

“Towards integrated governance of land and soil: Addressing challenges and moving ahead.”

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Jes Weigelt*, Charlotte Beckh*, Purabi Bose*, Ivonne Lobos Alva* and Oscar Schmidt**

*Global Soil Forum at the Institute for Advanced Sustainability Studies e.V. (IASS) Potsdam, Germany.
Jes.Weigelt@iass-potsdam.de / Phone: +49 331 28822 319

**Division of Resource Economics, Faculty of Agriculture and Horticulture, Humboldt-Universität zu Berlin, Germany. Oscar.schmidt@agrar.hu-berlin.de / Phone: +49 30 2093 6225

Introduction

Soils support human wellbeing and provide indispensable ecosystem services, such as water regulation, biodiversity conservation and carbon storage, the latter of which is essential to the mitigation of climate change (Lal et al. 2007). Moreover, soils are the basis for food security. The state and the functioning of soils are intrinsically linked to decisions regarding the management and use of land. Over the last 50 years, available cropland has fallen from 0.45 ha/per capita to 0.25 ha/per capita (FAO 2011). Adding up to this dramatic trend, soils are increasingly deteriorated by different forms of human induced degradation, e.g. erosion, contamination and sealing.

In order to tackle these problems, ways must be found to coordinate the great variety of roles and uses of soils and land as two explicitly interdependent phenomena. This task is demanding as the issues at stake play out at various dimensions, times and scales. It is therefore not surprising that soil related problems are presently addressed as if they were disconnected from their social causes, in particular those that belong into the realm of land governance. The soil sciences accordingly tend to have little consideration for questions regarding the social drivers of soil degradation or the political coordination of contested soil uses. The few existing initiatives for global soil conservation include attempts for international governance but regularly underemphasize that the overexploitation of soils is often rooted in local property

right disputes, insecure tenure or inequitable land distribution. Vice versa, in the contemporary discourse on land governance – with its strong focus on the local political economy of land - there is hardly any reflection on the global nature of soil related uses and functions. Moreover, in this latter field of thought there is hardly any consideration for implications that derive from the physical characteristics of soils. The disconnection between the associated academic fields and their polarized discourses represents a severe limitation if we aim for a critical debate on how a joint coordination of the uses of soil and land can look like in the future.

In the paper at hand we seek to take a first step towards more holistic approaches by proposing the establishment of integrated concepts of land and soil governance. Our discussion starts out by asking what kinds of issues arise when soil and land are addressed as two explicitly interdependent phenomena. We show that integrating soil and land governance requires us to simultaneously deal with a multitude of challenges in a multitude of dimensions. In order to identify, analyse and communicate those challenges with respect to the bigger picture a transdisciplinary approach that also includes practical knowledge and experiences from outside the sciences is needed. The second part of our paper represents an early attempt to establish key categories for integrated concepts of land and soil governance. To make our argument we first move to an abstract level which allows us to briefly reflect on governance as a means to address the social relations that determine the often detrimental interactions between land use and the state of our soils. Within this context we propose to particularly focus on a critical analysis of property rights regimes. From this rather abstract level we then move on to identify a number of more concrete propositions which relate directly to the challenges that were identified in the earlier chapters. It is important to note that neither our theoretical discussion, nor the more concrete propositions should be read as an attempt to provide a full account of what integrated soil and land governance could imply. The discussion should rather be used as a collection of arguments and observations that we believe are central themes for a future debate on the sustainable management of soils. The paper concludes with a summary of the key arguments of our discussion.

2 Land and Soil Governance: multiple challenges and multiple dimensions

The coming sections are committed to identify and discuss what kinds of issues arise when soil and land are addressed as two explicitly interdependent phenomena. Integrating land and soil governance into a single concept requires us to simultaneously deal with a multitude of challenges in a multitude of dimensions. In order to identify, analyse and communicate those challenges with respect to the bigger picture a transdisciplinary approach that also includes practical knowledge and experiences from outside the sciences is needed.

2.1 Conflicting objectives and trade-offs in soil ecosystem services

Potentially diverging interests in how to use soil and land frequently lead to severe conflicts and trade-offs. The challenge we are facing is how to govern possible tradeoffs in the use of soil resources so that the provision of ecosystem services is balanced for optimizing land use for food production, environmental protection and human well-being (Haygarth and Ritz 2009). A common approach to identify the bulk of potential tradeoffs between competing uses of soils is the concept of ecosystem services as advocated by the Millennium Ecosystem Assessment in 2005 (MA in the following). The MA defines ecosystems services as the “benefits people obtain from ecosystems” (MA 2005a). It emphasizes that the inter-linkages between human well-being and the condition of ecosystems are bi-directional. On the one hand, ecosystems provide services to people, while on the other hand human activities have considerable, often unintended, impacts on ecosystem functioning (MA 2005b). People depend essentially on functioning ecosystems, regardless of whether they are aware of this dependency or not. Yet according to the MA, because of globalized commodity markets many humans have recently become less dependent on services from local ecosystems. The spatial disconnection of consumers from the very natural resources that are the basis of their consumption, however, has led to a loss of feeling of responsibility and monitoring capacity. As a consequence to this trend, natural resources, including soils, run at risk to become ill-managed or overexploited even more rapidly (MA 2005b).

