

Applying Ostrom's institutional analysis and development framework to soil and water conservation activities in north-western Ethiopia



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ABSTRACT

Sustainable land management is of utmost importance in Ethiopia and relies on Soil and Water Conservation (SWC) measures collectively implemented by smallholders through participatory processes. This paper contributes systematic evidence on how SWC strategies are implemented and how participation is operationalized. Drawing upon inductive, qualitative research, we explore the design, implementation and evaluation of SWC activities, as they relate to Ostrom's Institutional Analysis and Development (IAD) framework, in order to determine how the activities can be made more appropriate, effective and sustainable. Findings show that on all levels of Ostrom's framework, there are shortcomings in the SWC institutions, which have to be addressed with more participatory approaches, a change from top-down to bottom-up measures, and economic incentives for farmers to invest in SWC measures instead of e.g. compulsory labor, and the integration of so far neglected groups like youth, women and the landless.

1. Introduction

Sustainable land management is of utmost importance in Ethiopia. The agricultural sector generates a significant portion of the country's gross domestic product, about 41%, according to World Bank (2017). It is also essential because the large majority of the population, above 80%, is reliant upon agriculture for their livelihoods, primarily as smallholder farmers (CSA, 2008; World Bank, 2017). However, little has been done to preserve land resources compared to the magnitude of the land degradation problem (Bewket and Sterk, 2002; Hurni et al., 2010). Despite decades of recognition, and some degree of activity to enhance soil conservation and rehabilitate lands, significant challenges remain. In order to understand why existing soil and water conservation (SWC) activities are not working effectively, we draw upon Ostrom's (2007) Institutional Analysis and Development (IAD) framework in the Upper Blue Nile Basin (UBNB) of Ethiopia.

There is currently a limited amount of research available on SWC activities in Ethiopia. The objective of the paper is to contribute an important systems perspective to the available evidence and thus provide new insight into SWC activities in Ethiopia. Drawing upon

inductive, qualitative research, we explore the design, implementation and evaluation of SWC activities, as they relate to Ostrom's framework, in order to determine how the activities can be made more appropriate, effective and sustainable. The IAD framework was selected because the activities of SWC largely concern collective action for the provision of collective services (i.e. the commons). The structure of this paper follows the flow of Ostrom's framework, namely: context, action arenas, patterns of interaction, evaluative criteria and recommendations that can inform policy reform. Before delving into these details, we present an overview of the analytical framework and the methods used for this research.

2. Institutional analysis and development (IAD) framework

Ostrom's IAD framework has been widely employed in research aimed at studying local management of common resources (Benson et al., 2013; Clement and Amezaga, 2013; Rudd, 2004). The IAD framework provides guidance for highlighting key insights on institutional, technical, and participatory aspects of collective SWC interventions, or the commons problem, and their resulting effects. At the

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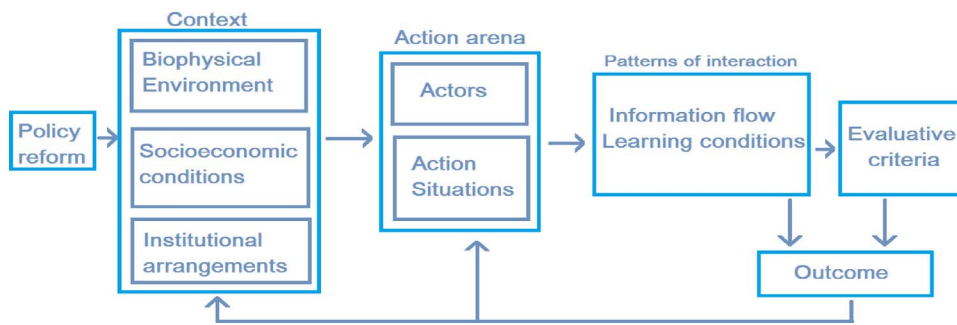


Fig. 1. The IAD framework.
Source: Ostrom et al. (1994).

framework's core is the 'action arena'. The action arena is composed of an action situation and actors. The action situation refers to a social space where the actors interact, solve the commons problem, and exchange goods and services; the actors are those who participate in the situation (Ostrom, 2007; Ostrom et al., 1994). In the Ethiopian SWC case, the action arena was assumed to shape the efforts towards sustainable watershed management.

By following the steps in the IAD framework (Fig. 1) and using the action arena as the unit of analysis, the analysis systematically follows the path of decision making from pre-planning to planning, on to execution and also ensuring the sustainability of a project. When the action arena and its associated rules are evaluated against the background of watershed development projects in terms of their structure, management, and outcomes or performance in community engagement, the results can provide useful guidelines for practitioners regarding how and where to act to improve the broad societal value of ongoing SWC projects.

In the action arena, interests of the different stakeholders confront and planned initiatives are (re)shaped. Therefore our approach is first to analyze, what was planned by official interventions and which administrative set up has been installed, then to compare the planned changes and the real ones. The region chosen for the investigation is the UBNB where planned change with the "community participation" strategy has been implemented for more than five years. As set out in government documents (e.g., MoANR, 2017; MoFED, 2010; NPC, 2016), SWC development works have been and are going to be widely executed across degraded watersheds through community participation to achieve sustainable land management. The ongoing initiative was launched in 2010, following the release of the country's 5-year Growth and Transformation Plan (i.e., GTP-I (2010/11-2014/15), followed by the GTP-II (2015/16-2019/20)) (MoFED, 2010; NPC, 2016). Therefore we were able to examine the pre-planning and planning processes, implementation, participation of marginalized and disadvantaged groups, and monitoring and evaluation (M&E) systems.

3. Contextualizing land degradation

Land degradation, a process that involves a decline in the processes and productivity of ecosystem goods and services provided by land (e.g., soils, water, vegetation) (Vu et al., 2014), poses enormous challenges to both humanity and ecological systems. This challenge is experienced across all regions in the world (Vu et al., 2014), but particularly in sub-Saharan Africa, which has the highest rate of land degradation (Tully et al., 2015). In the United Nations Convention to Combat Desertification (UNCCD) conference, poor management of land resources was identified, among other factors, as an important driver of land degradation (Kust et al., 2016; UNCCD, 2009). As a result, sustainable land management practices offer synergistic solutions in protecting land from being degraded and in restoring degraded land (Akhtar-Schuster et al., 2011; Kust et al., 2016). Hence, parties in developing countries (e.g., Ethiopia) that have been affected by land degradation have been receiving support (e.g., technical guidance, finance, and knowledge transfer) to mainstream land degradation and

sustainable land management issues into their national policies and frameworks (Akhtar-Schuster et al., 2011). We employ Ostrom's IAD framework as a means to evaluate SWC activities within this context of land degradation, analyzing the broader environment that is influencing the challenges related to land degradation and restoration as well as the development of more sustainable land management practices.

