Enabling Policy and Institutional Environment for Scaling-Up Sustainable Land Management in Central Highlands of Ethiopia

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Abstract

An effective policy and institutional environment is crucial to speed-up the scaling-up of Sustainable Land Management (SLM). However, many limitations at institutional level currently hinder the spreading and effectiveness of SLM efforts. The central aim of this study was to analyse the policy and institutional environment that was relevant for the process of scaling-up SLM in the central highlands of Ethiopia. The qualitative data were generated through interviews with key informants and reviews of relevant policy documents. The results indicated that the limitations for institutions at the national, regional and local level related to policy formulation and implementation, institutional capacity and collaboration. The study concluded that changes at the policy and institutional level were urgently required to speed-up the scaling-up of SLM practices. Hence, the government of Ethiopia and other development actors should invest more in creating supportive policies, building the institutional capacity, and consolidating institutional collaboration and networking. These are crucial to tackle land degradation and improve food security in the country.

Keywords: Mass mobilization, integrated approach, institutional capacity, institutional collaboration, policy instruments, content analysis

1. Introduction

In Ethiopia, various Sustainable Land Management (SLM) practices have been implemented by government agencies in collaboration with consortia

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of donors on farms and community lands over the last decades. Particularly, SLM, through improved soil and water conservation, has been a key strategy to increase agricultural production and achieve food security in Ethiopia (MoARD, 2010; Chilot *et al.,* 2014; Snyder *et al.,* 2014). In the successive Growth and Transformation Plans of Ethiopia (GTP I: covering 2010 – 2015, and GTP II: covering 2016–2020), SLM practices have received special attention and are expected to be implemented through community mass mobilization campaigns (Akalu *et al.*, 2016; Gerba *et al.*, 2018). Mass mobilization is a strategy pursued to mobilize all farmers living in a particular watershed with the purpose of implementing SLM activities (Daniel, 2010). Although aimed at scaling-up SLM practices (Betru *et al.*, 2015), the mass mobilization approach has only partially achieved this objective and brought limited benefits to farmers (Ludi *et al.*, 2013; Kebede, 2015). Nevertheless, scaling-up of SLM practices to achieve more benefits to farmers remains a major challenge, and success has been limited to date.

Previous studies have shown that several political and institutional factors limit the effectiveness of the mass mobilization approach for this purpose. For instance, Gete et al. (2006) indicated important constraints such as a lack of awareness among policymakers about the extent and impacts of land degradation, limited availability and poor sharing of information on SLM, and institutional instability. Similarly, Chilot *et al.* (2014) and *Betru et al.* (2015) indicated that poor collaboration and coordination among key stakeholders, a top-down approach in planning and implementation and a limited capacity among implementing staff hindered scaling-up SLM practices. Other factors mentioned were a lack of enforcement of laws and policies, of empowering farmers to solve their own problems, and of regular follow-up and monitoring (SOURCE). Furthermore, inadequate attention given to locally available knowledge and social networks, and weak linkages between stakeholders in spreading SLM technology, were mentioned as well (Ludi *et al.,* 2013; Mulema *et al.*, 2017; Adenew *et al.*, 2018; Zerihun *et al.*, 2018). Finally, the absence of an adequate enabling policy and institutional environment to shape farmers' actions, either individually or collectively, and to increase their capacity to invest in SLM

practices was hindering the effective implementation and scaling-up of SLM in Ethiopia (Zenebe *et al.* 2016).

Given the importance of creating such an enabling environment (Franzel *et al.*, 2004; Tukahirwa *et al.*, 2013b; Kessler *et al.*, 2016), this study aims to further the knowledge on the limitations at institutional and policy level in Ethiopia. The study starts by analysing the existing institutional and policy environment with respect to the implementation of SLM in the Central Highlands of Ethiopia and then reviews the way this environment would need to change to facilitate scaling-up SLM using the mass mobilization approach. Hereby we distinguish between three institutional levels (local, regional and national), in order to help understand where to start when aiming for more sustainable and large-scale impact. The main research question is therefore: "What changes are required in the policy and institutional environment of Ethiopia to enable the scaling-up of SLM practices using the mass mobilization approach?"

2. Overview of Policies and Institutional Arrangements for SLM in Ethiopia

The Government of Ethiopia has developed a wide range of policies, strategies, legal frameworks and proclamations to address environmental problems, and hence, to support the promotion and implementation of SLM practices in recent years. For instance, the environmental policy of Ethiopia, approved in 1997, aims to "promote the sustainable social and economic development of the country through the conservation and sustainable utilization of the natural resources and the environment at large" (EPA and MEDC, 1997). Similarly, the Rural Development Policy and Strategies of Ethiopia target to ensure sustainable agricultural development through appropriate use and management of agricultural land productivity by addressing natural resource depletion and encouraging different conservation and rehabilitation mechanism (MoFED, 2003). There is also a policy provision in Ethiopia that places responsibilities and obligations on the community to manage their land (FDRE, 2005). Table 1 shows the major policies, strategies, proclamations and legal frameworks important for SLM.

