years ago drawing particularly on Dingler (2003), Spehr (1997) and Eblinghaus and Stickler (1996) (published as Lippert 2010b).

While the proponents of EMT, like Jänicke (2008), Huber (2008) and Mol (2010), seem to continue claiming that environmental reform is happening and Western societies are on the way to green themselves successfully (they just need to optimise their instruments and draw on the proposals of EMT[4]), others (including myself) tend to see limits to the idea that environments can actually be managed sustainably (as in a strong reading of sustainability). Thus, we set out to describe in empirical detail the *limits to managing the environment* (Lippert 2011a) as a practical and/or discursive engagement between humans and natures: While in the 1970s environmentalists critically questioned the cause of environmental crises and located them in industrial and/or capitalist modes of production, the Earth Summit at Rio in 1992 marked how the environmental discourse has been merged with modernist discourses promising ecologically modernised industrial and capitalist development globally. While early analysis pointed to the role of industrial and capitalist modes of development in causing environmental problems, the sustainable development discourse positioned industrial and capitalist modes of development as the solution to global crises. Key to the now hegemonic discourse of sustainable development is the notion of management. Environments are to be managed sustainably, i.e. reconciling ecological, social and, above all, economic interests. Since the 1990s the notion of environmental management thrives. By now it is partially contained in the notion of sustainability management or, in the case of businesses, Corporate Social Responsibility (CSR).

This text reads five studies on the limits of environmental management and reflects about some of the limiting entities identified using some of the sensibilities of the field of Science and Technology Studies (STS). Lippert (2011b) introduces a case study on participation in ecologically modernising a company. He discusses the limits of a corporate suggestion scheme in mobilising and selecting knowledges with respect to competing frames of conceptualising sustainability and energy saving measures. The paper by Krause (2011) relocates environmental management practices vis-à-vis the historically and naturally configured powers of a river. He substantiates the claim that control over an entity like a river may easily be rendered impossible. Strauss (2011) sketches the limits of environmental management by outlining the limits of imagining and perceiving nature and environmental effects of landscape planning and industrial development. She shows how the material used to inform affected subjects and enable them to participate rationally in decision-making processes and public deliberation limits the possibility of subjects to understand and sense environmentally relevant transformations. Ninan (2011) reconstructs how the emerging climate change regime is discursively limited by the contours of the ecological modernisation paradigm. In effect, he predicts that a operational manifestation of ecological modernisation like the Clean Development Mechanism (CDM) will be “antithetical to equity and justice”. Lippert (2011c) shows the analytical limits of both environmental management understandings of its objects supposedly

being managed as well as of studies of environmental management with respect to the strategy of naturalising the objects under management. He traces the case of a recycling network for glass bottles and shows how recycling management can easily reproduce the structures which sustain increasing production of waste rather than reducing it or even question consumption and production processes.

These five papers can be deemed useful to understand some of the qualities of limits to environmental management. Empirically, the include a width of objects and institutions of management: corporations, global discourses, planning enterprises, hydraulic engineers; water, energy, landscape, recycling, carbon; documents, individual managers and professions. This body of literature is also limited. There are also other STS studies on environmental management out there. Including those is beyond the scope of this paper.

In the main body of this text, the next section, I introduce in detail some of the limiting dimensions which can be found in the papers analysed. I have reflexively interwoven this discussion with giving voice to the problems of cutting the empirical material and classifying it into neat categories. Nevertheless, I tentatively sorted the dimensions into two groups: dimensions which point to the various ways in which management of environments is always situated – not only in and to external contexts but situated as ontologically being part of networks of relations. The other group concerns conceptions of managers of environments. How they think, imagine and sense environments comes to matter in their interactions which address environments. This section finally, as a way of summarising, poses a set of four questions to critically study the limits of environmental management effectively. The paper concludes in terms of performativity and possibilities of intervention, proposing an outlook for critical studies of environmental management and proposing a methodological and analytical take which is deemed promising to engage the specific ways limits of environmental management come into being.