Soil degradation due to water erosion from heavy rains (Ayele et al., 2016), overgrazing (Alemayehu et al., 2013), conversion of marginal lands to croplands (Bewket and Sterk, 2002), and inappropriate farming practices (Astatke et al., 2003) remain major threats to sustaining agricultural yields and soil fertility. Hurni et al. (2010), for example, estimated that soil loss due to water erosion of cultivated fields in Ethiopia amounts to about 42 Mg ha⁻¹ year⁻¹. Considering that substantial efforts to promote soil conservation and environmental rehabilitation have been on-going for four decades (Bayabil et al., 2010; Dessie et al., 2012), the continued loss of this amount of soil due to water erosion suggests these efforts have not sufficiently and/or appropriately addressed the causes. Recent national strategies and policy documents in Ethiopia have also considered combating land degradation as one of the most important development priorities (MoANR, 2017; NPC, 2016).

However, soil conservation and environmental rehabilitation interventions have had little success in bringing about the voluntary uptake of improved SWC technologies by smallholder farmers to tackle soil degradation problems in the drought-prone highlands of the UBNB (Dessie et al., 2012; Smit et al., 2017; Tesfaye et al., 2014). The lack of integration from the different disciplines and sectors (German et al., 2007), limited stakeholder participation (Bewket and Sterk, 2002; Smit et al., 2017), inappropriate incentives such as food-for-work programs (Amsalu and de Graaff, 2006), rigid technical packages, unmanageable planning units (Desta et al., 2005), and top-down extension systems (Amsalu and de Graaff, 2006; Dessie et al., 2012; Smit et al., 2017) have been reported as limiting factors to success.

Evidence suggests that without localized participatory initiatives, there will be limited widespread adoption of exogenous SWC technologies by smallholder farmers (Desta et al., 2005; German et al., 2007). These factors influenced the Ethiopian government, with the support of the FAO, to pilot community-based participatory watershed development approaches from 1988 to 1991 (Desta et al., 2005). Following this initiative, various international agencies (e.g., WFP (United Nations World Food Program), GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit)) have adopted similar, but scattered, watershed development approaches (Desta et al., 2005) to support the government's efforts to improve the land resource base. Community-based participatory watershed development guidelines were formulated in 2005, the intent of which was to provide adaptable planning and implementation tools (Desta et al., 2005).

Recently, a growing body of work (e.g., Amare et al., 2014; Amsalu and de Graaff, 2006; Haregeweyn et al., 2012) has shown some positive outcomes in sustainable land management in Ethiopia in general and the UBNB in particular. However, intervention programs still lack a concerted focus on sustainability issues from their early diagnostic phases and instead start considering sustainability during the phase-out

stage as an exit strategy. Moreover, they seem to degrade rather than sustain local collective organizations and management capacities as well as indigenous people's capacities for conservation (Amsalu and de Graaff, 2006; Nigussie et al., 2017).

4. Methods

This research utilized a comparative, case study based approach. In order to better analyze changes and their causes, we compare arenas in three different agroecological contexts within the UBNB. It was expected that the more acute the land degradation, the more prone to collective action and common norms stakeholders may be. The comparative analysis allows for an assessment if the findings are location specific (socio-cultural or political) or linked to agroecology. Consistency of findings across the case studies suggests more generalized trends, while also recognizing the limitations of what generalizations can be made from a study based on a comparative analysis of three cases.

The fact that this research has been conducted within a research project with a life span of 2013–2022, with field assistants who are residents of the study watersheds, allowed the researchers to establish trust with the community. This enabled: (1) to avoid, or at least minimize, suspicious view of interviewees regarding the identity of the researchers, (2) to know the communities more (who is who? affiliations with State? economic status? etc.) and spot respondents easily, and (3) to verify information that we were soliciting from agricultural extension agents [also known as development agents or DAs] and local authorities.

The study is based on the qualitative research conducted in three periods of time: February to March 2015, October to November 2015, and February to March 2017. Individual interviews and focus group discussions were conducted on current outcomes in ongoing collective SWC initiatives, the different factors impacting these outcomes and their envisaged sustainability. In sum, 60 farmers and local authorities from the 3 study sites, 20 agricultural experts (2 regional, 4 zonal, 6 district, and 8 DAs) from the Bureau of Agriculture, and 4 university professors were individually interviewed as subject-matter experts. As a qualitative study, the participants are not a statistically representative sample of the population. As our aim is to provide insights and in-depth understanding of common perceptions and experiences rather than empirical generalizations, the respondents for individual interviews were chosen using a purposeful sampling technique, as suggested by Patton (2005), so as to select a specific segment of the community that is believed to represent the range of variation expected in a population.

Additionally, a total of 15 focus groups—consisting of watershed development committee (WDC) members and sub-groups of men, women, young adults, and mixed farmers, each composed of approximately 8–10 participants—were carried out at the 3 study sites. Three meetings (i.e., one meeting per study site) for each sub-group were held. The participants were recruited in consultation with the project field assistants and DAs, in order to take into consideration differences in age, gender, education, and wealth within the focus groups. The principal researcher and his field assistant were present at each focus group discussion to facilitate deliberations and take notes. Approximately, the study respondents represented not more than 10% of the watersheds community. Moreover, participant observation and field notes were also utilized to augment findings from the other data sources. The information obtained from any given source of data was also triangulated with other qualitative data to ensure adequate representation from multiple viewpoints, to increase synchronic reliability of data, and to uncover any deeper meaning in the data. Transcripts and emerging themes were categorized and (re)coded seeking for possible patterns in the texts, finally making the way to interpretation of results and analysis. Analysis was manual rather than computer-assisted.