Table 1. Policies, strategies, proclamations and frameworks focusing on SLM in Ethiopia

Type	Description	Source
Policy/strategy		
Environmental Policy of Ethiopia	• It aims to improve the health and quality of life, and promote the sustainable social and economic development of the country through the conservation and sustainable utilization of the natural resources and the environment at large. • The policy involves a wide range of sectoral and cross-sectoral policies and strategies to attain its objective.	• (EPA and MEDC, 1997)
Rural Development Policy and Strategy	• It intends to ensure sustainable agricultural development through proper management and utilisation of natural resources.	• (MoFED, 2003)
Disaster Risk Management Policy	• It aims to reduce disaster risks and potential damage through establishing comprehensive disaster risk management activities giving special attention to natural resource conservation. • It provides an integrated framework for disaster risk management in the context of sustainable development	• (FDRE, 2013)
Proclamation		
The Federal Rural Land Administration and Use Proclamation	• It places the responsibility and obligation to maintain the land on the community. • The proclamation 465/2005 states that "A land user will not have the right to use the land if he fails to apply conservation measures on the land or lets the land to degrade and loose its productivity"	• (FDRE, 2005)
Frameworks		
The Ethiopian Strategic Investment Framework for SLM	• It aims to improve the livelihood and economic well-being of the country's populations by scaling-up SLM practices with proven potential to restore, sustain and enhance the productivity of farm lands. • It guides the prioritization, planning and implementation of current and future investments in SLM.	• (MoARD, 2010)

In order to put these policies and strategies into practice, different institutions have been established at the national, regional and local level (Belachew and Berihun, 2017). The institutional arrangements and organizational structures responsible for the implementation of SLM are created in line with the decentralization and regionalization policy of the Ethiopian government (Nigussie *et al.*, 2012; MoA, 2014). To this end, a multi-sectoral institutional arrangement has been established at national, regional and local levels to support the scaling-up of SLM through the mass mobilization approach (Daniel, 2010; Nigussie *et al*., 2012; Kebede, 2015; Akalu *et al*., 2016).

The national institutions include government organizations working at the federal level. These institutions are responsible for formulating the policies and strategies related to land management, strengthening the capacity of the regional and local level institutions, developing extension strategies, providing financial support to strengthen the capacity of the regional and local level institutions, planning SLM activities, and facilitating monitoring and evaluation of implemented practices at the national level (MoA, 2014). The Ministry of Agriculture and Natural Resources plays a leading role in the coordination of SLM activities at national level (MoARD, 2010; Nigussie *et al*., 2012; Tsega *et al*., 2018). Regional level institutions (in our case in the Oromia region) support the mass mobilization through building the capacity of local level institutions, providing material and financial support, facilitating the technical and practical training manuals, planning SLM at the regional level and facilitating the monitoring and evaluation of the local level implementation of SLM (MoA, 2014). The regional Bureaus of Agriculture and Natural Resources are responsible for the coordination of SLM activities.

Local institutions include organizations working at the *wereda* (similar to district, an official administrative unit) and *kebele* (similar to ward, the lowest official administrative unit) level (Figure 1). These institutions support scaling-up SLM practices through selecting watersheds, mobilizing the community resources (labour), organizing farmers in groups, providing training, technical support and working materials, assisting in planning and implementing SLM practices, and monitoring activities at the watershed

level (Nigussie *et al*., 2012; Kebede, 2015; Belachew and Berihun, 2017). At the local administrative level, the *wereda* Agriculture and Natural Resource Offices are responsible for coordinating and organizing the planning and implementation of SLM (Nigussie *et al*., 2012). The farmers' development groups (comprising 20 to 30 members) are key actors at local level. Through these farmers' development groups, farmers are working together to achieve better results and foster the scaling-up of SLM (Tukahirwa *et al.*, 2013b; Chilot *et al*., 2014). Through the creation of 'one-for-five' groups (groups of five farmers living and working in the same area with one farmer leading the group) (Akalu *et al*., 2016; Zerihun *et al*., 2018), these farmers' development groups are crucial in transferring the knowledge on SLM practices among farmers (Daniel, 2010; Snyder *et al.*, 2014; Tsega *et al.*, 2018).

3. Theoretical and Conceptual Frameworks

3.1. Theoretical Framework

Institutions are "the rules of the game in a society, or more formally, humanly formulated constraints that shape the social and individual interactions and behaviour" (North, 1990). Similarly, Ostrom (1992) defines institutions as the set of rules actually used (the working rules or rules in use) by a group of individuals to organize actions that produce sustainable outcomes affecting those individuals and others. Working rules are those rules actually used, monitored and enforced when individuals make their own or collective choices (Ostrom, 1992). Such rules can be formal (e.g. laws, policies and regulations) and informal (e.g. behavioural norms) (Imperial, 1999). Hence, both formal and informal institutions exist and both play an important role in shaping the management of natural resources and in providing the norms and values that support policy decisions and management practices related to SLM (Hillman and Howitt, 2008; Maconachie *et al.*, 2008; Pahl-Wostl, 2009). Analysing formal and informal institutions is important when trying to understand why everyday social activities are organized in a particular way, because paying attention only to formal institutions fail to comprehend daily reality.

