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Title: Institutional and social challenges to land use strategies in a multilevel governance context: the case of southwestern Ethiopia

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Abstract

Achieving sustainable development goals, and biodiversity related conventions fundamentally rely on effective governance of land use. Ensuring food security and biodiversity conservation are two pressing contemporary global challenges. Coupled with threats of increasing population and climate change, harmonized achievements of these dual goals are crucial. The harmonization, however, largely depends on the effectiveness of land use policy and implementation. Sustainable land use governance faces fierce challenges due to multiple interest over the land resource. Key challenges of land use governance include: structural flaws to incorporate diverse interests and powers; weak institutional capacity to enforce land use policy; process and practice misfits; sectoral policy incoherence, and absence of good governance such as corruption. Identifying these land governance challenges in a contextual setting has a paramount importance to solve development as well as conservation problems. Here, focusing on the harmonization of food security and biodiversity conservation goals, we explored land use governance challenges related to both structural and process dimensions in a multilevel governance context. The study was conducted in Jimma zone, southwestern Ethiopia. Within Jimma zone we selected three woredas (Gumay, Gera, and Setema) and six kebeles (two in each woreda) based on social-ecological gradients. In addition, we considered stakeholders at the zonal, regional and national levels of administration. Using bottom-up snowball sampling technique, 244 stakeholders participated in the study. We used focus group discussion with community and interviews with individuals at key positions (e.g. (deputy) heads of organizations, planners, and experts). First, we used a multi-level social network analyses to investigate how stakeholders harmonize food security and biodiversity governance. Second, using content analysis we analyzed the interviews for institutional and process governance challenges. Our results of social network analysis revealed that the governance of food security and biodiversity was strongly hierarchical. We found that horizontal interaction between stakeholders in different administrative levels were missing, and that interaction was linear to the immediate above or lower levels of administration. For the process dimension, we found that land governance processes were non-participatory. In addition, sectoral policy misfits, diverse and uncoordinated interest on the land use, a mismatch of land use policy with the local conditions and implementation capacity limitation were primarily hampering the land governance. We also found that there was a difference between the policy making levels and policy

implementation levels concerning the land use preference. Based on our findings we emphasize the following two issues for further consideration in the governance of land use. First, we stress that a governance structure supporting interactions across multiple layers of governance, and across jurisdictions, would likely improve land use governance. Second, there are mismatches in strategic land use preferences between policy-making stakeholders versus implementing stakeholders. To minimize such mismatches, land use policies should ensure stakeholder participation (both during policy design and implementation) and coordination between sectors (both at policy and implementation levels).

1. Introduction

Achieving food security, and biodiversity conservation are two of the most pressing global challenges especially in the Global South (Tscharntke et al. 2012). Coupled with the threats of human population growth and climate change, a harmonized achievement of these dual goals becomes more crucial than ever. A successful harmonization, however, strongly dependent on the effectiveness of land governance and a fair and sustainable distribution of resources (Brown, 2003). Traditionally, food security and biodiversity conservation have been governed through separate institutional arrangements, which led to poor outcomes in both (Tscharntke et al. 2012). Through implementing an integrated land governance, production and conservation, could be much more efficiently harmonized, that is possible trade-offs could be minimized and synergies maximized (Björklund et al. 2012; Brussaard et al. 2010). Governance, in this context, comprises both the structures (actors and their linkages in land governance for ensuring food security and biodiversity integration), and processes (process of rulemaking and enforcement) influencing food security and biodiversity conservation outcomes (Hill 2013; Mertens et al. 2015). For this purpose, we focus on the formal arrangements related to land governance, i.e. all structures and processes related to the introduction, implementation or monitoring of land use policies.