5. Soil and water conservation activities

SWC activities refer to technologies which are aimed to preserve and enhance the productive capabilities of a land, or they embrace those practices that significantly reduce soil losses and their consequences. In the UBNB, various SWC technologies have been promoted among smallholder farmers to control soil erosion through campaign-based SWC programs. Common physical technologies being promoted across the study sites include soil bund, *fanya juu* (a ditch excavated along a contour with the soil placed on the uphill side to form a ridge), stone-faced soil bund, and trench. The modality of this program is that farmers are expected to provide compulsory free labor under close supervision of DAs and local authorities. In addition, district-, zonal- and regional-agriculture offices, and the Ministry of Agriculture and Natural Resources are key players under the ongoing SWC program. Currently, different externally funded programs are also involved in SWC activities. Concerning our study, Water and Land Resource Center (WLRC) project is involved in the Aba Gerima watershed funded by the Swiss Agency for Development and Cooperation (SDC) and Sustainable Land Management Programme (SLMP) project in Guder watershed supported by the World Bank, whereas, the Dibatie watershed is not under any external support for SWC activities. Although it requires further study, we hypothesize that the existence of external projects could have diverse impacts. In addition to the government's SWC programs, external activities could be helpful in enhancing awareness regarding land degradation problem and possible ways to rehabilitate degraded watersheds, such activity may also serve as an important source of additional pressure on local actors for SWC success.

6. Study areas in the upper Blue Nile Basin

The Ethiopian administrative system is composed of (from lowest level): sub-Districts, Districts, Zones, and Regions. The UBNB is located within three regional administrative boundaries: Amhara, Benishangul Gumuz, and Oromia. The study was undertaken in three watersheds within the UBNB: the Guder watershed from the Fagita Lekoma District (population 161,002, Amhara region); the Aba Gerima watershed from the Bahir Dar Zuria District (population 222,304, Amhara region); and the Dibatie watershed from the Dibatie District (population 90,577, Benishangul Gumuz region) (see Fig. 2). Livelihoods of the three watershed communities are dominated by rain-fed cereal based mixed farming systems. These watersheds were selected because of their ability to capture a variety of bio-physical and socio-economic characteristics and to represent higher, medium, and lower elevation watersheds within the highlands of the basin. The climate in the basin changes from humid in the higher elevation zones (Guder) to semi-arid in the lower zones (Dibatie). Detailed descriptions of the study watersheds are beyond the scope of this article, but have been elaborated by Nigussie et al. (2017).

Following the 1975 land reform, all land in Ethiopia is owned by the government. Individual land holders in rural areas have rights to use land, which have recently (post-1998) been protected via a land certification system. Rural land holders are not allowed to sell or exchange their land, rentals are only permitted for temporary periods of time. Land can only be transferred in the form of inheritance. All unoccupied land is owned by the government, plots of which are maintained in a 'land bank' that can be distributed to community members, such as the landless. Unused land is returned to government control in the land bank. The land tenure system has direct implications for SWC activities. For example, while land security has relatively improved, it remains precarious as land redistributions were conducted as recently as the 1990s in Amhara region.

7. Action arenas

The following assessment of action arenas, which follows the

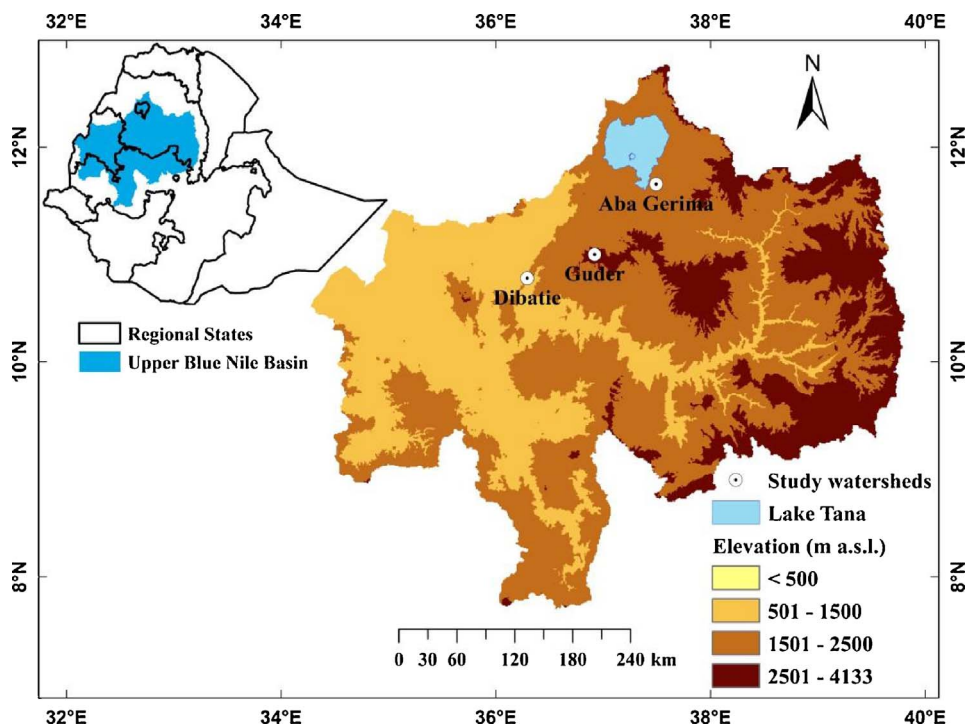


Fig. 2. Location map of the study sites in the UBNB, Ethiopia.

contextualization as outlined in Ostrom's IAD framework, is organized around the stakeholders involved with SWC activities in the case study locations, namely: community members, community-based government staff, experts, and regional stakeholders.

7.1. Community members

Not all community members have equal interest in rehabilitation, nor do they have equal ability to engage and influence what the committees decide to do. Of the community members, landholders have the most power, but not the same interest as others. Those without land may support SWC activities in hopes of obtaining rehabilitated land. While the landholders may have an interest in expanding their land holdings, they also face competing labor priorities – maintaining their own agricultural livelihoods as opposed to investing their labor in SWC activities. Due to a lack of land, youth prefer to pursue work options outside of the community (Bezu and Holden, 2014; Smit et al., 2017), and only reluctantly join SWC activities with few expectations of benefiting by such action – often these youth are landless and earn their daily needs, thus are less incentivized to participate in voluntary SWC activities. In theory, labor contributions are to be equal. In actuality the contributions are not equal nor are the burdens equally borne. Most importantly, as outlined below, it is unclear who will benefit from the SWC activities. As a result, individuals with less ability to participate, and who are less likely to benefit from the process, are less likely to engage in communal SWC activities (e.g. youth, women, those without land).