In institutional theory, institutional collaboration, i.e. understanding the collaborative relationships between and among different institutions and with their environment, involves institutionalizing some form of structure and organizing shared and individualized responsibilities among the different institutions involved (Wood and Gray, 1991a). In particular, the process of collaboration and the ongoing relationships between and among the organizations and their environment are crucial (Wood and Gray, 1991b). This process involves institutionalizing some form of structure and exercising shared responsibility among the organizations (Wood and Gray, 1991b; Phillips *et al.*, 2000). Institutional collaboration is crucial for successful implementation and scaling-up of SLM (Kessler, 2008) because it facilitates mobilization of resources such as labour, materials, finances and information, and advances their effective implementation (Zenebe *et al*., 2013). In the case of SLM, institutional collaboration entails the harmonization between multiple activities that could not be achieved when each institution would work independently (Zenebe *et al*., 2013). However, collaboration is difficult when sharing of information and responsibility is lacking, or when large groups of members collaborate (North, 1990; Wood and Gray, 1991b; Kessler, 2008). 1000503752038

Moreover, to be effective in contributing to the scaling-up of SLM, institutions need to have the required capacity. Institutional capacity refers to the effectiveness and efficiency of formal institutions in implementing their goals (Pahl-Wostl, 2009). The institutional capacity for scaling-up SLM relates to knowledge of staff on SLM in terms of effective practices and costs and benefits, and to the human and material resources available for implementing the assigned tasks (Hillman and Howitt, 2008). Policies are important, but it is critical as well to analyse how they are implemented in practice. In this study, we analyse the policies and institutions relevant for the planning, implementation and scaling-up of SLM, to determine by what formal rules (laws, policies, regulations) and informal rules (behavioural, social and cultural norms) they are guided.

Furthermore, selecting the correct policy instruments during the process of policy formulation and implementation is also critical (Roseland, 2000; Borrás and Edquist, 2013). Such a selection should be based on the

effectiveness of the policy instrument, its monitoring and enforcement capacity, as well as its dissemination effect and conformity with other policies and political preferences (Shiferaw and Holden, 2000). Policy instruments are required to institutionalize SLM at the grassroots level. Fostering collective action is important for scaling-up SLM practices and developing farmer level institutional capacity to engage in landscape level decision making (Tukahirwa *et al.*, 2013a). A wide variety of possible policy instruments are available and can be categorized as regulatory, economic and voluntary instruments (Bekele Shiferaw and Holden, 2000; Roseland, 2000; Pregernig, 2001; Cocklin *et al.*, 2007). Regulatory policy tools are generally government-initiated legal instruments (e.g. laws, regulations and bylaws) and use a command-and-control approach, which means that they prescribe a particular behaviour and use legal instruments (fines, etc.) to secure their implementation ('sticks'). Economic policy instruments make use of monetary incentives, such as subsidies and tax reductions to encourage a particular behaviour ('carrots'). Voluntary instruments (also called informative policy instruments) involve training, exchange of information and persuasion ('sermons') (Pregernig, 2001; Cocklin *et al.*, 2007; Borrás and Edquist, 2013). Over time, many countries have witnessed a shift in the use of these different categories away from regulatory (command-and-control) towards the use of economic and voluntary instruments. In this study, we use this differentiation in policy instruments to assess whether the same trend is also occurring in Ethiopia with respect to the scaling-up of SLM. It may be expected that the use of economic and voluntary instruments in policy and institutional environment offer better opportunities to engage farmers actively in this process.

3.2. Conceptual Framework

Figure 1 presents the conceptual framework that underpins this study. The framework is developed giving insights on the enabling environment for horizontal scaling-up, the key-stakeholders (institutions) involved in the scaling-up process, and their roles and responsibilities at different institutional and organizational levels. An enabling environment involves a combination of interrelated political, institutional, financial, economic and environmental conditions (Akhtar-Schuster *et al.*, 2011; Amjad *et al.*, 2015).

In the context of this study, an enabling environment consists of the political and institutional conditions that encourage more farmers to invest in SLM practices and speed-up the scaling-up of SLM practices over a wider geographical area. Vertical and horizontal scaling-up are used to explain the scaling-up process. Horizontal scaling-up involves the geographical spreading of SLM practices to reach large numbers of farmers, whereas vertical scaling-up involves the coordination between different institutional levels and policy departments to establish a coherent and conducive environment (IIRR, 2000; Gündel *et al.*, 2001; Franzel *et al.*, 2004; Akhtar-Schuster *et al.*, 2011). In this study, the enabling environment is differentiated into three institutional levels (local, regional and national) to help understand the role and responsibilities of the institutional hierarchy for the horizontal spreading of SLM practices (Figure 1).