2 Identifying Dimensions of Limits to Managing the Environment

This section introduces some of the dimensions of limits identified in reading the five articles. Underlying this section is a process of reading, grounded in identifying quotes from these papers which I heuristically read as referring to limits (either because statements were making limits explicit, or grammatically statements showed that some thing limited others, or because my theoretical baggage made me see statements as referring to limits).

My analysis resulted in twenty eight categories of limits. This was already a result of *drawing things together* (Latour 1990). Here, two difficulties arose. First, this practice of classifying limits can be assumed to be inherently problematic[5]. The effects are not in any way neutral. Let me postpone these kinds of thoughts to the next section. Now, the second difficulty was quite simply: these nearly thirty categories did not seem enough condensed to present them to you. Albeit while classifying the quotes I already constructed some form of structure – I had to, otherwise there

would be no analysis – the structure is not clear cut and many counter arguments can be given.
The initial structure for classifying the limits was laid out on a table. The table's surface provided a physical constraint for the structure. Roughly, what emerged was this – after I translated the view from above onto a sheet of paper: At the top, there was a meta discourse. Below, the actual top was the category aims. Limits in the aims of environmental management. Reading the table/paper top-down, the next topographical feature was a differentiation into two branches: the structural-materialised situation and cognitive conceptions. Obviously this is theoretically not very advanced. Funny, isn't it? Reading actor-network theory and after (Law 2004) and Bourdieu (1988) and still falling back into mind versus body and nature versus society. Welcome back dichotomies? All this kind of thought needs to be postponed until the next section. This section should focus on getting the dichotomies, the boundaries down (well, in front of me, onto the screen and in front of your eyes).

2.1 Situatedness

Environmental managers, i.e. actors who are to control some kind of environment[6], are always part of the world which they are managing (or not managing, or in a specific way managing). Thus, Krause (2011) reports:

> A further fact that precludes a genuine “management” of the Kemi River is that the hydroelectricity producers' lives are interwoven with the river in many ways that have little to do with hydropower. They all live close to it and spend a considerable part of their leisure time at, on and in the river. Some even grew up along the river.

Clearly, then, the manager is not necessarily purely in a rationalistic, distanced relation with their subject matter. Managers are socially situated. This kind of limit cannot be overcome. Neither is there a need to. As Strauss (2011) points out:
“The consultant's long-standing expertise in energy consultancy provides companies with a certain set of proven practices." An company's agent is situated between a company which wants good results and an expert (the consultant) who offers, or rather promises, proven practices. Thus, being situated provides the things for the manager to act with and upon. And the availability and individual quality of these things are unique and limited. No way out.
Several categories of limits which I identified point to assumably quite stable shapes of situations. This includes the body of managers (after all, as Haraway (1999) emphasises: the specific kind of primate which humans are has a quite narrow ability to see with their eyes). The body stabilises how we perceive. Ingold (2000) points out that the ways people attend to environments may differ. However, these ways are not necessary only biologically determined but are socially co-configured. This is a point made for example by Bourdieu (1989) when explaining his concept of *habitus*. This theme is strongly linked to the other branch of the structure of limits: conceptions and knowledge. Any perceptual engagement with an environment is historically shaped. The past is reproduced in

the act of perceiving and may materialise in an actor's actions. Of course, I need to emphasise here, and – again – relocate the thought to the next section, in these processes mutations of the things reproduced are to be assumed and can be found.

Anyway, next to the limiting dimension of bodies, I found network structures, positions and the relations of the entities positioned in a field. Ninan (2011), for example, points to the limits of the "institutional capacity of capitalist liberal democracies" to green themselves which he exemplified by the ability of

> mechanisms like CDM to quarantine themselves from other potential effects that the [CDM] processes can have on [O]ther points in the product cycle or in another industry.