In setting up the SWC activities at the community level, local government staff are to involve community members. The majority of landholders in all three sites confirmed that they attended a presentation by the local government staff, which presented the SWC plans. Fewer individuals without land, as well as youth and women reported having been involved in such a meeting. This is reflective of community-level power dynamics as well as socio-cultural norms. The product, however, is that landholders have had a far greater ability to influence the SWC activities than other members of society have.

The majority of interviewed farmers had a high level of knowledge about the extent of soil degradation and likely outcomes of SWC

activities in rehabilitating their degraded landscapes. In addition, they have started witnessing some positive environmental outcomes in their immediate landscape from SWC works. Respondents from Aba Gerima and Guder sites mentioned that some wild animals are returning, some springs are reviving in downstream areas, and flood risk in downstream farmlands is decreasing. However, there was a shared sentiment that farmers were not participants in designing and planning the activities, but were rather the implementers. For example, one farmer explained that when he tried to express his opinions regarding the prioritization of needs he was portrayed as being opposed to positive change:

Soil erosion is an important problem, but the shortage of feed, water, roads, firewood, land, and off-farm and non-farm employments are even more important. When you bring up these issues, sometimes you are categorized as 'anti-development' instead of being given the opportunity to state your point of view.

The lack of needs assessment, and thus the inability to align local priorities with plans, is also reflective of the different options and opportunities afforded to different members of society. SWC activities may not have the same level of urgency for livestock owners as they do for landless farmers. Rather than be a participatory process – as designed – the plans were developed outside of the community, and 'participation' equated with following the pre-determined plans. Government authorities claimed that in the current SWC initiative, communities have been involved in every activity. However, the government has sought consent while the community members express dislike from a lack of participation and ownership. Thus, a key issue is the notion (or use of the notion) of 'participation'. As outlined elsewhere by Cochrane and Skjerdal (2015), the State appears to view participation as equating with consent, not as involvement in decision making.

Socio-cultural factors also play a role in influencing broad community participation in SWC activities. For example, women participation was noted as being low by community members. However, their involvement was strongly resisted by men, particularly married men refusing to allow their spouses to participate in these public activities. The main reason given by the male focus group members for this was their belief that women should be taking care of small children, tending livestock, and doing household chores. To exemplify this point, one district interviewee stated, "if you find a woman in the interventions,

she must be widowed or divorced.” In the focus group discussions with women, it was highlighted that these challenges have deeper roots; they stem from the women’s spouses’ negative views of women participating in the public sphere. Existing cultural practices and taboos regulating women’s relationships with their environment have the potential to deny them of their rights and roles in watershed management systems and to institutionalize their traditional roles (e.g., farming, cooking, and collecting firewood), which have often been characterized by unequal resource and power distributions. A further reason given by most respondents for the limited involvement of women is that local authorities did not take the lead in having their own spouses participate in such initiatives as examples to others. Lubell (2004) noted that the community’s lack of trust in local leaders to have their own spouses participate in collective SWC works can engender resistance among other farmers to do so.

7.2. Local government staff

Community chairpersons and DAs briefed community members on the SWC activities, inventoried tools and identified available labor. These personnel determine the specific nature of the implementation, based upon the watershed area, nature of landscape, and available resources. However, these decisions fall within the parameters of the SWC guidelines and direction from higher authorities (zonal and regional levels). A draft document developed by local government staff is submitted to the District Agricultural Office for approval. There is an opportunity in the drafting of these plans to involve community members in an inclusive and participatory process. While this is ideal, local government staff have limited resources, and are particularly constrained in having few personnel, they often have to cover very large areas and populations, have no vehicles for transportation, and have no budget for convening community members for such a process. As is typical for rural participatory programs in Ethiopia (Berhanu and Poulton, 2014; Cochrane and Tamiru, 2016), all these activities are expected to be voluntary.

Another reason why local government staff do not undertake such an effort is because they report that the approved plans rarely resemble the submitted draft. DAs felt that the District officers did not appreciate their reports, nor believe the information to be accurate. As lower level administrative staff, these personnel understand they have little to no option to refuse or return these re-made plans. In many instances, the result is that DAs felt the plans they were called to implement were not reflective of the realities of the watershed within which they work.

7.3. Experts

External researchers and academics with a focus on agriculture provide another perspective into the SWC activities. In the assessment of such experts, one good part of the process has been the political commitment that puts the initiative as ‘a matter of life and death’. However, they questioned if the manner in which the initiative is being implemented will lead to its intended outcomes. This concern is supported by their past experiences with similar initiatives, where rural communities destroyed everything accomplished by community labor within a short time during periods of political neglect (Harrison, 2002). In other words, the experts doubt that the prior experiences of stakeholders (i.e., farmers) in earlier similar initiatives have been incorporated into the design of the current project.

The experts also shared concerns regarding the preplanning activities performed at community level. Among their concerns, the most important were how watershed problems were identified and prioritized and how related tasks are performed. For these tasks, the approach is supposed to fully rely on community fora. This method, as pointed out by German et al. (2007), is a common practice when defining watershed problems in the eastern African highlands (including UBNB), and it incurs lower transaction costs by generating agreement

in large communities. However, according to experienced experts, the definition and diagnosis processes were fully run by government officials, although the expectation was that local residents would be part of the process through consensus building.

A related concern of the external experts is that the lead agency (the Bureau of Agriculture) has inappropriately took up the SWC work as part of its annual planned activities. The Bureau is expected to coordinate actions and resolve conflicts among actors within the similar areas of the organization (e.g., crop, livestock, natural resources, and extension) and also across different tiers of the organization (e.g., roads, education, cooperatives, NGOs, and land administration). Contrary to the design of the ongoing SWC program, it is still following a campaign style approach, with little integration and without any holistic views of rural landscapes. In addition, little consultation among the actors involved in the various activities under the supervision of the lead agency seems to occur, even though watershed rehabilitation involves multiple stakeholders and interdependent collective actions.