The MA distinguishes four different types of ecosystem services: (1) provisioning, (2) regulating, (3) cultural and (4) supporting services (MA 2005a). Soil provisioning and regulating services occur at very different scales ranging from the micro-level (e.g.

habitat for micro-organisms) to landscape (e.g. erosion control) to the global level (e.g. air quality) (Dominati et al. 2010). Provisioning services of soils include the supply of food, timber and fiber as well as the physical support to living things and infrastructures. They include habitats and raw materials like topsoil, as well as biodiversity and genetic resources. Soils provide regulatory services which ensure a stable, healthy and resilient environment. Soils have the capacity to mitigate floods and lessen impacts of extreme climatic events by storing and retaining water. They filter nutrients and by this control the proliferation of pests and diseases and improve water quality. Last but not least, soils contribute to combating climate change by regulating atmospheric constituents and storing carbon as stable organic matter (Dominati et al. 2010; Haygarth and Ritz 2009).

Supporting services of soils are a vital basis for the production and functioning of many other ecosystem services. They include services such as soil formation, primary production and nutrient cycling (Haygarth and Ritz 2009). Supporting services mostly reveal indirect and long-term impacts and are often overlooked and taken for granted. The examples we have just discussed indicate that ecosystem services are highly interdependent and interlinked at many levels. They reveal complex, often unpredictable interactions and non-linear relationships. Many of the causes and mechanisms behind these interactions and relationships are still poorly understood, a fact which makes it difficult to know what kind of trade-offs or synergies are to be expected and managed at what particular point in time (Bennett et al. 2009; Raudsepp-Hearne et al. 2010).

Ignorance of these complex feedbacks often leads to the inefficient use and overexploitation of some services (mostly provisioning services to meet short-term societal needs). This is detrimental to the overall integrity of ecosystems and has long-term negative consequences for human well-being (Bohensky et al. 2006). Furthermore, long time lags as well as impacts over large scales of ecological processes make it very difficult to forecast and take appropriate decisions. For instance, soil carbon storage influences the atmosphere and hence impacts on a global scale (MA 2005b). We can subsume that it is a considerable challenge to try to coordinate and balance the ability of soils to provide a full range of ecosystem services at different scales, throughout time and without reaching any tipping point.

Due to the complexity of interactions, ecosystem services are frequently affected negatively (trade-off) or positively (synergy) as one service (e.g. food) increases

(Elmqvist et al. 2011). Here it is important to point out that trade-offs and synergies should be considered alongside their dimensions of time, space and reversibility (Hancock 2010; Rodriguez et al. 2006). A trade-off occurs, for example, when an increased provision of agricultural crops reduces soil quality, carbon storage and water regulation (Elmqvist et al. 2011; Haygarth and Ritz 2009). A trade-off may further arise whenever population and economic pressures trigger the use of arable land for urban development. The ensuing sealing of formerly productive soils represents a critical tipping point, as it is often impossible to restore the original conditions of the soil or to make any reversal for the use of other services. Moreover, since soil formation takes hundreds of years the loss of soil resources is in human timeframes a permanent loss (Haygarth and Ritz 2009). A synergy as opposed to a tradeoff occurs, for example, when the maintenance of soil quality promotes nutrient cycling, enhances carbon storage and improves most provisioning services, notably food. Integrated governance of soils and land should aim for the identification of such synergies. Further complicating the issue: different and often conflicting value systems, interests and priorities of different actors need to be taken into account and balanced. The challenges that relate to this social dimension of the problem are addressed in the following.

2.2. Inequalities in access to land

Land is an extremely inequitably distributed resource. According to Deininger and Olinto (2000) the average Gini index of land distribution for selected countries in Africa, the Americas, Asia and Europe is 0,65. To provide a reference point: The current Gini index of income distribution in South Africa is 0,58 (UNDP 2012). That is, a country that is still grappling to overcome the inequalities resulting from Apartheid has a more equitable income distribution than the average Gini index of land distribution of the countries covered by Deininger and Olinto's study (Deininger and Olinto 2000). Further, in all but one of the 53 countries for which data on income and land distribution is available, the income Gini is lower than the land Gini. This even holds true for countries with an extremely skewed income distribution such as Colombia or Guatemala (ibid.). When it comes to fertile soils, the distribution is likely to be even more skewed. The State of the World's Land and Water Resources Report shows that the poorer people are, the more they live on degraded lands or lands that show strong degradation trends (FAO 2011: 66). The underlying causality

merits attention. Is it that the soils are degrading because poor people lack the necessary means to invest in soil protection or is it because they have been deprived of better quality land? While the answer to this question is likely to be case specific, one should not lose sight of the agricultural history of those countries characterized by a skewed distribution of land rights. Deininger (2003) provides an overview of cases where peasants have been deprived of good quality land under colonial rule. There are also contemporary processes that deprive already marginalized groups of society of their land. Homer-Dixon (1999) has coined the term “ecological marginalization” to describe these.