Understanding land governance is crucial because linkages between stakeholders lay the foundation for how different interests, policies and strategies on the land are integrated and implemented. For example, collective action, integration of diverse interests, sharing of knowledge and experience, effective interaction of stakeholders across governance levels, and appropriate implementation can all be fostered or hindered by existing governance structures (Berkes and Ross 2013; Candel 2014; Candel and Biesbroek 2016; Cumming 2016; Leventon and Antypas 2012). Thus, it is widely understood that governance structures that promote institutional fit with the local

condition (Bodin and Crona 2009), and that foster interactions of stakeholders across governance levels (Ostrom 2007) are beneficial. A stakeholder, in this context, is any governmental, non-governmental or community actors who affects or is affected by a decision (Freeman 1978; Lemos and Agrawal 2006).Similarly, a good understanding of current governance processes and challenges is key for navigating future improvements. For instance, poor coordination between stakeholders, lack of participation, and limited capacity for land policy enforcement are the main challenges in the governance of complex system (Kirschke and Newig, 2017).

Despite abundant literature on associating land governance with food security as well as biodiversity, to the best of our knowledge, no study has specifically addressed how existing land governance arrangements help or hinder the harmonization of food security and biodiversity. This is a major shortcoming because many countries of the Global South are biodiverse and food insecure at the same time.

The synergies or trade-offs between production and conservation are most pertinent in smallholder-dominated rural landscapes (Graeub et al. 2016). For that reason, we selected a case study area in the rural landscape of southwestern Ethiopia, which is characterized by a mosaic of different land-use types and subsistence farming. The selected landscape is part of the afro-montane forest region, an internationally recognized biodiversity hotspot. However, biodiversity is under pressure from forest clearing (Aerts et al. 2017), agricultural intensification (Eshete, 2013), and population growth (Facts of Oromia Region, 2012). Food security in southwestern Ethiopia is relatively high by national standards, but very low by international comparison and declining over time. In order to overcome these challenges and to harmonize food security and biodiversity conservation, we studied land governance structures and process in our case study area and identify points of improvement. Specifically, our study aimed to: (1) identify relevant

stakeholders and map their interactions in relation to food security and biodiversity conservation in a multi-level governance context; (2) examine governance challenges hindering the achievement of dual goals; (3) investigate stakeholder's preferences of land use strategies for future land governance.

2. Methodology

2.1. Background of the study area

The study was conducted in the Jimma zone in Oromia regional state, southwestern Ethiopia. The country has a federal governance system with nine regional states and two city administrations. Accordingly, the administration of the country has five tiers: the national or federal level, the regional states, the zones, the districts (or hereafter 'woredas'), and municipalities (or hereafter 'kebeles'). Jimma zone is one among the 18 zones found in Oromia regional state and it is located 350 km southwest of the capital Addis Abeba. The total population of Jimma zone is approximately 3.1 million people, and Smallholder farmers accounting for 89 % of the population (Oromia Bureau of Finance and Economic Development, 2012). Jimma zone is considered food secure in comparison with other parts of the country (Facts of Oromia region, 2012), but remains food insecure by international standards. Jimma zone is rich in biodiversity, with approximately half of its land covered in forest. however, biodiversity is declining due to various anthropogenic factors, largely emanating from competing land use strategy between sectors (Oromia Bureau of Finance and Economic Development, 2012).

2.2. Research design and data collection

A mixed methods approach, drawing on quantitative and qualitative data, was used to describe the structural (social network) and the process-related characteristics of governance. Within Jimma zone, we selected six kebeles from three woredas (Gumay, Gera, and Setema) along gradients of altitude and forest cover in order to cover a varying importance of different land use types. In terms of governance, our study considered a broad range of levels: six kebeles, three woredas, zonal, regional and national level of administration. Across these levels – from local to national – we sought to identify all important stakeholders involved in land governance relating to food security and biodiversity governance, and map their interactions.

Stakeholders were identified through a bottom-up snowball sampling starting at the kebele level. Snowball sampling usually starts from specific predefined stakeholders, levels or categories of stakeholders (Leventon et al., 2016; Reed et al., 2009). Here, kebele level stakeholders were identified through the help of local guides and administrators, to whom we had explained the scope of the project. First, we considered all stakeholders involved in the production, supply and utilization of food, the access to food and the agency dimensions of food security, as well as all stakeholders relevant for biodiversity management in farmland and forests. Then, we identified those stakeholders directly involved in land governance. Finally, we asked the stakeholders to respond to the following tasks: A) the identification and ranking of stakeholders they interact with both horizontally (at the same governance level), and vertically (at higher or lower levels); B) the description of challenges for the harmonization of food security an biodiversity conservation goals through land governance; C) their preference for land use strategies and associated limitation for their implementation.