7.4. Regional stakeholders

Regional informants confirmed that few provisions were made for active community participation in the process. They attributed the reluctance to involve the community in planning at the lower administrative or community levels to the communities’ low capacities, lack of knowledge, and lack of resources and information for reliable planning activities. As a result, plans were formulated at higher levels and sent down to the lower levels. This also led to a mismatch between the planned physical SWC structures, which were seemingly based on a quota system, and watershed realities, which in turn led to difficulties in subsequent processes. The regional government personnel have, therefore, discounted the value and usefulness of local, inclusive and participatory processes. This is exactly what community members and local government personnel have experienced, and is a key reason why there is a lack of participation and ownership in the SWC activities.

8. Patterns of interaction

An analysis of design, implementation and perception of SWC measures allows for insight into the assumed and actual outcomes of the interactions and therefore for understanding the patterns of interaction for SWC activities. For Ostrom et al. (1994), this included an assessment of market structures, information flows and political participation, which we have adjusted to the SWC scope of this paper. The design of the SWC program was to be participatory and community driven, but in practice it is not. While each actor has different experiences (see Fig. 3), all are in agreement that decision making occurs at higher administrative levels (district level and above) and those based within the community (government staff and community members alike) have little ability to influence what they are required to do in the SWC activities.

According to Tippett et al. (2007), sustained participation and support are only possible when members in local communities feel that they have had a say, see their concerns reflected in the process, and when they foresee how the end product is going to benefit them. None of these factors was a characteristic of the current process, which was limited to community members’ mere physical presence at community fora and to labor provision. Broad public participation is viewed as crucial by the government for successful implementation of watershed development initiatives (Desta et al., 2005; MoANR, 2017; MoFED, 2010; NPC, 2016). In this regard, the issue is not a matter of poor design, but of implementation diverging from the design.

8.1. Input and benefit sharing

As outlined at the outset, there is an annual labor contribution of 40–60 days, which is mandatory. SWC is labor intensive and often

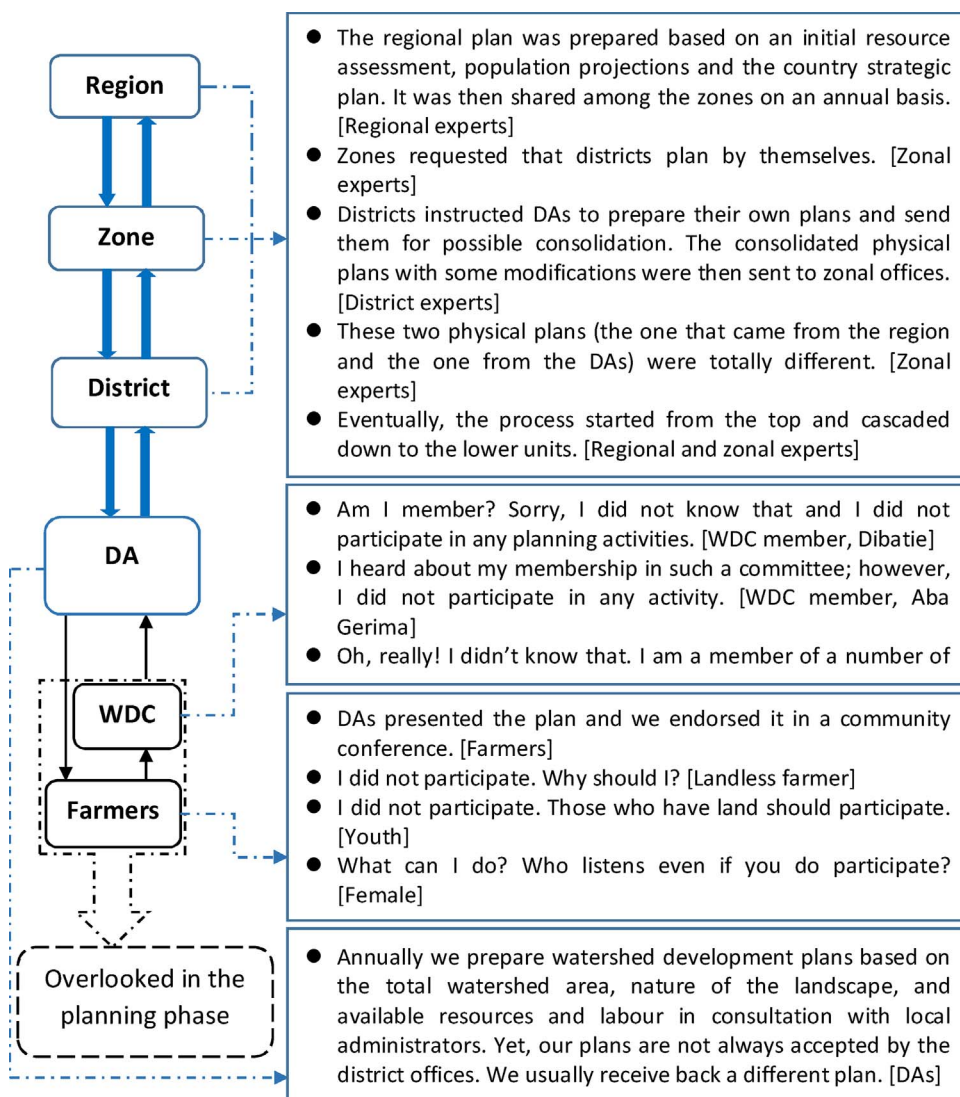


Fig. 3. Sample of Interviewees' statements about the watershed development planning process (downward-pointing arrows show actual planning, and upward-pointing arrows show planning rhetoric).

conflicts directly with agricultural livelihoods (i.e. time spend in SWC activities competes with tending to one's own field or laboring on another person's land). The government has not neglected this concern, and has struggled to find a solution, setting up the time for compulsory labor during the dry season. In particular, farmers in Aba Gerima and Dibatie sites associated this problem with the timing of the SWC initiative – January to March – because these months are part of the long dry season, the soil moisture is fairly low; this makes the soil digging, excavating and embanking activities labor demanding. This confirms what *Kassahun and Jacobsen (2015)* noted about farmers in Debrekelem, Yetsed and Gelila sub-districts—all along the Choke Mountain ranges of the UBNB—not being in favor of the current timing of community labor (mid-January to end of March), which was originally intended to avoid labor competition. In addition, many social ceremonies (especially weddings) take place during this period of the year. Farmers instead prefer an arrangement that distributes the labor load equally between each month of the year.