The thing Clean Development Mechanism (CDM) is positioned such that it is not materially challenged by any unintended effects it might have outside a particularly bounded range of wished-for and made-observable positive effects. This constitutes a structural limit of a management mechanism. I also identified as limiting dimensions nature and social mechanisms. A river flows. This has quite forceful consequences, Krause observes. His analysis concludes that a river cannot be controlled – which he understands as a key prerequisite of the concept of management. An example for a social mechanism at work is the hierarchy between different knowledges which Lippert (2011b) described. From the environmental manager's point of view, the manager's knowledge is more adequate than a mere worker's knowledge about the environment. This hierarchy invites actors for putting it into practice, e.g. by selecting out the worker's knowledge and acting on the manager's knowledge version. At a grander level, Ninan construes market mechanisms as subverting the sustainability objectives of the CDM. These are examples of how structures can limit well-intentioned management action.

There are further ways in which a situation can be limiting the ability to manage an environment. Power differentials are in the way to sound management. And management requires such power differentials. If they are in its way, then the idea that any management can be entirely successful is contradicted. Strauss (2011) indicates that "there have been no opportunities for residents to influence the choice of a site or the choice of plant design" in the cases she studied. Thus, power distribution (e.g. of taking decisions and the design of decision-making) needs to be studied when attending to the limits to managing environments. Another form of power differential is the one attached to questions of ownership. In capitalist contexts, where even biodiversity is to be owned (Sullivan 2010), who owns environments is related to limiting interests in sustainable human-nature engagements. Ownerships stand in several limiting relations to the possibility to manage environments. On the one hand, non-ownership may limit the interest in sustainable relations (Lippert 2011b). On the other hand, exclusive or shared ownership can cause conflicts with non- or co-owners (Krause).

Managers are also situated in the repertoire of available technologies and its limits. Strauss provides a detailed account of how visualisation technologies used for nuclear landscape planning

are limiting what can be seen. She states that

> many of the issues residents are concerned about are hard to imagine with the help of a manipulated photograph, such as increases in traffic, presence of around two thousand foreign workers, changes in the municipality's image and identity, and increasing municipal dependency on the company. The construction site, which will prevail for some years, is not subject to visual presentation.

Technologies are used to provide accounts of environments and to act on them. In both respects technologies can only support management in limited ways. Krause (2011) summarises that weir technologies had often to be adapted to the river rather than the other way around to make them useful for engaging with the river.

Finally, all these structures are highly precarious. As Krause says: “anything can happen – anytime”. Of course, he restricted this statement to the river under study. However, in principal, we observed, environmental management depends on a myriad of things to be in place. And at the same time, as Lippert (2011b) shows, having things in their places, i.e. positioned, may be part of a contradictory reality. The latter study pointed to the wide-spread phenomenon in environmental management of desiring some form of participation (after all, participation is key to sustainable development) while they very act of inviting participation may induce “considerable excess work”. In contradictory configurations, friction exists (Tsing 2005). And this limits the room for management while seemingly making management necessary at all.

Of course, managers are often well aware of the room they have in which they can manage some things. Thus, the way actors conceptualise their environments is key to understanding limits.

2.2 Conceptions

To start with, the fundamental conception underlying and constraining environmental management is that environments can be actually managed. The studies show that only partially environments can be conceptualised and only partially (not necessarily the same parts) systematically influenced. Management presupposes plans. However, plans cannot simply be executed but management-as-practice is always taking place situated (Suchman 2007). Krause (2011) spells out:

> [T]he idea of river management in the traditional sense seems to be a conceptual illusion. A river cannot be managed, by imposing a rigid, predefined plan, but an engagement with its ow is always a reciprocal relation.

Management which does not recognise the underlying reciprocal human-nature relations cannot be systematically managing these relations. However, if they are recognised, then the idea of managing is limiting itself. A problem which managers face is that some forms or things of reality are not thinkable for them. Both, Strauss and Lippert (2011b) refer to the cognitive deficit model which environmental management practice often exercises vis-a-vis actors conceptualised as non-experts. The possibility to manage is limited by actors not recognising and imagining the capacity

of other actors and things to take part in knowing, managing or shaping environments. Management which assumes a god's eye view misses the very possibility to exercise objectivity (Haraway 1999). This is strongly linked to the limits of a belief-system which assumes that objectivity is neutral and only possible by exercising a god's eye view. This belief-system is for the purpose of acting taken as valid as knowledge; however, these beliefs, like any other, are limited.

