

Stakeholder analysis: Improving agricultural water management planning and practices to address small-scale producer vulnerability in the Awash River Basin, Ethiopia

Recommendations

- Engage all stakeholders in decision-making to improve the implementation of AWM and WRP.
- Build on the experiences of stakeholders.
- Improve stakeholder access to resources and provide capacity building training.
- Empower coordinating and implementing agents.
- Establish multi-stakeholder learning dialogs and platforms to incorporate multiple voices, plural meanings and elements of dissent in conversations.
- Strengthen collaboration and integration among stakeholders to improve the implementation of interventions.
- Support local-level competencies.
- Implement empowerment measures concentrated on the actors' capacity to organize themselves toward the implementation of AWM and WRP.
- Improve the enforcement of existing policies and laws at the grassroots level.

In the last two years (2022–2023), the International Water Management Institute (IWMI), in collaboration with Wollo University, implemented a research-for-development project titled '*Prioritization of Climate-smart Water Management Practices*' in Borkena and Mille catchments, Awash River Basin, Ethiopia. The objective was to improve the effectiveness of agricultural water management (AWM) and water resource planning (WRP) to address small-scale agricultural producers' vulnerability and draw lessons for future stakeholder engagement. We hope this will help stakeholders identify the actions needed to better plan, design and implement AWM and WRP.



Rainwater harvesting structures in Borkena catchment, Awash River Basin, Ethiopia (photo: Wolde Mekuria).

Context and objectives

In the Awash River Basin, existing water-related problems and small-scale producers' (SSPs) vulnerability are mounting because of anthropogenic and climatic factors (Bekele et al. 2019; Shawul and Chakma 2020; Maru et al. 2021). It is, therefore, crucial that we reduce the vulnerability of SSPs through integrated water resource management (Hailu et al. 2018). There is a need for improved planning, implementation, and monitoring and evaluation of multi-scale water resources planning and management practices (i.e., farm, watershed, landscape, basin scales), as well as sustaining the benefits of successful interventions. Such efforts, however, require i) understanding the system and addressing the underlying causes of water-related problems and vulnerability of SSPs (Liehr et al. 2017); ii) mapping, engaging and ensuring meaningful participation of all stakeholders (Hoolohan et al. 2018; Hailu et al. 2019); and iii) implementing AWM and WRP interventions with a full understanding of the local context, including respect for and understanding of the local

communities, smallholders' rights and the local and federal policy context.

This study was conducted to i) assess the drivers, pressures, states, impacts and responses related to SSPs' vulnerabilities; ii) identify and map the stakeholders involved in AWM and WRP; and iii) assess stakeholders' interests, priorities, power and power resources, and interactions among stakeholders, and suggest future actions for improved engagement and stakeholder participation.

Study catchments and methods

The study was undertaken in Borkena and Mille catchments in the Awash River Basin. The two catchments represent diverse agroecological zones and household and farm characteristics (Figure 1). Several AWM interventions were implemented in both catchments, with multiple stakeholders planning, designing and implementing the project. The study applied the five stages of conducting a stakeholder analysis described in Mekuria et al. (2021).