One of the greatest issues of contention within the communities is who will benefit from the SWC activities. Community members stated that the main reason for low levels of participation by youth was that their primary concerns, access to land and non-farm employment opportunities, were not addressed. In existing rural settings, the only way young farmers can get access to farmland is through informal land markets, primarily through share-cropping arrangements. The problem with such arrangements, according to the interviewees, is that land

holders often prefer to lease their land to adult farmers. Younger people have suggested redistribution as a solution but land holders have rejected that idea. Local authorities also agreed that land redistribution is impossible in the foreseeable future because it would lead to further fragmentation of already meagre per capita land holdings.

An equally important issue concerns communal lands. Landless individuals want to gain access to such lands for the development of income-generating activities such as farming, livestock fattening, bee-keeping, and agroforestry, whereas land holders are not willing to offer such rights. These conflicts of interest have remained unresolved, which has become an important source of dissatisfaction among landless individuals and has limited the expected labor contribution from this group. Generally, it seems that land holders' claims are likely to prevail over those of others within the existing social norms, for example, in managing communal lands, which means there is a need for additional community-level negotiations. At the time of our interviews, these issues were more contentious in the Guder and Aba Gerima watersheds than in the Dibatie watershed, possibly because Dibatie has better access to farmland in nearby, and less populated, lowland areas.

Most respondents noted that the issue of 'how the disadvantaged groups within the watershed communities would benefit' was not discussed among stakeholders. Negotiations about how future accrued benefits (e.g., property rights) would flow to various actors within communities were not conducted in a transparent or timely manner, which could have arisen from government's incorrect assumptions of

homogeneity of interests arising from the soil erosion management regimes. These issues are critically important for disadvantaged people within communities, in particular youth, the landless, and women.

The question of how land holders are going to equitably share future benefits also did not receive much attention and was left vague during community fora, as noted by almost all respondents. This has the potential to be a source of conflict among watershed users. This conflict is likely to arise due to distributional issues within the resource users' community and the inequities created by excluding some groups from receiving benefits, as also already noted by Natcher and Hickey (2002).

9. Evaluative criteria

The IAD model itself did not develop the evaluative criteria in significant detail, but included potential areas of investigation such as efficiency, finance, equity, accountability, conformance to values and sustainability. For the purpose of this paper, we focus upon aspects of evaluative criteria that relate to (1) the relevance of SWC measures as affecting the program efficiency, (2) the management of the activities as influencing equity, (3) monitoring, evaluation and learning processes as major aspects of accountability, and (4) sustainability of achievements as the main expected value.

9.1. Relevance of the SWC measures

UBNB covers different agro-ecological zones characterized by different farming systems coupled with highly variable biophysical factors (e.g., soil, rainfall, vegetation, land use types) both in terms of location and seasonal distribution (Alemseged and Tom, 2015). This naturally calls for variation in land management interventions. Recognizing this, albeit without sufficient scientific evidence, the Ministry of Agriculture and Natural Resources suggested different improved SWC measures for possible implementation across different agro-ecologies (Hurni et al., 2016). However, our field observations revealed few variations in implemented SWC technologies. Interventions were restricted to the use of soil bunds, stone-faced soil bunds, trenches, and *fanya juu*, an issue which is also confirmed by others (Nigussie et al., 2017; Teshome et al., 2013). Furthermore, in all three locations, none of the community members who attended the planning meetings recall any discussion regarding issues about how to fit traditional SWC practices (e.g., drainage channel, traditional stone bund, grass strip) into the proposed plans. As outlined also elsewhere by Amsalu and de Graaff (2006) and Assefa and Hans-Rudolf (2017), such local practices and technologies have been neglected by plans.

Farmers noted that the newly introduced SWC techniques were not resulting in productivity improvements in the short term. While this is concerning, many SWC activities are geared to improve the sustainability of agricultural practices rather than result in immediate yield increases (as a newly introduced seed or crop might). This is suggestive of a communication issue during the implementation. A more systematic challenge is the poor selection of techniques being advocated, which may not contribute to the aims of the program. For example, about 55% of farmers in the Chemoga watershed, a watershed in the UBNB, believed that "*fanya juu* construction was not for the sake of conserving farmers' land, but to meet government's development program" (Bewket and Sterk, 2002: 194). The use of *fanya juu* can even be counter-productive in high rainfall areas due to its limited resistance to intense rainfall, especially during the months of July and August (Kassie and Holden, 2006; Nigussie et al., 2014). The yield penalty from adopting such physical structures is high for small farmers because of the loss of productive land and the associated higher investment costs (Shiferaw and Holden, 2001).

9.2. SWC management and equity

As part of the plan for the current SWC program in the region,

Watershed Development Committees (WDCs) were established in almost all lower administrative units and were expected to create direct engagement and interactions between local governments and communities. The WDCs are supposed to be fully involved in all watershed development activities and all governance processes. However, all three case study areas experienced challenges in establishing these WDCs. Primarily, these committees were not inclusive of all social categories, and thus not representative of their interests, priorities and concerns. As a result, community members who had pre-existing power utilized these opportunities to maintain and entrench their position in society, while entrenching the exclusion of others.

Even if WDCs were representative of their constituencies, committee representatives sat in between officials' and their principals' expectations. In the Aba Gerima watershed, for example, even though observable positive bio-physical changes in the environment have occurred, power dynamics in the community is a very important concern. This may be related to the fact that the watershed's close proximity to Bahir Dar—the city where the lead agency's office is located—has enhanced the purview of the agency on local leadership (the DAs and local leaders), which has in turn enabled the latter to exercise substantial authority. In addition, the Aba Gerima watershed serves as a learning site in the UBNB. This may also have attracted more attention from external stakeholders (e.g., NGOs and government agencies), thereby imposing a relatively high psychological burden on local leaders to push decisions (e.g., compulsory mass mobilization) to their limits so as to meet expectations. In relation to this point, one interviewee stated, "Who is going to stop them when they penalize us for not attending in collective SWC works? When they [local administrators] fine us 100–300 Ethiopian Birr [\approx 5–15 USD] for non-attendance, they do not listen to our reasons, and they do not even give us a receipt as evidence of our payment."