Inequitable access to land poses serious challenges to sustainable development. First in the economic dimension, inequitable land distribution and economic growth tend to be negatively correlated (Deininger 2003). That is, higher levels of inequality in land distribution translate into lower GDP growth. Secondly, in the social dimension, access to land is a core determinant of whether people move out of or into chronic poverty (Hulme and Shepherd 2003). Last but not least, in the ecological dimension, security of land rights is a pivotal incentive for investments into the resource (Meinzen-Dick and di Gregorio 2004). Poor people often do not only hold rights to a limited amount of land, their rights are also often insecure. They lack the necessary regulative backing that would allow them to invest in soil improvement measures.

Taking an international perspective on access to land brings another topic to the fore: international investments in land acquisitions through lease or purchase. For the period 2001 – 2010, the International Land Coalition reports 203 million hectares that are under consideration or negotiation. There is a large volume of case studies highlighting the often negative implications of these land acquisitions for impoverished communities around the world (White et al. 2012; Oxfam 2011). While these investments hold the potential to channel urgently needed funds into agriculture (von Braun 2009), it is crucial to bear in mind that the majority of these investments occur in regions of weak land governance. Arezki et al. (2011) find that a one standard deviation deterioration in the land governance index (equivalent to the difference between Angola and Brazil) would be predicted to increase the number of investment projects by 33% even with other factors held constant (such as land abundance which would be associated with weaker land governance). Although more

evidence is still necessary to reach a final conclusion, these results suggest investors prefer weak governance areas to acquire land.

Across the globe inequality in access to land tends to play out along the lines of social and political classes, race and gender. To uncover those differences and their underlying causes should be at the core of questions regarding distributional equity in soil and land governance. On this regard, especially gender dynamics in land governance processes are receiving increasing global recognition. Gender is thus understood to be an important analytical category for obtaining more sustainable natural resource governance (Pottier 1999; Agarwal 2000). The concept of “gender” deals with how femininity and masculinity are constructed in society or culture. Women face more severe challenges as compared to men when it comes to the access, the control and the management of land related resources (Agarwal 2003; Bose 2011; Colfer 2004). In the context of forestry, for example, the gendered dimension is often quite explicit in the way resources are controlled and managed. Research on gender and forestry in Asia, Africa, and Latin America show that women are in many situations responsible for collecting fuel wood and fodder from the forest, but have hardly the right to make decisions in the control, management or access of these non-timber products (see Mwangi and Pottinger 2011). Moreover, there is heterogeneity even within women’s groups due to class, caste, and socio-economic differences that would affect some women more than the others.

With respect to soil management the gendered dimension currently remains relatively under-studied. A study in Uganda by Nkedi-Kizza et al. (n.d.) examined the soil fertility indicators for both women and men’s agricultural plots (excluding women headed households). The study shows that gendered differences in soil management were less obvious except that both men and women were hesitant to use fertilizers. Engel-Di Mauro’s (1999) research in Hungary, on the other hand, linked gender division of labor explicitly to soil management and showed that women (unlike men) process subsistence crops, have more control on subsistence crops, and dominate manual labor. The findings from this work indicate that these soil status disparities result from basic gendered difference in soil use and the division of labor. This is generally manifested through: ‘1) uneven land distribution and control, 2) gender-specific technological applications (e.g. tractor use), and 3) gender-specific cropping systems and associated inputs (e.g. fertilizers)’. This overall discussion indicates a need to further explore the gender dimension in soil use, to analyze how soil

dynamics are shaped by historical gendered patterns of cropping systems and agricultural inputs, and to highlight the ways in which women and men play active roles in sustainable soil management and food security.

2.3 Implementation challenges of progressive land and soil policies

Land policy is one of the policy areas in which there is often a blatant gap between progressive policies and legislations and the degree to which they are implemented. For example, despite of many land policies acknowledging women's rights to land, implementation of these policies often lags behind (FAO 2002). Land distribution patterns, to provide a different example, are not fundamentally altered although there are progressive land policies in place. In the case of Brazil the Gini Index of land distribution has gone up from 0,857 in 1985 to 0,872 in 2006 (IGBE 2009). That is, land is more unequally distributed in 2006 than it was in 1985 although the Brazilian Government designed ambitious land reform programs under democratic rule. Cumbersome processes to secure access to Common Pool Resources by marginalized groups are a further example in this regard.

Scholars analyzing land policy implementation often refer to land policies as path-dependent processes. De Janvry and Sadoulet (1989) accordingly argue that the allocation of land rights at a certain point in time influences who can influence the allocation of land at later stages. Analyses attribute this outcome to political elites who are often in the position to impede or obstruct the implementation of progressive policies (Angeles 1999; Bardhan 2000: 226f).