Data were collected through focus group discussions and key informant interviews. Focus group discussions were held with local community groups and these four groups represented: the general community consisting of all segments of the community including age, gender, and wealth categories; a poor community group; a wealthy community group; and community leaders, respectively. Key informant interview were conducted with stakeholders other than the community groups, and the interview included (deputy) heads, planners and senior personnel's of governmental and non-governmental organization.

We analyzed the structural data through social network analysis technique using the statistical software R. We mapped the interactions of all stakeholders involved in the governance of food security and biodiversity sectors and examined the structural gaps. The qualitative data on governance challenges were collected from all identified stakeholders whereas the land use preference, were collected from 80 stakeholder interviews directly involved in land governance. The interviews were first transcribed based on audio recordings and field notes. Subsequently, we performed a qualitative content analysis using NVivo version 11. Governance challenges were derived applying an inductive coding approach and land use types were deductively classified into three categories: Land sparing, land sharing and mixed land use system. Land sparing describes a spatial segregation of areas used for intensive farming and areas strictly protected for biodiversity conservation. Land sharing, in turn, is a strategy that combines food production and biodiversity conservation on the same land thus providing lower levels of protection but also lower amounts of external inputs. A mixed land use strategy entails land use strategy which combines both the land sharing and land sparing in a mosaic of different land use types.

In-depth analysis for each of the three components (governance structure, governance process challenges and land use preferences in the harmonization of food security and biodiversity) will be published elsewhere.

3. Result

3.1. Structural collaboration in the land governance

Network node description

We mapped the structural linkages between stakeholders involved in the governance of food security and biodiversity. We identified 244 relevant stakeholders from local level to the national levels of administration. Of the 244 stakeholders, 174 (71%) were simultaneously involved in both food security and biodiversity governance; 56 (23%) had only food security links; 14 (6%) had only biodiversity links. From these 244 stakeholders, government actors accounted for 80%. Non-governmental organizations accounted for 9% and 6% of actors in the food security and biodiversity networks respectively, whereas community groups made up 11% and 14% of actors in the food security and biodiversity networks, respectively. Of the 244 stakeholders, 80 of them were directly involved in land policy decision and implementation.

Network link description

Looking at the stakeholders *links*, each actor had on average 20.3 (sd = 14.7) food links (i.e. interactions through food security related governance processes) and 10.4 (sd = 12.2) biodiversity links (i.e. interactions through processes related to biodiversity conservation). Of the 1884 collaborations in total, 944 (50%) were about food security only, 303 (16%) about biodiversity only, and 637 (34%) about both food security and biodiversity. Many of the food and biodiversity

links were reciprocated (i.e. had interactions in both directions). Seventy-two percent of the food security links and 51% of the biodiversity conservation links were reciprocated.