9.3. Monitoring, evaluation, learning and accountability

Regional informants confirmed that there was no formal M&E system during the initial stage of the ongoing SWC initiative. However, during the implementation process, the government came to the view that installing such an M&E system would be crucial for program management. In the original design, teams were created in which one 'model' farmer would lead five others (a 'one-to-five' team). Each team was expected to report its achievements (i.e., team members involved and daily work accomplished) to its respective development group (DG), which was composed of 4–6 one-to-five teams, or a total of 20–30 households. Each DG was supposed to consolidate its respective report and pass it to the WDC. After approving the reports, the WDCs were to deliver them to their respective DAs. The DAs then compiled the lower administrative (i.e., sub-district) level reports and passed them along to their respective district agriculture offices. The reporting procedure was to continue up the line according to formal organizational arrangements until it finally would reach the regional government.

However, regional informants noted that the WDC establishment process was not uniform throughout the region. As a result, WDCs were not established in all areas. Even in areas where committees were established, they often had no clear idea, for example, of how to collect, manage, and report information; undertake periodical committee level meetings; or meet with the general community. Data that was collected was limited, and no information was collected about the maintenance of SWC investments. Although our aim was not to provide conclusive reasons for these problems, it could be at least partly associated with the absence of a tailor-made participatory watershed M&E working manual and the low focus given to empowering WDCs by the concerned bodies. Therefore, the M&E system largely bypassed any active involvement of the WDCs. The failure of this system, and the WDCs in general, was acknowledged by government staff at the Bureau of Agriculture, stating, "we failed to functionalize WDCs, in general."

Because of the poorly functioning monitoring and evaluation, the

quality of the available data obtained via the reporting systems is questionable. In effect, therefore, there is no feedback loop to ensure that monitoring data enables learning and improvements, because the data is inaccurate. In relation to this, one DA stated, “Sometimes I hate myself when I prepare reports. I write them with my bosses [district agriculture officers] in my mind, questioning myself, ‘are they going to be satisfied if I say this or that...’”. The experts we interviewed said that nobody at the higher administrative levels was in a position to discourage such behavior given the structure of the M&E system. One potential reason for this, as pointed out by Faravelli et al. (2014), could be related to the ‘competition effect’ of reporting falsified progress, where an individual’s misreporting improves his or her outcomes at the expense of others. Those who are honest may be overtaken by their dishonest colleagues and then begin to misreport results themselves, which in turn, is likely to affect the whole M&E system.

Furthermore, the lack of participation has limited social learning processes, which were expected to develop and sustain the outcomes of the initiatives. Dessie et al. (2012) pointed out that the components of social learning from such processes include strengthening the interplay between local and outside knowledge, building mutual trust, collaborating in land management activities, and promoting leadership within local communities.

9.4. Sustainability

The lack of participation in design and planning has serious implication for participation, as it does for community ownership of the activities, and thus for the long term sustainability. Many farmers expressed disinterest in the existing governance approaches and felt that their concerns went unheard or were quickly overruled. They only provided their labor contribution to avoid penalties and to satisfy local administrative bodies. In some instances, not participating in SWC activities and being forced to pay fees may be more financially rewarding (i.e. the returns of following own economic activities instead of participating in the activities are greater than the costs involved in paying the fees), such as those who opt to grow high-value crops such as *khat* (*chata edulis*) in Aba Gerima. These feelings exacerbated governance problems within the current land management systems because farmers believed that their mere physical presence by itself was an end, and they mainly did so to avoid punishment. In its current implementation modality, the program will likely cease to exist if the governmental pressure, fees and (dis)incentives (e.g. patronage and exclusion) end. The SWC activities, in their current modality, are not serving the needs of community members and thus the program is unsustainable in its present form.

10. Discussion

Returning to Ostrom’s IAD framework, a summarized version of the UBNB results is proposed in Fig. 4. The study has assessed the institutional settings for SWC watershed development programs, stakeholders’ perceptions of these, and of the impediments to efficient collective efforts to develop within watershed communities.

Crucial to the notion of people’s involvement in watershed development is to ensure the inclusion of voices of all segments of the community to decision making. However, researchers have suggested that participation should not be an end in itself but a means to an end both to facilitate deliberation among actors (Rist et al., 2007) and harness local community resources and support for the program (Parfitt, 2004). In practical terms, promoting inclusive governance, for example, through engaging the WDCs could provide synergy to increase collective investments in watershed development. All else being equal, inclusive governance can support local values, trust, customs, and ownership; strengthen the enforcement of rules; address power relations; and thereby improve local implementation capacity, monitoring and sanctioning efforts, and long-term sustainability of the desired

intervention outcomes. More importantly, it encourages long-term cooperation in cases where short-term cooperation is predicted to be unsuccessful (Lubell, 2004). However, the country’s mainstream natural resource management policy and its institutional designs at work are very far from this ideal vision, and little attention has been given to such potential outcomes from participation (Dessie et al., 2012); as a result, outcomes are often unsustainable. This finding is not surprising in this region (Cochrane and Skjerdal, 2015; Harrison, 2002; Smit et al., 2017). These types of processes have traditionally operated in such a way that communities have felt alienated from the process.

Many stakeholders involved directly or indirectly recognize that in the current collective SWC initiative, State bodies still appear to be reluctant to share decision-making with local communities. The State is trying to rehabilitate degraded watersheds mainly by introducing physical SWC measures, but it is paying little attention to public involvement in decision-making processes, including problem diagnosis, planning, implementation, and monitoring and evaluation activities. In particular, the problems lie in the following areas: (1) planning processes are top-down, not interactive, and (2) involvement of stakeholders, in particular farmers, seems to be poorly managed and sometimes appears to exist only on paper. Stakeholders recognize that such problems could be addressed by actively including them and ensuring that their needs and suggestions are integrated and that their participation should be voluntary, not compulsory. These actions should then lead to more and better participation, in particular, more differentiated and improved plans. Divergent farmers’ needs and resource endowments should be respected, which could lead to a higher acceptance of SWC measures. Plans and involvement would have to be adjusted to different stakeholders’ circumstances and trade-offs made explicit.