This observation points to a fundamental challenge. The objective of agrarian reforms is to alter the distribution of land in favor of those who lack access. That is, agrarian reforms are implemented in a social context that made the (re-)allocation of rights necessary in the first place. Rights are recognitions of property claims by third parties – often the state. This initial recognition of rights does not automatically alter the social relations sustaining marginalization. It is a first initial step towards this direction. To make these rights alter social relations, mechanisms have to be put in place that guarantee that violations of these rights are punished, that an organization assumes the responsibility of enforcing these rights. In many contexts, this proves to be challenging, as, for example, access to the judiciary system or other conflict resolution mechanisms is missing.

2.4 Ill-defined rules

The previous sections indicate that one of the most dominant factors that grant or restrict access to the use and management of soils and land is property. Despite the truly global character of soil related problems, land is increasingly defined as private property. Private property arrangements can be said to sensibly serve those soil related uses that are exclusively reaped at the local level. A perhaps rather obvious example is soil fertility if exclusively seen as a basis for agricultural production. When it comes to other soil related services like carbon sequestration or water purification the situation becomes way more complicated. Soils in this context represent a so called Common Pool Resource (CPR in the following) whose size or characteristics make it costly to exclude potential beneficiaries from obtaining benefits from its use (cf. Farrington and Boyd 1997). Moreover, it is also extremely complicated to account for both negative and positive externalities that result from the use or mere existence of a CPR (see also our earlier discussion on trade-offs between ecosystem services). Common Pool Resources are generally subject to the problems of congestion, overuse, pollution, and potential destruction unless use limits are devised and enforced. Private property regimes - which as we have argued above dominate the legal rule over land - are extremely limited in their capacity to sustainably manage a CPR. The number of stakeholders who – from a normative point of view - should have voice in the governance of services like carbon sequestration is naturally huge. Private property, which is explicitly designed to guarantee the restriction of access, would here once again represent a highly complicated choice.

The question arises whether institutions and governance systems can be designed to fit the large bulk of soil related problems at all different scales. In order to deal with this challenge it seems necessary to draft regulations in a manner in which economic interests and the public welfare perspective can be reconciled. Without the proper identification of institutional fit and scale no governance structure will be effective (Young 2002). Ostrom (2008) examines the effective handling of CPRs and addresses the question why existing attempts have led to very mixed results. In her reading, the main lesson from international experience in CPR governance is that there is no quick fix or uniform solution to the problem of the commons. In contrast, governance should be geared to create institutions at multiple levels, based on precise data with respect to the physical nature of the resources (ibid.). The problem

to identify 'fitting' sets of rights to land and soil - and of guaranteeing those rights - will be repeatedly emphasized in the ensuing sections.

2.5 Organizational inertia

Within bureaucracies, governmental departments and other governing bodies a vertical "silo approach" to management has been observed to pose a serious obstacle to accountability and the delivery efficient outcomes. This "silo mentality" is not only observed in the departmental structuring of governments but also in law- and policy making. A departmental isolation can hinder coordinated law- and policy making, leading to inefficiencies and the exacerbation of resource challenges (Ontario Cabinet Office 2000). Similar to our earlier discussion on a lack of transdisciplinarity in the soil sciences, we find that although there is a lot of literature on integrative approaches to management and governance, it is rarely put into practice effectively. Forest, water, soil and other resources are often governed in thematic isolation, where the different properties, such as quality and quantity are likewise managed by different administrative bodies. The consequence is that administrative bodies often face weak or perverse incentives for interdepartmental cooperation (Sato 2001; Ontario Cabinet Office 2000). The actions and decisions of such agencies often oppose each other due to different priorities in target setting and budget allocation, a problem which frequently develops into interagency rivalries. Often this organizational inertia leads to a slowing or even a complete stalemate in decision making and managerial practice. The recent push for the establishment of networked, multilevel governance can at least in part be read as a reaction to those problems (Leach et al. 2010).

3 Towards an integrated concept of Land and Soil Governance

The coming sections represent an early attempt to establish key categories for integrated concepts of land and soil governance. To make our argument we first move to an abstract level which allows us to briefly reflect on governance as a means to address the social relations that determine the often detrimental interactions between land use and the state of our soils. Within this context we propose a particular focus on a critical analysis of property relations. Subsequently, we move on to identify a number of more concrete propositions which relate directly to the challenges that were identified in the earlier discussion. None of the propositions made should be read as an attempt to provide a full account of what Integrated Land and Soil Governance could imply. Rather the discussion should be used as a collection of arguments and observations that we believe are central themes for a future debate on the sustainable management of soils.

3.1. Governance and property rights

At least since the early 1990s governance theory has met considerable scholarly attention and debate. 'Good governance' is today an omnipresent demand in public discussions on problems as diverse as public health care, international security or environmental conservation. The wide use of the term has at times been the cause of considerable imprecision and confusion. In order to avoid falling into the same trap we want to begin with a few clarifications.