If we zoom into knowledges and beliefs, several further features – and limits – crop up. To start with, the format of knowledge can limit practices of environmental management. Some formats are deemed non-adequate for "proper" management.

While Krause (2011) reports that "[m]any of the engineers' ideas about the river do not come from books or hydroelectricity production, but from their childhood and leisure time experiences" in some settings the type of knowledge source is constitutive of the format of knowledge which can be used as an exclusion criterion. Local or tacit knowledges which are not formalised may be excluded from deliberation. Another type of formatting knowledges is making it compatible with a certain discourse. If the environmental manager does not accept selected formats of knowledge, then his knowledge base will be limited. Furthermore, if such an agent is the principal agent of greening, they would be acting as an *obligatory passage point* (Callon 1999).

> Therefore, if workers – as shown in this case – frame ideas to contribute to sustainable energy management in a way which is not compatible with the rationality of ecological modernisation then their ideas are likely to be lost. (Lippert 2011b)

If knowledge is necessarily somehow formatted, then any kind of knowledge is only partial. Furthermore, the discourses to which knowledges and statements relate are themselves limited. For example, Ninan (2011) observes that ecological modernisation focusses on consumers to green consumption while the discourse

> tends to delink the structural processes in which the consumption is embedded. [Ecological modernisation] mostly renders the different aspects around consumption, access to products, equity in resource allocation etc to lesser significance.

Important limiting entities are also concepts and classifications. Management presumes conceptually what the world is. Lippert (2011c), for example, addresses that assuming glass waste to be a "given" is a form of naturalising the relations which give rise to glass waste. Management which draws on a naturalised concept of glass waste is limited in that it will treat glass waste as a given object which needs to be administered once it showed up on stage. Of course, ecological modernisation, by now, recognised for this case as well: reduce and reuse ought to be preferred over recycling glass. However, the discourse of ecological modernisation is not emphasising to question the politics of products coherently. Management is supposed to serve production. Thus, when Krause points to the limit of the concept of river as a bounded object, rather than as a flow, we can see that statements about the environment will inevitably be utilising limited concepts. One of the reasons for this is that concepts often are imagined to represent many things which share

characteristics. Ninan (2011) points to carbon dioxide as a technical category into which various practices and things are collapsed. To make the world manageable, actors need to simplify its representation. Things are classified. Botany is a classical case. However, there are always *overflows* (Callon 1998): some things do not fit the classes. Any analysis which informs management will have to classify bits of the world into important and not important characteristics. This presupposes reductions of issues to a surface representation. Acting on such representations limits the control over effects of management practice. To illustrate, Lippert (2011c) finds, addressing the "symptoms of multiple relations, as in 'glass waste', does not promise changing the relations themselves."

Strauss emphasises that any representation of real world does not allow actors to actually experience it. Rather, managers relate in distance to the object of management. However, if environmental management practice draws on representations – which are not identical to the world assumably managed – then it becomes obvious that different representations are possible and potentially compete. She highlights the controversy among academics and practitioners over various knowledges constructible and constructed. Different knowledges about the assumably same real world phenomena limit in respective ways the management practice which draws on such knowledges. This is of relevance with respect to any kind of management solution which is supposedly implemented to green some world. Knowledge about whether a measures to green some things is actually promising to achieve the desired effects is decisive in environmental management – and limits the outcome of management. This is even the case for the often real world issue, whether a measure pays off. Lippert (2011b) finds that "the objectivity of whether a measure is worth it is socially co-constructed." And Ninan (2011) describes that a greening mechanism like the CDM "presumes that the action performed at a specific point of the process entail direct correlation to sustainable practices". Global climate change management acts on the conception that within the process of greening using such a mechanism is positively effective for sustainable development. Such assumptions limit environmental management in the way of an instrument's effect not being empirically verified, let alone critically. Speaking of ecological modernisation forms of environmental management is linked to a set of assumptions made. Any discourse entails a number prescriptions which are taken-for-granted in conceptualising the human-nature relationship under management. For example, Ninan warns that "the aim of cost-effective GHG reductions overruns the sustainability priorities significantly". Similarly, Krause reconstructs:

> When the first hydroelectric dam on the river was finished in 1948, its impacts on the ecology of the river and on the livelihoods of the inhabitants of its banks were regarded as secondary to the goals of national progress and regional development towards which it was seen to contribute.