11. Recommendations for reform

The findings from the analysis based on the IAD framework result in some recommendations, which are intended to improve all IAD levels in particular the institutional context, the action arena, as well as the evaluation and learning processes.

Instead of compulsory measures, which should be abandoned, SWC programs should have selective provisions (e.g., formal credits) to incentivize all groups’ full engagement in collective endeavors. Such kind of provisions could, for example, be done through investment subsidies for SWC measures that on the one hand provide means to overcome short term financial bottlenecks for farmers, and on the other hand support disadvantaged target groups like youth, landless farmers and less resource endowed women. This would also increase gender sensitivity of SWC programs. Landless groups could also be integrated by other labor programs to help establish SWC in less advantaged areas, or where the ecological benefits of SWC exceed the economic returns.

For successful collective watershed management, due consideration to different gender-related needs, responsibilities, and endowments, and in particular the gender division of labor, should be given by SWC programs to enhance women’s collaboration. As a result, for example, introducing gender-sensitive watershed management strategies and capacity building could contribute to women’s effective participation in general, as well as to better incentivize labor contributions from all women, not only from female household heads.

A proactive conflict management scheme should be introduced into ongoing SWC programs for ensuring effective participation of various segments of the community, sustaining watershed management outcomes, and also solving the prevailing and potential conflicts of interest (e.g., clear and transparent system for contribution and benefit allocations) among watershed users. For instance, an entity that could be involved in such a scheme is the WDC, however it needs to be endowed with legitimacy by local authorities.

There should be a stringent and independent strategizing and planning process, including evaluation criteria and monitoring processes. Independent, maybe even privatized bodies are needed to

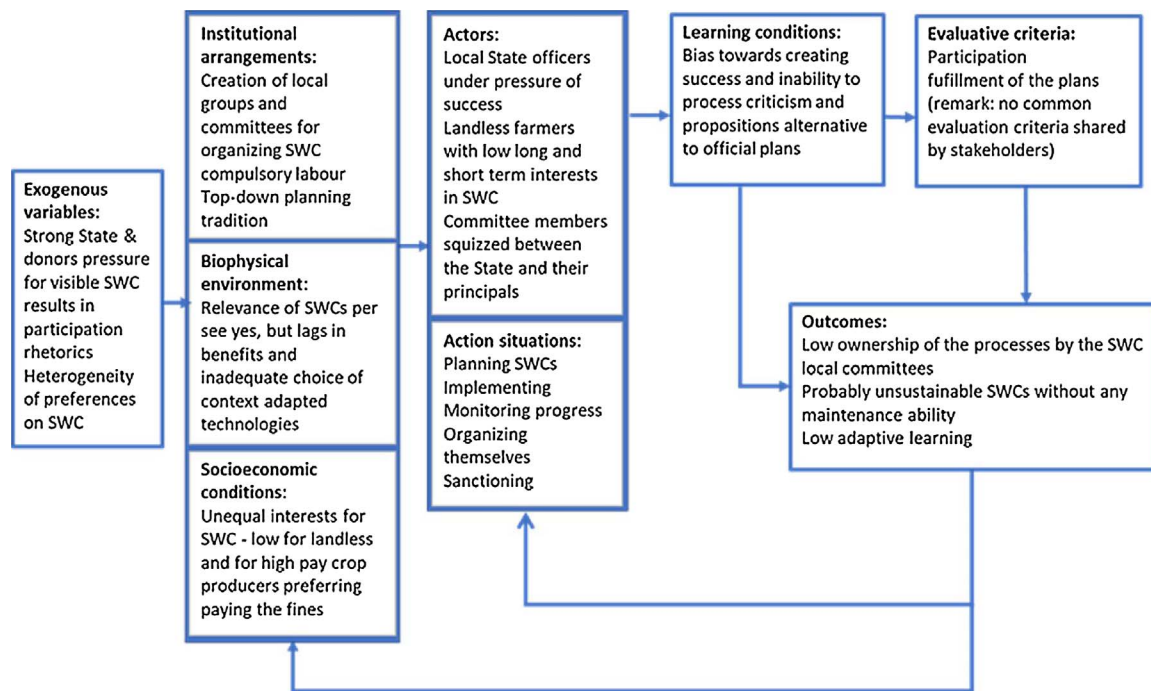


Fig. 4. Adapted IAD Framework for SWC Activities in UBNB, Ethiopia.

organize and facilitate the strategizing and planning processes and also to monitor and evaluate SWC activities and institutional performance of the SWC implementing organization. In particular, implementing and monitoring/evaluating institutions should be separated to align the reward system with respect to results obtained. Moreover, local decision making about SWC activities should actively involve all watershed users, with inputs from government and DAs expertise. This would ensure and foster bottom-up processes. The processes should also be evaluated by the target groups, in order to avoid suppression of criticism and a bias of reporting to fulfilling plans on paper rather than in reality on the ground.

12. Conclusion

Unless addressed in a timely fashion, the above issues will jeopardize current gains and potential future outcomes from SWC measures in watershed communities and pose continuing problems for respective programs' sustainability. Specifically, the findings from this study demonstrate that the established 'participatory' approaches are subject to criticisms that they are dominated by top-down processes, which lack stringent monitoring and reporting systems, and raise the risk of conflicts between farmers, local authorities or extension workers. As a consequence, approaches to solve soil and water management problems in the region need to cover a wider range of options, which include: making programs inclusive of the broad public starting from their early stages, i.e. applying bottom-up approaches; ensuring effective incentives for community participation (instead of e.g. applying penalties), and introducing holistic watershed development approaches, such as extending the programs to reach disadvantaged groups, taking closer looks at economic incentives and disincentives, and promoting employment opportunities and integration of local technologies from and in SWC. As one major bottleneck in conducting SWCs, we have identified bureaucratic structures, like the rigid reporting systems and the above mentioned penalty systems. This brings about new research needs for best practices of collaboration between State agencies and local-formal and informal-institutions in charge of managing commons as SWCs and their constituencies.

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