First and foremost, 'governance' is not tantamount to 'government'. Rather, 'governance' refers to the exercise of management power and policy, while 'government' is one among several possible forms of social organization that does it. Governance is accordingly not an end in itself, but a means to achieve certain normative goals (Palmer et al. 2009: 10). In many contexts, governance is performed simultaneously by a wide range of actors and organizations with crosscutting responsibilities, expertise and interests. The multi-agential character of governance systems can represent an opportunity – and even a prerequisite - for the inclusion of a broad body of expertise. At the same time, however, it can also be the cause for considerable inertia and conflict – we will return to this point below.

A look at a selection of scholarly definitions will help us to get a better understanding of how, by whom and to what end governance may actually be practiced. Palmer et

al. (2009) accordingly define governance as “the complex mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights and obligations, and mediate their differences” (Palmer et al. 2009: 9). In their understanding governance should thus provide room for the voicing of different perspectives as well as for mediating differences. Along the same lines and with special reference to the resolution of conflicts over the use and conservation of natural resources, Turton et al. (2006: 374) define governance as “[...] the process of informed decision-making that enables trade-offs between competing users of a given resource so as to balance protection and use in such a way as to mitigate conflict, enhance security, ensure sustainability and hold government officials accountable for their actions”.

A central feature alongside any attempt to practice this process is the social struggle over the assignment, recognition and enforcement of societally recognized claims, i.e. property rights. The recognition of a property right is a significant factor with respect to the management of a resource as it entails the assignment of rights to a benefit stream as well as the allocation of corresponding duties to those who do not hold the property right. Moreover, the recognition of a property right also entails the definition of a collective – typically the state - to enforce the property right in case it is challenged (cf. Bromley 1991). Property rights, in the present conceptualization, accordingly establish social relationships and allocate social positions within these relationships.

The acknowledgement of property claims is often contested and/or complicated by the broader structural context in which they are negotiated. Their recognition might for instance have occurred under very particular circumstances; circumstances that might have changed afterwards. The contemporary allocation of property rights to land for example often reflects past inequities and influences who has superior influence over decisions that would affect this distribution (Sikor and Nguyen 2007). The ways the distribution and use of resources, including that of soils, are governed, therefore need to be understood “in relationship to historically shaped relations of production and power” (Nygren 2000: 12). Furthermore, the recognition of property claims by the state tends to be based on the establishment of legal rules which up until their actual fulfillment merely grant *rights in theory*. These *rights in theory* do not necessarily turn neatly into *rights in practice*. Rights require a translation process which in many instances involves a process of confronting the embedded power

relations that have perpetuated the negation of these rights in the first place (Pettit and Wheeler 2005). A process as such might involve legal action ‘to assure enjoyment of the right’ and ‘political action at the cultural level to achieve acceptance of the right’ (Miller et al. 2005: 59). In the case Land and Soil Governance this process can play out between a great variety of actors along different territorial and temporal scales – a number of examples of which will be discussed in the coming sections.

What follows from this discussion is that governance cannot be envisioned as an ‘apolitical machine’ which once it is switched on automatically produces ideal outcomes such as equity, sustainability and economic efficiency. We instead need to account for the fact that any political attempt to govern a specific problem involves the task to negotiate the allocation and enforcement of property rights and duties.

Land governance deals primarily within the “power and political economy of land” (Palmer et al. 2009). It is accordingly often understood to be the procedures by which major challenges like land inequity, insecure tenure, overexploitation of land resources and property right disputes are addressed. Integrating soils into such procedures will require a reframing of our general understanding towards including those property relations that are associated with soil use and management.

What our discussion has tried to show is that actors concerned with ‘equitable governance’ face the task to coordinate competing needs and claims over soil and land related services. This is tantamount to establishing secure rights for those members of society who mostly remain without voice. Vice versa there must be sanctioning mechanisms in place that restrict powerful actors from abusing their social position at the expense of other actors’ claims. What is then needed is a remoulding of the relations between those actors, other agents and the state. This remoulding, however, implies politicising the term governance (cf. Borras Jr and Franco 2010).

A strong focus on property relations is not only a crucial analytical category to uncover the political nature of governance – a fact which is often underemphasized in corresponding debates. By helping us to identify and question the full range and complexity of claims and responsibilities over a resource, it also represents a promising perspective to critically inform public debates on the negotiation of what a sustainable balancing of objectives and trade-offs in Integrated Land and Soil Governance could look like. We go even further and argue that addressing social

property relations is indispensable if Integrated Land and Soil Governance is to achieve its intended objectives.