Thus, prescriptions are limiting the range of options for managing environments. Lippert (2011b)

illustrates the practical reality of such limiting with his discussion of how a corporate environmental manager wants ideas for greening to be quantifiable and easily classifiable. We can sense how such *conceptions* are equally to be seen as part of the *situatedness* of management practices. These practices are guided and limited by various kinds of norms which may be stabilised in regulation and discourses.

Environmental management in practice is a multiply limited endeavour. The aims of its practices are limited in various ways. For example, Strauss (2011) points to representational technologies which are designed for “presenting beauty rather than reality”. Or the agency of managers is constrained, as Lippert (2011c) observed for the case of the environmental manager Julian.

> The boss made clear where Julian's agency ended: “night clubs (are) designed to waste energy”. Four years later, Julian remarked in a written comment on this paper: “Exactly! It is not the remit of an environmental manager to close down the organisation for whom he works for."

In many realities, actors are dependent on social and economic relations to be in place. And these relations might have effects on management practices which counter the goal of greening things. In consequence, then, management in practice may end up in environmental managers promoting “less an informed decisionmaking [...], but the delivery of a positive image about a companys activities and [...] following a smooth siting procedure" (Strauss 2011). In complex realties, the limits of managing environments may result in “a host of negative side-effects” (Krause 2011) or in a social lock-in where

> rather than ending up with a social structure (of the recycling network) in which reduction of waste or alternative consumption patterns became the focus the actual network required the production of enough waste. (Lippert 2011c)

Ninan (2011) points to the critique of global carbon management as “carbon colonialism”. Environmental management may, thus, easily be seen as an endeavour with positive outcomes limited available for some actors and abundant negative outcomes for many others.

The critical discourses about environmental management, ecological modernisation and sustainable development point to such limitations as well. Our studies provide a more detailed understanding of how such limits come to exist through management.

2.3 Discussion

The study of the limits found in these articles yielded a variety of types of limits. Trying to structure them failed. Here are four ways of trying to come to terms with the task of outlining the dimensions of limits. First, we could try to study the degree in which a limiting dimension is materialised. Take “nature”. This is a supposedly very material part of reality. However, as the example of glass waste shows, seemingly natural things are not fixed materially. They are effects of relations. The question to ask, then, would be: *how are the objects managed material?*

Second, readers might try to structure the limits encountered in the extent at which these limits are stable. Again, we find that limits to environmental management are not usefully differentiated into a dichotomy of continuum between stable and unstable. A visualisation technology is not simply stable or unstable. It can be better understood in terms of how it is stable. Thus, we would inquire: *how are entities involved in management (de)stabilised?*

Third, a topographical location of object might be used to organise information about the limits of managing environments. Some would ask where and on what management is taking place. The problem, however, is that this presupposes specific reference grids and constructions of spaces. The open question to address the realities of managing environments should be: *how do things reside and how does this form space?*

Finally, we might be tempted to use a construct like the degree of complexity to order the findings about limits of environmental management practices. Something like a simple fact about nature, say the global warming potential of a greenhouse gas, could be classified as less complex than a legal-socio-technical arrangement like the CDM. Yet, both are arrangements which are limited in specific ways. They cannot be quantitatively compared. The simple fact is simply *differently* complex compared to a seemingly huge bureaucracy. To order findings about the limits of managing environments with respect to complexity, then, means we need to ask: *how are entities related to each other?*