Overall, the governance structure of food security and biodiversity conservation was strongly hierarchical, exhibiting many vertical links between the five governance levels (Fig. 1). However, neither on the woreda nor on the kebele level we found horizontal links between stakeholders, despite the fact that these are geographically close neighbors. Moreover, there was virtually no reported direct interaction spanning two levels of governance, only ever to the same or the nearest level up or down the governance hierarchy (Fig. 1). For instance, there was no direct vertical interaction between woreda and region level stakeholders, or between zone and federal level stakeholders; the only exceptions being two non-governmental organization (Fig. 1).
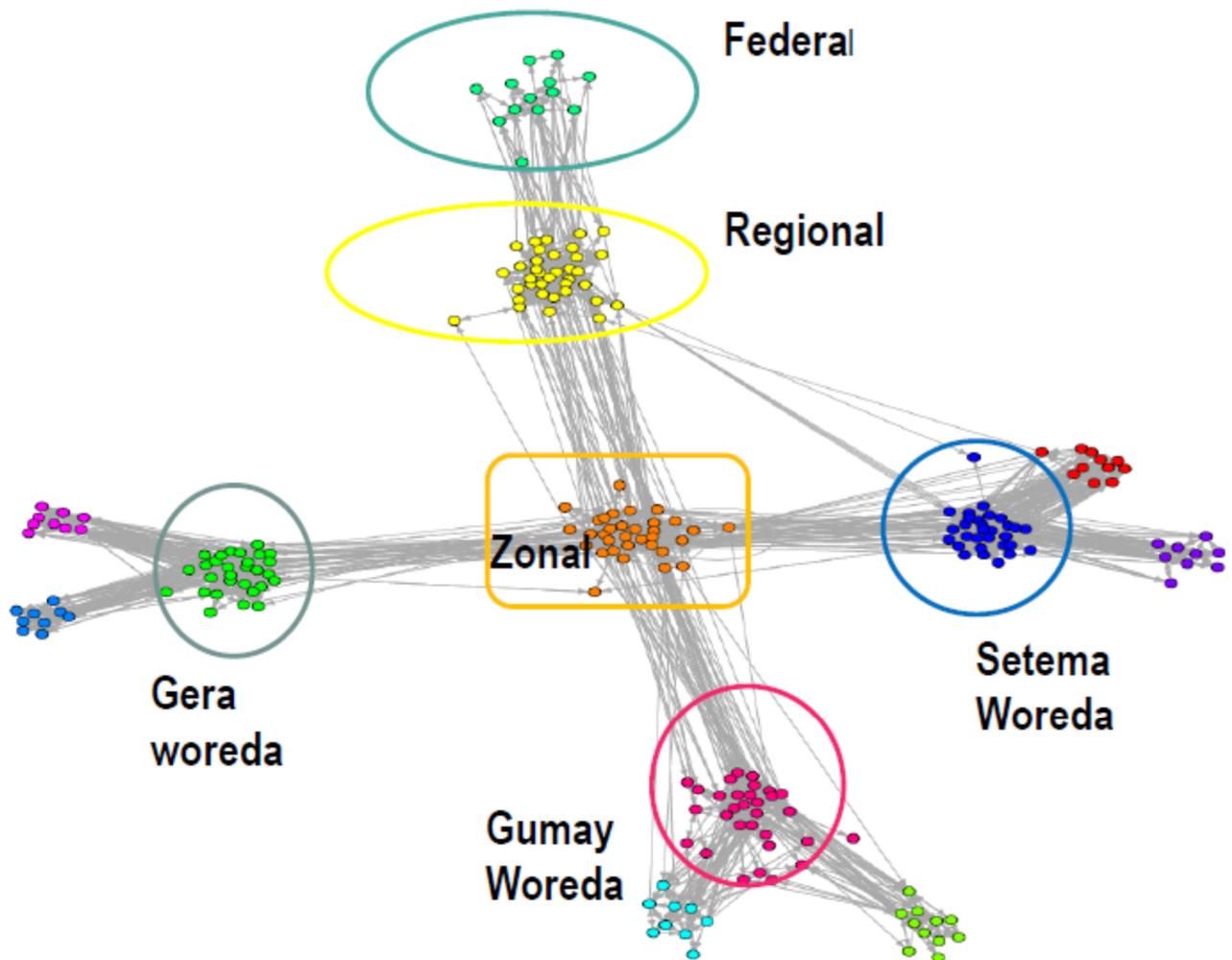
Fig. 1. Visualization of the stakeholders' network for the governance of food security and biodiversity conservation. Points represent different stakeholders and the connecting lines their interactions. The different colors reflect administrative units. The arrangement indicates a strongly hierarchical structure. Importantly stakeholders are linked only with other stakeholders within their administrative unit and within their governance level. For instance, horizontal links (e.g. between woredas, as well as between kebeles) are largely absent. Moreover, the vertical interaction usually only link to the next governance levels. For instance, stakeholders at woreda level usually don't interact with stakeholders at regional level.

3.2. Governance process challenges

We found six major types of challenges in the governance process that inhibit a successful integration of food security and biodiversity conservation in our area. These include (see Table.1): Lack of institutional fit (institutional overlap); contradictions between policies and mismatch with local condition (land use strategy); coordination gaps between and within sectors; limited capacity to reinforce policies at the local level; procedural challenges; and political traps.