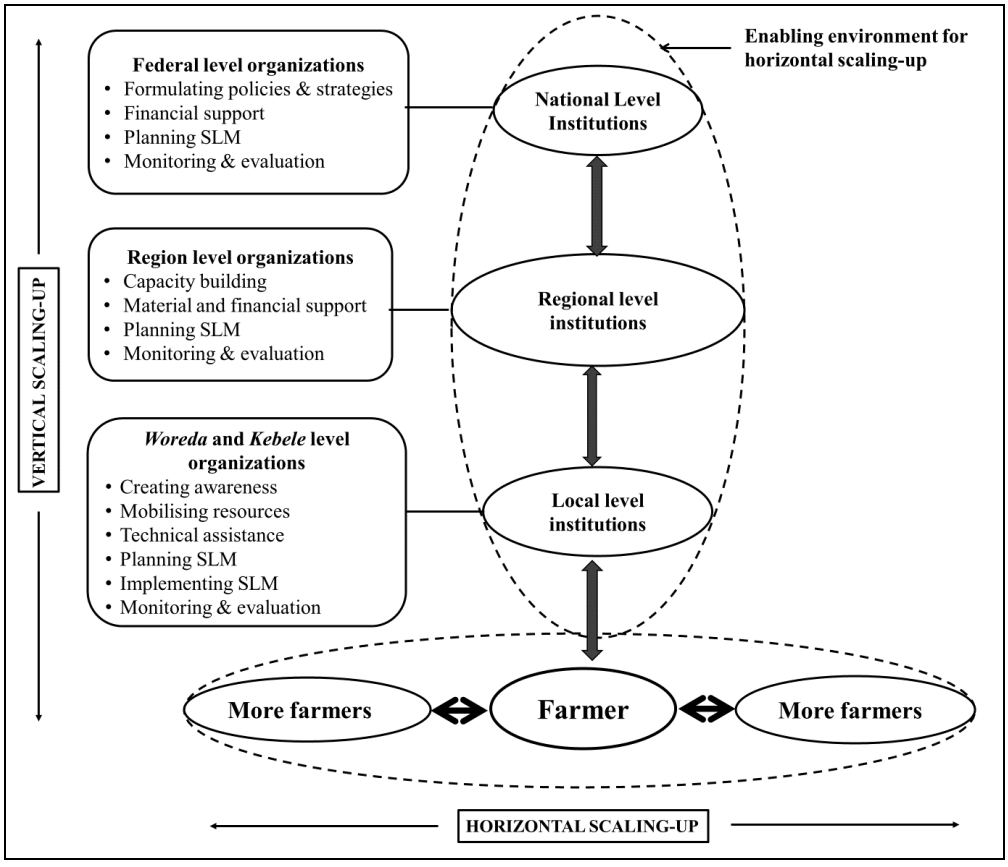

Figure 1. Conceptual framework of the enabling environment for the horizontal and vertical scaling-up of SLM considering three institutional levels in Ethiopia (adapted from IIRR, 2000 and Gündel *et al.*, 2001).

4. Methodology

4.1. Study Context

This study builds on previous research in the Sago-kara watershed, Central Highlands of Ethiopia (Meskerem *et al.*, 2019). The watershed is located in Torban-Ashe *kebele* of Girar Jarso *woreda and* covers about 355 hectares of land with about 340 households and has a highly dissected and hilly topography. The primary economic activity of the farmers in the watershed is mixed agriculture consisting of crop and livestock production. This agricultural production is mainly rain fed, and severely affected by soil erosion, low soil fertility, lack of vegetation cover and poor farm

management practices (Degefa *et al.*, 2015). In order to tackle these problems, like elsewhere in the highlands of Ethiopia, SLM technologies such as bunds, terraces, soil moisture harvesting structures and tree planting have been implemented through the mass mobilization approach. Despite the implementation of these technologies, land degradation persists and continues to be a serious problem in the watershed undermining the production capacity of farmers.

4.2. Methods of Data Collection

Interviews with policy makers and implementers at the three institutional levels were carried out to assess the policy and institutional environment for scaling-up SLM through the mass mobilization approach. It was presumed that there were divergent views among policy makers and implementers with respect to planning and implementation of SLM practices. Hence, we selected 30 key informants (five from national level institutions, eight from regional level institutions, and 17 from local level institutions). Table 2 presents an overview of the interviewed informants and the institution they represented.

Table 2. Description of key informants from different institutional level

Level	**Description**	**Sample size**
National	Representative from Ministry of Agriculture and Natural resource	1
	Representative from Ministry of Finance and Economic Development	1
	Representative from Ministry of Livestock and Fishery	1
	Representative from Federal Rural Land Administration and Utilization	1
	Representative from the National Sustainable Land Management program	1
Regional	Representative from Oromia Bureau of Finance and Economic Development	1
	Representative from Oromia Bureau of Agriculture and Natural Resource	1
	Representative from Oromia Bureau of Livestock and Fishery	1
	Representative from Oromia Bureau of Rural Land Administration and Utilization	1
	Experts from Oromia Bureau of Agriculture and Natural	2

	Resource	
	Experts from Oromia Bureau of Livestock and Fishery	1
	Coordinator of the Oromia region Sustainable Land Management program	1
Local	Official from Girar Jarso *woreda* Administration	1
	Official from Girar Jarso *woreda* Finance and Economic Development Office	1
	Official from Girar Jarso *woreda* Agriculture and Natural Resource Office	1
	Official from Girar Jarso woreda Livestock and Fishery Office	1
	Official from Girar Jarso *woreda* Land Use and Administration Office	1
	Experts from Girar Jarso *woreda* Agriculture and Natural Resource Office	2
	Expert from Girar Jarso woreda Livestock and Fishery Office	1
	Expert from Girar Jarso *woreda* Land Use and Administration Office	1
	Torban-Ashe *kebele* Administrator	1
	Development Agents from Torban-Ashe *kebele*	3
	Representative from Sago-Kara watershed management committee	1
	Representatives from farmers development groups in the Sago-Kara watershed	3
Total sample size		**30**

These interviewees were selected based on their position in the institutions at the time of the interview. Representatives from the higher-level institutions (national and regional) were selected based on their experience with SLM. Interviews were carried out between April and May 2017 using an open-ended interview method to allow for in-depth engagement with their particular professional capacity. Our questions focused on three core issues: (1) institutional capacity: existing and required knowledge of SLM and scaling-up at all institutional levels, (2) institutional collaboration and arrangements: how different actors are involved in scaling-up of SLM practices, and (3) the process of policy formulation and implementation. Based on these three core issues, all informants were asked to identify, in their perspective, the most important limitations and opportunities for the national, regional and local institutions for scaling-up SLM.