3 Instead of a Conclusion: Towards Sensibilities for Studying Environmental Management Empirically

A frequent point made in recent STS discourses revolves around the notion of performance. The underlying approach taken by ethnomethodological studies suggests that social order does not exist at some meta level but is produced by actors who competently act and interact (Lynch 1999; Suchman 2000). Through their interactions actors of a group bring orderings into existence and make them observable. Thus, group members perform order. Studying environmental management can be considered as studies of performances of the environment. Actors perform together when they exercise so-called environmental management. Some actors may be considered by others as performing competently, while others are not construed as performing competently. Empirical studies of environmental management should study how it happens that some actions are considered as a competent performance of environmental management. This allows to grasp the orderings of and through environmental management.

Another approach, Actor-network theory (ANT) indicates that specific things can be seen as effects of heterogeneous networks and engineering. Latour (2004) emphasises that many things can be seen as the effect of assemblies of actants which in cooperation produce and uphold something. If such an assembly ceases to support that effect, it will collapse. The empirical question is which actants are powerful enough to stabilise or distort such an assembly. The practical work necessary

to align various materials, humans, discourses and others can be understood as *heterogeneous engineering* (Law 1992). A different configuration of the supporting/distorting actants might effectuate a different thing. For the world to exist as it does now, actants need to act. If they stopped, the world would change. Thus, the world as it is, including all its limits, are continually achieved and performed. Mol (2002) calls this process enactment in order to emphasise that no backstage exists within this understanding.

For the discussion of this paper, the enactment approach is useful because it allows us to view all the actants who are part of situated management practice as precarious effects themselves. I need to emphasise this especially with regard to "nature" and "social mechanisms"; but it is equally the case for the other categories of limits and their relations I referred to and constructed above. This kind of STS thinking proposes to consider these limits as being enacted. And the specific forms of limits are not determined. This opens up the question of which limits we want as a political issue. Humans can influence in which ways they want the limits of world to be enacted.

At the same time, I like to emphasise that the actants which are part of a configuration do not only limit management, but also enable practice. Thus, managing environments is not merely limited but it constrained and particularly configured. These configurations are subject to change.

What is, then, the role for critical research on environmental management? It seems to me that what we can contribute are interventions in two ways. First, we can provide knowledge which can be used by actants to help configuring networks in more emancipatory ways. Second, our texts can act as interventions themselves, shifting discursive limitations.

Practically, researching environmental management empirically would be well advised to be attentive to all forms of limitations. While analytically, studies focussing on a single dimension of limits may be illustrative, a deeper understanding seems best possible by describing and critically discussing the manifold ways in which management practice is situated and configured. As we will not be able to follow all these ways, we can only provide stories based on *partially connecting* (Strathern 2004) our observations to each other.

Notes

1. *Academic knowledge is not produced by individuals but in networks and communities.* Thanks to Magdalena Gasser for supporting me with reproductive infrastructure during them time I worked on this paper. I am grateful to Anup Sam Ninan, Franz Martin Krause and Hannah Strauss to have worked with me on the body of analyses which this paper discusses. The discussion with participants of the session "How do you manage?" at the 10th Annual IAS-STS Conference *Critical Issues in Science and Technology Studies* (May 2-3, 2011 at the Institute for Advanced Studies on Science, Technology and Society – Graz, Austria) greatly contributed to the reflections incorporated in this paper. Alexandra Stupar

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2. This paper reflects discussions and co-operative work within the *Environment, Management and Society Research Group* (http://www.ems-research.org) which took place between 2008 and 2010.
3. In more detail: we have interpreted the accounts by scholars like Blühdorn and Welsh (2007), Schnaiberg, Pellow, and Weinberg (2000), Christoff (1996) or more radical ones like Clark and York (2005) and Li and Hersh (2002). See our discussions in Lippert (2010a), Ninan (2011).
4. Even though Mol (2010) now calls for studying environmental reforms differently, i.e. as flows and networks, this can be still read as part of the project of optimising Western governance.
5. See e.g. Bowker and Star (2000), Waterton (2002)
6. For the specific case of agents of ecological modernisation, see Lippert (2010a)

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