3.2 Balancing tradeoffs between ecosystem services

In order to successfully balance conflicting objectives and to overcome trade-offs in soil ecosystem services, we need to enhance our understanding and knowledge of how different soil ecosystem services are interlinked and interact over time and space. Furthermore, the concerned actors must be encouraged to explore institutions and governance mechanisms which may help to reduce the most undesirable trade-offs. Although the concept of ecosystem services is so far only little used in land use planning and local decision-making (Elmqvist et al. 2011), it helps provide focus and raise awareness for key functions from a societal viewpoint (Haygarth and Ritz 2009). Attempts to characterize and map multiple ecosystem services across space and in bundles have only recently emerged (Carpenter et al. 2009). A suggested approach for governing trade-offs among ecosystem services is the development of incentives within so-called Ecosystem Services Districts, where the full range of ecosystem services provided within a landscape is monitored, valued and integrated into responsible decision-making processes (Elmqvist et al. 2011). The advantage of operating at the district level is that landowners are more likely to manage small scale Common Pool Resources sustainably (Goldmann et al. 2007). When using the concept of a tipping point, it would be appropriate to consider optimal ranges rather than simple thresholds, because of the difficulty to prove below which threshold levels functions are irreversibly damaged (MA 2005b).

In general, it is wise to apply the precautionary principle when dealing with ecosystem services, in particular because of unpredictable time and space lags. Also, irrespective of which of those approaches will be tested in the future, it is important to be aware that any of those seemingly neutral scientific attributes – e.g. thresholds, ecosystem boundaries or services - are in fact socially constructed categories. It follows that even when we assume that the definition of such categories is not interest driven, we will still find that what is presented as an apolitical act has very political consequences. The way we socially construct an ecosystem boundary for example, not only helps us to describe and differentiate ecosystems, but it also strongly influences the allocation of rights to access or managerial responsibility. One

way to avoid this political pitfall is to uncover and to communicate the logic and the processes by which a respective category is constructed.

3.3. Overcoming inequalities

This section on overcoming inequalities is closely linked to our conceptual argument in section 3.1. Equity in access to soil related services is thus closely connected to a change in the distribution and recognition of land rights. Strong institutions and regulation can give marginalized local communities the tools they need to manage natural resources such as land, water, and forests. In their study of four African countries, Nkonya et al. (2011) revealed that the number of land and water management by-laws enacted by communities was strongly correlated with the level of decentralization in each country. In another example, coordinated efforts in the Brazilian Amazon have shown that innovative policies on forest monitoring, land tenure and law enforcement, together with consumer-driven initiatives, can have a significant impact on lowering deforestation rates (UNEP 2012).

By focusing primarily on scholarly work on gender relations, we have identified three major challenges against such a change. Firstly, it must be understood that the shift towards a formalization of property rights through land registration and land titling often leads to disparities between social and political classes, race and sexes. The initial recognition of rights does not automatically alter the social relations sustaining marginalization. To make these rights alter social relations, mechanisms have to be put in place that guarantee that violations of these rights are punished, that an organization assumes the responsibility of enforcing these rights. A second factor that contributes to inequalities between classes, race and sexes is related to the disempowerment of marginalized actors, a problem which most notably manifests in political exclusion. The third factor is legal pluralism with respect to land tenure. Legal pluralism creates overlaps and contradictions with regard to property claims a situation which often culminates in the overriding of informal claims by marginalized actors, women in particular.

The way forward must be to address those obstacles and to instead ensure genuinely participatory methods in agrarian reforms. From a policy perspective there is need to examine why accounting for the problem of inequality in land is pertinent, and what new avenues are available for improving access for marginalized groups to land governance. Our discussion on the challenges to implement agrarian reforms

already pointed at the fundamental threat to the success of these policies: they are implemented in the very same societal context that made them necessary in the first place. To overcome inequalities in access to land, it is necessary, therefore, to address the question of how to translate rights into lived social practice.

There are several threads that Integrated Land and Soil Governance can be built on to address this question. In institutional economic theory, Hodgson (2006) distinguishes legal rules from institutions. Institutions, according to him (ibid.: 18) are "(...) systems of established and embedded social rules that structure social interactions". Legal rules to the contrary have not yet become embedded. They are not being followed as a matter of habit. To make people adhere to these rules they need to be supplemented by strong enforcement mechanisms. This applies to the large majority of contexts in which marginalized groups obtain land rights. They constantly run the risk of powerful actors appropriating the resources to which they have obtained a right to. Moving from institutional economic theory to analyses of human rights implementation, literature mirrors Hodgson's considerations from a more applied perspective. Miller et al. (2005: 59) point out that the translation process requires legal action "to assure enjoyment of the right" and "political action at the cultural level to achieve acceptance of the right". To turn these considerations into more prescriptive terms: The implementation of progressive land policy can not only rely on capacity building initiatives. It requires empowerment of the intended beneficiaries and alliances of change to ensure that fragile policy reforms transform into tangible benefits. Bearing in mind that the need for external enforcement becomes less evident when the new rules on the allocation of fertile soils are internalized by the actors, it is obvious that the implementation of progressive land policies is a long term project. It requires sustained support. Experiences in the implementation of land policies aiming at a more equitable distribution of fertile soils among the sexes demonstrate that these rights need of course to be seen in the wider societal context.