 Table 1: Land governance process challenges in the harmonization of food security and biodiversity

Classification	Governance challenges
Institutional overlap	• High institutional/organizational density with overlapping responsibilities • Institutional inconsistency and frequent change related to land governance • Policy instability and its mismatch with the institution to implement the policy • Policy enforcement or implementation gaps • Misfit between land tenure and tenure-enforcing institutions • Structural segregation of stakeholders in the governance of land • Multiple accountability of implementation level actors. • Multiple decision sources over the land governance
Land use strategy	• Policy element contradictions with regard to land use governance • Farming system misfit with the land use plan and governance strategy
Coordination gaps	• Poor coordination of stakeholders both vertically across levels and horizontally between sectors on the same governance level • Missing or weak coordinating institutions on the land governance • Missing coordination of different land use priorities between stakeholders
Capacity challenges	• Land governance tasks versus implementers capacity mismatch • Low local capacity to implement land policy and land use plans
Procedural challenges	• Lack of participation in decision making • Procedural incompatibility of planning, monitoring, and evaluation with land governance goals
Political traps	• Unequal treatment and favoritism • Absence of merit based bureaucracy of stakeholders at the implementation level

3.3. Preference of land use by stakeholders

The preference regarding land use governance varied between stakeholders based on position, sector, and in the case of community members, wealth. Two key findings emerged. First, classifying the stakeholders according to policy-making (zone, region, federal level) versus implementation levels (woreda, kebele), we found that land sharing strategy was more popular at the implementation level, whereas land sparing and a mixture were preferred at the policy-making level. At the implementation level, 45% and 23% of stakeholders preferred land sharing and a mixed strategy, respectively (n = 62), whereas at the policy level, land sparing and mixed-land use strategies were preferred each by 39%, and land sharing was preferred by only 22% (n=18).

Second, a difference emerged at the community level between wealth categories. Poor community members unanimously preferred land sharing (100%, n=11 groups of poor people). Half of the rich community stakeholders, in contrast, preferred land sparing (50%), followed by a mixed land use strategy (33%, n=12).

4. Discussion

This study assessed structures and processes of land governance related to food security and biodiversity conservation in southwestern Ethiopia. With regard to the study area, the study produced three main findings: 1) The governance structure of food security and biodiversity was strongly hierarchical and this could lead to implementation deficits; 2) Main governance challenges for food security and biodiversity included problems emanating from institutional, governance process and capacity limitations for policy enforcement; 3) There were mismatches in understandings and strategic preferences of land use between policy-making stakeholders and

policy implementing stakeholders which reinforces implementation deficit. We will discuss our findings following the aims of our study.

4.1. Stakeholder network

Within this study we identified a large number of stakeholders that were involved in the governance of food security and biodiversity. While this large number of stakeholders can cause coordination problems, as we also showed, this risk is likely reduced by the high degree of homogeneity among stakeholders (most were governmental), and the high degrees of reciprocity

We found a strong hierarchical structure of interactions among stakeholders. A network perspective of governance suggests that both vertical and horizontal interactions among stakeholders enhance sustainability (Bajracharya 2008). Therefore we identify the lack of horizontal linkages, for example between the three geographically adjacent and ecologically connected woredas, as an important structural gap. Absence of such horizontal interactions can hamper the integration of interdependent goals, and can contribute to ecological fragmentation, impede collective action, and block collective learning. It has, for example, been shown that cross-boundary governance of natural resources is critical for coordination, collective action, and minimizing possible conflicts and tradeoffs (Bergsten et.al. 2014; Berkes and Seixas 2008).

Similarly to horizontal cross-boundary interaction, effective governance of food security and biodiversity requires coordination of stakeholders across levels, from policy making at higher levels to the implementation at lower levels. Such interactions were missing in southwestern Ethiopia, with stakeholders only interacting with others at the same level or the level immediately above or below. This hinders communication and learning between policy and implementation, because there is no direct interaction of policy makers and implementers. Indeed, communication

between policy makers and implementers is widely regarded as critical because it ensures that local contexts are adequately accounted for (Seed et al., 2013; Bastian and Coveney, 2012; Koc et al., 2008).