4.3. Methods of Data Analysis

Qualitative content analysis was used to analyse the data from the interviews and document reviews. This method is considered most appropriate to analyse qualitative data for institutional analysis (Mwangi & Bettencourt, 2017; Liao, 2018; Zerihun *et al.*, 2018).

5. Results and Discussion

This section is divided into three subsections. The first subsection explains the most important limitations at the three institutional levels for scaling-up SLM through the mass mobilization approach, as perceived by the key informants. The second subsection discusses the policy and institutional changes required to speed-up the scaling-up process and to make the mass mobilization approach more effective. The third subsection discusses changes required at policy and institutional levels to build an enabling environment to speed-up the scaling-up process.

5.1. Limitations for Scaling-up SLM Practices

5.1.1. National level

a) Limited knowledge on SLM among decision-makers

This study found a lack of knowledge on SLM practices among decision-makers at the national level institutions. From the five informants interviewed at this level, only two responded correctly when asked to explain SLM and its benefits. Most informants related SLM with a particular type of soil conservation measures such as bunds and planting trees, mainly useful to reduce soil erosion. However, SLM is broader and includes multiple technologies suitable for the improvement or maintenance of the productive capacity of agricultural land such as soil conservation, soil fertility management, conservation agriculture and irrigation development (Dumanski and Peiretti, 2013). Besides, the Ministry of Agriculture has documented SLM technologies and approaches (both recently introduced and traditional) applied in Ethiopia (Daniel, 2010) that are also accessible to decision-makers involved in SLM decision-making. However, most interviewees were not aware of this, which limited their ability to make informed decisions with respect to scaling-up SLM practices. From this

result, we conclude that the emphasis put on the implementation of physical soil conservation measures through the mass mobilization approach is due to the limited knowledge on SLM among decision-makers.

b) Poor coordination and integration between and among sectors in scaling-up SLM

The government of Ethiopia has established a multi-sectoral institutional arrangement to coordinate and implement SLM activities through mass mobilization (Kebede, 2015; Akalu *et al*., 2016). However, the interview results showed that the coordination and integration between the different sectors (e.g. agriculture, livestock, finance and land administration) with respect to SLM were not very effective. This poor coordination and integration seem to be due to each sector following a 'disciplinary' approach, whereas, the implementation and scaling-up of SLM require a more interdisciplinary and integrated approach (Gete *et al*., 2006). Snyder *et al.* (2014) and Belachew and Berihun (2017) also report that coordination between the government agencies for natural resource management in Ethiopia does not exist. This makes it difficult to integrate different sources of knowledge and exchange information on scaling-up of SLM practices. Likewise, the lack of coordination hinders the sharing of responsibilities, which, in turn, causes duplication of efforts and conflicting approaches when implementing and scaling-up SLM practices (Betru *et al*., 2015).

c) Use of a top-down policy formulation and implementation approach by decision-makers

Despite policy documents claiming that the current natural resource conservation strategy in Ethiopia follows a bottom-up approach, in practice the process of policy formulation and implementation for SLM is still primarily top-down (Cullen *et al.*, 2014; Adenew *et al*, 2018). This was recognized by the key informants at national level involved in this study, given that a majority of them identified the use of a top-down approach to policy formulation and implementation as a limitation for the national level institutions to engage in scaling-up SLM practices. They also recognized that such top-down approaches hindered achieving more sustainable impacts in enhancing food security and improving natural resource management. This result is in line with Weldeamlak (2007), Snyder *et al.* (2014), and

Mulema *et al.* (2017) who reported that soil and water conservation planning and implementation policies in Ethiopia followed a conventional top-down approach.

5.1.2. Regional level

a) Poor communication and learning between local farmers and professionals

Regular communication between key stakeholders and common learning activities are important in sharing knowledge and building capacity to effectively implement and scale-up SLM (Gündel *et al.*, 2001; Franzel *et al.*, 2004; Carter & Currie-Alder, 2006). However, the majority of our key informants at the regional level confirmed that communication was poor and that learning between farmers and professionals was lacking. Poor communication limits the flow of information and learning between the regional and local level institutions. Consistently, Gete *et al*., (2006) indicated that the lack of a suitable forum in Ethiopia to share information and communication hindered the scaling-up process.

b) Use of a top-down planning and monitoring approach of SLM

Similar to the national level, interview results showed that a top-down planning and monitoring approach to technical assistance was common also at the regional level. The Oromia Bureau of Agriculture facilitated the development of training materials and manuals before the commencement of the mass mobilization. Skills training provided to officials and extension workers and farmers at the local level relied on these materials and manuals (Gerba *et al.*, 2018). Similarly, plans for scaling-up SLM practices are developed at the regional level, based on the records of previous year's achievements (from the *wereda* reports). For instance, *Kebele* DAs explained, "We prepare our kebele plan every other year. But, we implement what is already planned at the Oromia Bureau of Agriculture and Natural Resource*"*. This indicates that the process of planning SLM activities still follows a top-down approach, without involving farmers and considering the reality at the local level.