3.4. Accounting for cultural diversity

The integration of cultural, spiritual and ethical dimensions into the designing and implementation of Integrated Land and Soil Governance is critical for sustainable development. The need emerges from the understanding that the cultural approach allows flexibility and adaptability and the accounting for questions of morality, all of

which have become extremely urgent in our rapidly changing world. The perspective on 'culture' helps us to reflect on complex ideas, values, and the identification of individuals and groups. The need for a cultural lens on resource governance is thus closely connected to our earlier argument for an analysis of property relations. The merits of a cultural perspective are numerous with respect to our aim for sustainable development. Addressing the cultural dimension of soil and land governance accordingly offers new means of community collaboration by using local values, beliefs, cultural diversity, and norms for sustained and effective management of resources. The cultural dimension provides us with local insights to identify the complexities of human's day-to-day interaction with their beliefs and values with respect to resources such as water, soil, land or forests. Rao and Walton (2004) suggest that the cultural lens allows us to see through the perspectives of those communities whose indigenous knowledge shaped the management of land and resources for centuries. Indigenous knowledge and local cultural beliefs are not static, but dynamic and influenced by numerous social, natural, political factors. The cultural dimension is crucial to many of the major challenges faced by land, soil and natural resource governance. Strengthening the cultural dimension in Integrated Land and Soil Governance must not be tantamount to a search for an all-encompassing hegemonic cultural reading. Rather, we argue for making the attempt to embrace the merits of cultural diversity and contextual difference based on an emancipated dialogue on cross-cutting and diverging cultural readings.

3.5. Strengthening the perspective on soil in international governance

Another way forward are international agreements which request states to employ adequate soil protection policies. For the time being, three international treaties deal with soil related issues. Firstly, the "United Nations Convention to Combat Desertification in Countries Experiencing Serious Droughts and/or Desertification, particularly in Africa" of 1994 (UNCCD) has to be mentioned in this context. The UNCCD's objective is to combat desertification and to mitigate the effects of droughts. The regional scope of UNCCD is limited to arid, semi-arid and dry sub-humid areas. Land degradation is only tackled by this convention as long as it causes desertification. In practice however, UNCCD has extended its scope to regions which do not comply with those climatic parameters. Moreover, there is an ongoing debate in UNCCD to cover also land degradation issues as a new challenge next to

desertification. The second noteworthy agreement is the “Convention on Biological Diversity” (UN-CBD) of 1992. The UN-CBD aims at the conservation of biological diversity and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Soils are also protected as “terrestrial ecosystems”. Various programs have been put in place concerning the protection of biological diversity in soil. Thirdly, as soils are the second largest natural reservoir of CO₂ after the oceans, also “United Nations Framework Convention on Climate Change” of 1992 (UNFCCC) has a role to play. According to UNFCCC Parties are generally obliged to promote the conservation and enhancement of reservoirs and sinks, including those in terrestrial ecosystems. Under the Kyoto Protocol afforestation has been approved as being a measure within the Clean Development Mechanism. Such an agreement is still lacking for measures to enhance the storage of CO₂ in soils.

None of the three agreements covers all aspects of soil management, especially the use functions of soils. Options have been provided to amend existing international law with the aim to establish a comprehensive regime on the sustainable use, management and restoration of soils and their functions. A new international treaty with its own organizational structure could probably be neglected as a practical option due the current reluctance of states to create new international organizations. UNCCD has recently stated that only minor amendments would be required in order to establish a soil related regime. However, from a legal point of view, amendments to treaty provisions would be required, above all because land degradation is until now only related to desertification. Furthermore, if UNCCD is about to regulate land degradation and sustainable soil management in a comprehensive manner additional aspects might require to be resolved in a new way. One example may be the relation between “affected countries” and “developed country parties” because if all aspects of land degradation and sustainable soil management would fall in the scope of UNCCD most “developed country parties” could become “affected countries” as well. Another option would be a protocol on land degradation and sustainable soil management as a new and standalone international treaty but which is organizationally integrated in one of the existing regimes. This could provide various advantages. Firstly the existing treaties would not have to be renegotiated and restructured. Secondly a consistent and appropriate treaty text could be established. Thirdly the organizational structure of existing regimes could be used thereby avoiding the financial and personal burden of a new organization. Whereas UNFCCC

could be dropped out due to its limited thematic scope both UNCCD and UN-CBD seem to be generally suitable to host such a new protocol on land degradation and sustainable soil management. It has to be discussed how such a protocol on land degradation and sustainable management of soils should be structured and which instruments would be recommendable. A concrete proposal for a “Protocol on Security and Sustainable Use of Soil” has been forwarded by IUCN.