In addition to a lack of communication between policy and implementation, the observed structure could also result in an implementation deficit, created by a discrepancy between the intent of a given policy and its actual on-ground implementation (Leventon and Antypas 2012). Especially for the integration of food security and biodiversity conservation, the translation of policies into practice through a proper implementation process is crucial (Esa 2011; Hailemariam, Soromessa, and Teketay 2016).

4.2. Governance challenges

Our study identified main challenges for the harmonization of food security and biodiversity conservation. These included limitations in capacity, coordination, communication as well as procedural shortcomings. Importantly, these governance challenges reinforce each other, for instance, the lack of participation of stakeholders in land governance decision making can lead to capacity challenges. Similar governance challenges were found in Europe (Kirschke and Newig, 2017)

An institutional overlap for instance can lead to integration problems through creating redundancy, lacunae or incoherence – that is, for example, stakeholders might have overlapping responsibilities, simultaneously neglect important tasks or pursue contradictory priorities instead of being motivated by the same general goal (Peter, 1998). Similarly, the absence of coordination between stakeholders can hamper collective action, lead to land policy incoherence and competition rather than collaboration (Carlsson and Sandström 2007; Torquebiau 2012). At the local level, these

coordination misfit could be caused by: A) a weak capacity of coordinating institutions such as agricultural development partnership and linkages advisory council (ADPLAC); or B) the fact that stakeholders evaluation is based on individual plan achievement, and not how integrated with other stakeholders of the same sector; or C) the lack of a coordination and integration plans for all levels of governance. These problems often occur in hierarchical governance systems in which single stakeholders are bound towards their respective goals without considering the impact on the other stakeholders. Clearly, a lack of coordination between stakeholders in such situations can hamper the successful implementation of policies (Björklund et al. 2012).

4.3. Stakeholder preferences for land use

We showed that stakeholders involved in the governance of land use differed in their views of how to best harmonize food security and biodiversity conservation. We found that land use strategies were influenced by interests diverging across governance levels and sectors. At the local level, we found an important difference between poor and rich farmers. Poor farmers clearly preferred land sharing, whereas rich farmers – who are able to afford agrochemicals and often produce surplus for markets – more often favoured land sparing. Consistent with our findings, a study conducted in the Philippines also found that poor farmers dispersed risk through land sharing (Dressler et al., 2016). These findings suggest that, instead of imposing technocratic solutions, land use strategies should match local conditions.

We also revealed a disparity between policy-making and implementation level stakeholders, with a relatively greater preference for land sparing at policy-making levels. This difference may be explained by the existing institutional context. Aspects of land sparing are enshrined in various formal institutions such as government policy, plans and strategies (e.g. MoFED, 2003, 2010) whereas local institutions have traditionally favored land sharing. In contrast to the policy scale,

the choice of land sharing is often favored in a context of local experience. For instance, an empirical study in the Philippines (Dressler et al., 2016) found that land sharing was supported by the local community, partly because it yielded sustainable outcomes in both social and ecological terms. The existing discourse thus causes two main misfits: (1) an incompatibility of policies with local conditions and preferences (Leventon & Antypas, 2012; Hailemariam et al., 2016), and (2) various implementation misfits created through a gap between policy content and on-ground realities (Leventon & Antypas, 2012; see also Hailemariam et al., 2016). Thus, social as well as institutional dimensions, including local preferences need to be integral parts of land use policy (see also Fischer et al., 2014; Kremen, 2015).

Based on our findings we stress the following two issues for further consideration in the governance of land use. First, we stress that a governance structure supporting interactions across multiple layers of governance, and across jurisdictions, would likely improve land use governance. Fostering such interactions would integrate diverse interests, improve coordination across governance levels, and promote land policy and strategy coherence. Second, there are mismatches in strategic land use preferences between policy-making stakeholders and versus implementing stakeholders. To minimize such mismatches, land use policies should ensure stakeholder participation and coordination between sectors.

5. Acknowledgments

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