5.1.3. Local level

a) ***Limited capacity of extension workers and officials to transfer knowledge on SLM:*** Despite the increased commitment by the Ethiopian government to build the capacity of extension workers and officials to support natural resource conservation activities (Belachew and Berihun, 2017; Gerba *et al*., 2018), the majority of our informants observed that the capacity of extension workers and officials to transfer knowledge about planning and implementing SLM practices to farmers was still limited. For instance, a key informant from the *kebele* administration noted, "*Though training on soil and water conservation is given every other year, increasing knowledge of farmers on how to plan and implement SLM practices on their own fields is lacking*". This is because the limited capacity in terms of skills, workforce, budget, equipment and facilities makes it difficult to provide adequate support (e.g. technical advice), and transfer knowledge on available SLM technologies to farmers. Knowledge on SLM implies more than an understanding of SLM practices alone, and also involves how to implement such practices and what (related to the benefits for farmers) these can achieve when implemented in the field (Meijer *et al.*, 2015).

b) ***Staff turnover:*** Staff turnover, the replacement of trained and professional staff working on SLM activities by new staff (Zenebe *et al*., 2013), is high at the local level. The majority of our informants responded that this was an important limitation for local level institutions with respect to the scaling-up of SLM practices. High staff turnover results in a shortage of qualified staff (with the necessary scientific and technical knowledge and familiar with the local context), which, in turn, limits the transfer of knowledge on SLM practices and the regular supervision and monitoring of implemented practices. Likewise, high staff turnover undermines the coordination and facilitation of the scaling-up process at the local level.

c) ***Limited use of existing social networks in the scaling-up process:*** The majority of our informants identified that the use of existing networks such as farmer groups and community-based organizations when aiming for scaling-up SLM is limited. Explaining how the existing social networks were not well involved in this process, a key informant from a local

institution responded, *"although development groups were formed to share experiences about their farming practices, learn from each other and take collective action in soil conservation activities, they rather serve to fine farmers and resolve conflicts that arise in the community".* However, social networks may be very effective in improving the flow of information (e.g. about new technologies and their benefits) in a community (Tesfamicheal *et al*., 2013). According to Tukahirwa *et al.* (2013a), social networks at the local level are crucial to share information between farmers and transfer knowledge on SLM practices. This was also observed in a previous study in the Girar Jarso *wereda* (Meskerem *et al.*, 2018b), where we found that farmers who spontaneously implemented stone bunds on their farmlands learned this mainly from their neighbouring farmers (through their social networks).

d) ***Lack of considering farmers' knowledge and priority needs when planning SLM practices:*** The results showed that farmers' indigenous knowledge and their priorities were generally not considered during the planning phase of SLM activities. A possible explanation is that a top-down SLM planning and implementation approach still persists at the local institutional level as well, and that farmers are not involved in the decision-making process.

When clarifying how the current planning method of scaling-up SLM overlooked farmers, a farmer group representative explained, "*Every other year, farmers are mobilized to contribute labour to construct bunds and plant trees in the already identified watershed, but they rarely participate in the selection of the watershed and technologies implemented".* A limited participation of farmers in planning SLM practices affects their sense of ownership of the implemented technologies (Ludi *et al.*, 2013; Adenew *et al*., 2018). The lack of farmers' involvement in the planning of SLM activities has important implications for the maintenance of implemented SLM technologies and observe the benefits of these technologies in the field. In a recent study conducted in the Central Highlands of Ethiopia, Meskerem *et al.* (2018b) reported that stone bunds implemented through mass mobilization were not well-maintained, and that some of them were broken or even destroyed.

Despite the perceived limitations with respect to scaling-up SLM practices through the mass mobilization approach as presented above, there are different opportunities for more effective implementation and scaling-up in the central highlands of Ethiopia.

- First, the existence of environmental policies and strategies in the country is a key opportunity to improve policy formulation and implementation on SLM. The national environmental policy promotes the active participation of all concerned stakeholders during the planning, implementation and monitoring stages of SLM practices (EPA and MEDC, 1997).
- Second, the national strategic planning framework offers an opportunity for scaling-up (MoARD, 2010). The framework sets out a strategy for scaling-up SLM practices, guides the prioritization, planning and implementation of current and future investments in SLM, and advocates for coordination of efforts and harmonization of approaches.
- Third, the existing structure of public institutions offers the opportunity to foster institutional collaboration for scaling-up. For instance, the organizational set-up of the Ministry of Agriculture and Natural Resources, from the federal to local level, has the potential of implementing and scaling-up SLM in different parts of the country (Gete *et al*., 2006; MoA, 2014).
- Fourth, SLM steering committees and technical committees at all institutional levels are an opportunity for networking and building institutional collaboration over larger areas. They bring together different stakeholders and actors to exchange knowledge, increase flow of information and expertise, develop joint action to bring about change, and mobilize resources and capacity for scaling-up SLM practices (Chilot *et al*., 2014; Cullen *et al.*, 2014).
- Fifth and finally, available experiences on a more integrated watershed management provide an opportunity for scaling-up SLM through mass mobilization approach in Ethiopia. Our previous study in the Sago-Kara watershed (Meskerem *et al.*, 2019) indicated that with rather small changes, such as an adapted training at the start of a mass mobilization