The following deliberations should be regarded as initial thoughts. Provisions have to be flexible enough to be applicable to the very different ecological, political and social circumstances in the various countries. At the same time, they should be so precise that the regulatory objective can be achieved. An indicator could be whether the provisions would be revisable in a compliance regime. It has to be taken into account that international treaties can only bind countries, but not private institutions, enterprises or citizens. The protocol would require clear objectives and should be based on internationally agreed principles, for example the precautionary approach or the polluter pays principle. An obligation to employ integrated planning instruments would be recommendable whereby soil, land and water issues are considered. Next to planning instruments an obligation to rehabilitate land degradation in its various forms seems to be necessary. There should be a general obligation for a prior environmental impact assessment for activities which might have detrimental effects on soils. Contracting parties should be obliged to develop standards for sustainable management of soils, especially for agriculture, either on national or international level. Moreover, it should be analyzed whether and how economic instruments could be included. Obligations to promote research and the exchange of scientific results as well as to take measures in order to raise the public awareness should be included. Finally, organizational provisions concerning the cooperation between contracting parties, technology transfer, procedures and compliance mechanisms should be added as well.

A general question that needs to be addressed with regard to any agreement for international governance is whether such agreements should be binding or voluntary. Several arguments could be brought forward in this regard: The urgent need for appropriate measures, the different perspectives and needs of developed and developing countries and the involvement of strong economic interests support the assumption that binding provisions would be better suited than voluntary agreements. Yet, despite their potential it should also be noted that many binding

international agreements have remained comparatively unsuccessful in accomplishing their intended aims. Moreover, in recent years the overall willingness of international actors to join binding agreements has declined dramatically – an observation which refers to governments of nation states as much as to international corporations. As a corollary, international negotiations have increasingly led to voluntary agreements which according to their non-binding nature are more easily agreed upon. Whereas such agreements are often celebrated as being outstandingly flexible and efficient – particularly by the actors who signed them - there are also numerous past experiences that call the effectiveness of voluntary agreements to question. Other than readily adopting voluntary approaches as easy solutions, we should instead make sure that voluntary frameworks are reviewed and if necessary criticized with particular rigorousness.

4 Conclusion

The sciences presently fail to address soil degradation and the associated loss of arable land in their full social and ecological magnitude and complexity. As a major consequence, existing attempts for sustainable soil management largely fall short of accounting for the social causes of these detrimental phenomena, many of which manifest in the local struggle over property relations on land. In order to truly tackle soil degradation, ways must be found to coordinate the many uses of soils and land as two explicitly interdependent phenomena. The present restricted perspective, however, represents a severe limitation on this regard. Our paper represents a first step in the direction of a more holistic approach for integrated concepts of Land and Soil Governance.

Broadening our perspective is demanding as the issues at stake play out at various dimensions, times and scales. Actors concerned with Integrated Land and Soil Governance will accordingly face the task to account for a multitude of challenges, some of which were repeatedly discussed in this paper. We, thus, pointed to the need to negotiate conflicting objectives and trade-offs in ecosystem services and to aim for synergies whenever possible. The balancing of different ecosystem services requires a revising of existing institutional frameworks, organizational set-ups and property regimes. It accordingly needs to be reassessed, whether property regimes in

their present configuration are suitable to sustainably manage the many uses of soils and land as two explicitly interdependent phenomena. Furthermore, existing international agreements and collaboration attempts including the UNCCD, the Global Soil Partnership or the UN-CBD are despite their often promising intensions up for further review and improvement. Moreover, since poverty is a major cause of soil degradation, ways must be established to uncover inequalities in access to land and other soil related resources. If necessary those inequalities must be addressed by progressive land and soil policies that help to secure the livelihood of the poor. We finally show that alongside, any attempt to apply a genuinely holistic and inclusive approach a cultural perspective needs to be adopted. A 'cultural lens' is an essential prerequisite to allow for an informed debate on diverging perspectives regarding morality, ethics and legitimacy, all of which are still dramatically underemphasized in present day discourses on environmental governance.

Our main conceptual argument is that a strong focus on property relations represents an outstandingly useful unit of analysis to get to the core of each of the above mentioned challenges. The focus on property relations also allows us to explain many of the complex interdependencies over time and scale as an integrated whole. This perspective, thus, overcomes the greatest flaw in contemporary discourses on soil degradation. Looking at property relations is tantamount to uncovering the political nature of governance, a step which for obvious reasons may not be welcomed by everyone. It is, however, exactly this assessment of the full range of contested claims and responsibilities, that allows us to critically inform public debates on the negotiation of what a sustainable balancing of objectives and trade-offs in Integrated Land and Soil Governance could look like. Addressing social property relations is in fact indispensable if Integrated Land and Soil Governance is to achieve its intended objectives.

The arguments made, are still far from being a full account of what Integrated Land and Soil Governance should be built upon and our conceptualization remains up for criticism and further elaboration in the near future. The paper in its present form is therefore primarily an invitation to join us in our upcoming discussions on the development of successful approaches for the sustainable governance of our soils.

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