campaign in a watershed, farmers' knowledge and awareness about natural resource management could be quickly enhanced. The key issue here is to pay more specific attention to awareness creation, the generation of intrinsic motivation of farmers to invest in SLM and to build capacities to foster implementation of SLM practices in the field. Similar experiences e.g. from central Zimbabwe (Nyagumbo *et al.*, 2011) show that a participatory approach empowers farmers and enhances their willingness to invest in SLM. Empowering farmers improves knowledge exchange, competitiveness and self-confidence. Similar findings are reported by Kessler *et al.* (2016) in Burundi, where an integrated approach resulted in significant impacts in scaling-up sustainable agricultural practices, particularly through integrated soil fertility management. In such an integrated approach, learning, vision building, integrated farm planning and scaling-up of intrinsic motivation and capacity to invest in SLM practices are transferred (Kessler *et al.*, 2016).

In conclusion, the potential for scaling-up and effective implementation of SLM practices through mass mobilization is present in Ethiopia. However, exploiting these opportunities requires certain effective changes in the policy and institutional environments, as discussed in the following sub-section.

5.2. Changes Required at the Policy and Institutional Level: Building an Enabling Environment

5.2.1. Policies

Based on the results presented in subsection 5.1, we can suggest that the process of planning, implementing and monitoring of scaling-up SLM practices should be more participatory and bottom-up. A key informant from the local level institution also suggested this: "*participation of farmers in mass mobilization should not only be limited to labour contribution for implementation of soil conservation activities: Farmers need to plan and monitor these activities together with DAs and experts"*. This implies that it is not enough that farmers only participate in the implementation of SLM activities during mass mobilization, but that involving them also in the

planning and monitoring processes is required. This is crucial for effective implementation of SLM practices, and developing a sense of ownership of the implemented practices (Millar & Connell, 2010). Consistently, Woldeamlak (2007), Cullen *et al.* (2014) and Tsega *et al*. (2018) suggest the need for a participatory and bottom-up approach in the planning and implementation of SLM practices in Ethiopia. In such an approach, the planning process starts with the identification of existing problems and selecting appropriate technologies together with farmers (Adenew *et al*., 2018). This empowers farmers to take a leading role in the scaling-up and decision-making process (Meskerem *et al.*, 2018a). Furthermore, supportive policies and regulations are required to ensure large-scale planning, implementation and monitoring of SLM practices during the mass mobilization approach.

Policy support may contribute through providing agricultural extension services (e.g. training, inputs and credit services) and building infrastructure (e.g. roads, electricity and communication services) to create an enabling institutional environment (Kuyvenhoven, 2004). Agricultural extension services are the major sources of information for scaling-up SLM in the field (Betru *et al*, 2015). It helps to improve farmers' motivation to engage in these activities (Tesfamicheal *et al*., 2013), and to increase their capacity to invest in them (Zenebe *et al*., 2016). Consistently, Meskerem *et al.* (2018a) reported that farmers who obtained adequate support from extension workers spontaneously implemented and integrated SLM practices on their farmlands. Building a good material infrastructure is important to strengthen social integration and networks and to facilitate communication between farmers, officials and professionals (Kuyvenhoven, 2004). An informant from the *Woreda* administration noted, "*constructing weather-roads and connecting all kebeles will enable extension workers and officials to transport working materials or equipment to all working sites during campaign works, and to undertake frequent monitoring and supervision of implemented activities*".

Implementing existing bylaws (regulations) is required to improve the institutional environment. Bylaws serve to prevent and manage conflicts within the community (Sanginga *et al.*, 2010), and to protect implemented

SLM practices (Akalu *et al*., 2016). They also facilitate addressing specific problems at the community level (Sanginga *et al.*, 2010), and motivate community members to participate and work together in the formulation and implementation of SLM practices (Chilot *et al*., 2014; Gerba *et al*., 2018). This implies that using a mix of voluntary instruments (learning, skills training, information exchange, etc.) next to the wise use of regulatory instruments (legislation and bylaws) is crucial to speed-up the scaling-up of SLM practices in Ethiopia. Mutual learning, skills training and information exchange are effective policy instruments for motivating large numbers of farmers to participate in the implementation and scaling-up of SLM practices (Pinto-Correia *et al.*, 2006; Greiner & Gregg, 2011; Ashoori *et al.*, 2017). Still, legislation and bylaws remain important to protect and manage implemented SLM practices in the field (Akalu *et al.*, 2016).

5.2.2. Institutions

With respect to institutions, the main suggestions to address the limitations identified in Section 5.1 include building capacity and strengthening collaboration and networking.

a) Building capacity: Scaling-up SLM practices requires adequate institutional and human capacity, as well as learning through skills training, communication and sharing of experiences (Noordin *et al.*, 2001; Franzel *et al.*, 2004; Tukahirwa *et al.*, 2013b). So, strengthening institutional capacity at all levels is important (Millar and Connell, 2010; Amjad *et al.*, 2015; Thomas *et al.*, 2018). This starts by creating awareness about the importance of SLM (e.g. on agricultural production and food security) through learning and education. Learning in a scaling-up process is not only related to knowing the best way to address a problem, but also towards having confidence in finding the best way to do so (Sturdy *et al.*, 2008). For instance, when farmers learn from each other (through their social networks) and they spontaneously implement stone bunds, they better maintain and integrate them in their farming activities (Meskerem *et al.*, 2018b). Thus, increasing awareness of the causes and effects of the current problems (e.g. land degradation and climatic variability) and the benefits of implementing SLM practices to tackle these problems is crucial (Kessler, 2008; Meskerem *et al.*, 2019). Besides, sharing knowledge and information among concerned

stakeholders is necessary to make effective decisions (Franzel *et al.*, 2004; Carter & Currie-Alder, 2006; Mulema *et al.*, 2017).

Building the capacity of extension workers and government officials with respect to communication, collaboration and learning is important (Carter & Currie-Alder, 2006; Tukahirwa *et al.*, 2013b). At the local level, this was seen as the main limitation for scaling-up SLM practices. To address this limitation, institutional capacity building activities focusing on improving the professional (skills and knowledge of the existing staff) and operational capacity (staff, budget and equipment) are required (Imperial, 1999). These activities improve the capacity of extension workers to plan, implement and monitor SLM activities (Mulema *et al.*, 2017) and improve the knowledge on SLM among farmers (e.g. how to effectively implement them in their own fields), and change their attitude to have them genuinely participating in the SLM planning and implementation processes (Ludi *et al.*, 2013). Therefore, the regional government should build the capacity of extension workers and government officials at the local level, through providing skills training, offering technical advice and support and allocating adequate budget and logistic services.

b) Strengthening collaboration and networking: Scaling-up SLM requires collaboration between stakeholders at all institutional levels and across different institutional sectors, including decision-makers, professionals, officials, extension workers and farmers (Dumanski & Peiretti, 2013; Thomas *et al.*, 2018). Hence, mainstreaming SLM activities is important to avoid duplication of efforts and promote synergy (Betru *et al*., 2015). Gete *et al*., (2006) also report that intra-(interdisciplinary) integration is required for scaling-up SLM. In a previous study, we found that the collaboration between the Agriculture Office and the Livestock Office at the local level of the Girar Jarso *woreda* was very important to provide training in integrated farm management (Meskerem *et al.*, 2019).

At community level, making use of the available community-based organizations and strengthening social networking are promising avenues for speeding-up the scaling-up process. Existing community-based organizations such as *iddir* (institutions for funeral purposes), *mahiber*

(religious institutions to celebrate specific saints) and *debo* (labour sharing or exchange mechanisms among farmers to perform different farming activities) can form a reliable base for implementing rural development activities and organizing agricultural extension (Gerba *et al.*, 2018). These organizations play a vital role in empowering community members to become their own agents of change (Noordin *et al.*, 2001) and in promoting collaboration, sharing information, facilitating training and mobilizing resources (material, finance and labour) for SLM activities (Belachew *et al*., 2017). Local networking and actors can affect farmers' investment in SLM practices and thereby their mind-set and behaviour. Besides, collaboration at community level is particularly important for collective decision-making during campaigns (Kessler, 2008). Therefore, a wide social network of information and technical support involving these organizations seem useful.

6. Conclusions and Recommendations

This study analysed the policy and institutional limitations at national, regional and local level for scaling-up SLM practices through mass mobilization in the central highlands of Ethiopia as perceived by representatives from these levels. Three core issues were perceived as the main institutional limitations: the processes of policy formulation and implementation, the available institutional capacity and the lack of institutional collaboration. This study also identified opportunities for scaling-up SLM in Ethiopia and found that changes in the present institutional and policy environment of Ethiopia are urgently required to exploit potential opportunities and overcome perceived limitations. The study concludes that a much more bottom-up approach is crucial to speed-up the scaling-up process. Moreover, different institutions are involved in organizing and implementing SLM practices and, therefore, collaboration between them is vital. Again, building institutional capacities and strengthening synergies and partnerships between them at local, regional and national levels are needed for the horizontal and vertical scaling-up of SLM practices in Ethiopia.

Finally, we recommend that creating an adequate enabling policy and institutional environment is urgently required for scaling-up SLM. Hence,

the government of Ethiopia should address three core elements of the present institutional and policy environment. First, transform the process of policy formulation and implementation and make it more participatory and bottom-up. Second, build the capacity of institutions through awareness raising and learning, as well as by providing logistic facilities and equipment. Third, strengthen the institutional collaboration through mainstreaming SLM in all sectoral offices and using existing social networks and relations. However, taking over these three recommendations without applying the right policy instruments would not lead to a wide-scale spreading of SLM practices. Therefore, we recommend that the government of Ethiopia puts less emphasis on using command and control instruments – although these remain necessary when used wisely – and rely more on voluntary instruments such as training, mutual learning, information exchange and creating intrinsic motivation. Implementing these recommendations and integrating them into the existing mass mobilization approach would enhance the impact of the latter and would let SLM to contribute to improved soil quality and food security in the central highlands of Ethiopia.

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