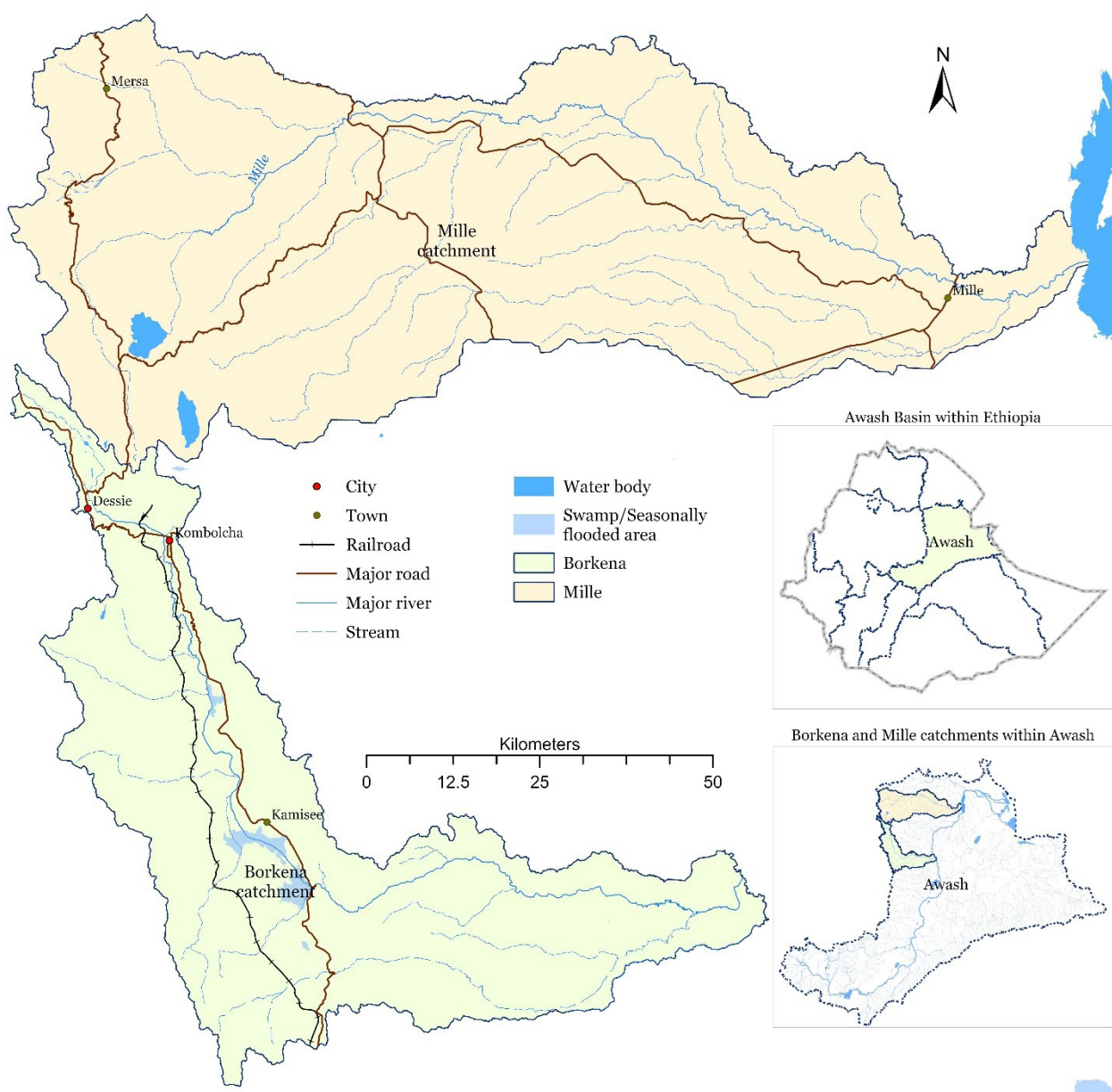


Figure 1. Map of Borkena and Mille catchments.

The researchers used key informant interviews (KIIs), focus group discussions, literature reviews and field observations to gather data. Data were collected from November 2022 to February 2023. Fifty-seven KIIs were conducted with people familiar with the issues and change objectives. The KIIs were conducted using informal and semi-structured questionnaires. The key informants represented a range of stakeholder categories (Table 1). The respondents were anonymous, and the information provided was reported as an opinion of the organization or institute they represented. Six focus group discussions were also conducted to gather data from farmers'

representatives, community watershed teams and irrigation water user associations.

We used the Driver-Pressure-State-Impact-Response (DPSIR) framework (Kristensen 2004) to understand the changes and status of the natural and agricultural systems in the two catchments. The tools outlined by Zimmermann and Maennling (2007) were used to conduct stakeholder mapping, describe their strategic options, and analyze their power and power resources, their interests and scope of action, influence and involvement, trust, and exclusion and empowerment (Table 2).

Table 1. Stakeholders consulted in the Borkena and Mille catchments.

Stakeholder categories	Stakeholders under each category
Development organizations (29)	Zone- and district-level water and energy, agriculture, land administration, livestock development, irrigation and lowlands, environment and forest protection and water supply and sewerage service offices
Development and research organizations (2)	Eastern Amhara Meteorology Service and Research Center and the South Wollo Agricultural Transformation Institute
Local administrative bodies (6)	Entities operating at both district and zone levels, including city administration offices and local administration bodies
Subregional policymakers and decision-makers (4)	Mainly the regional bureaus of water and energy, agriculture, land administration, and environment and forest protection
Communities and community-based organizations (6)	Water user associations, community watershed teams and local communities
Academic and research institutions (1)	Government academic institutions
Civil society organizations (1)	Logo-Ardibo Lake Protection and Development Association
Donors (1)	Donors working in small-scale irrigation and natural resources management
NGOs (1)	A nongovernmental organization (NGO) working on forest development
Private sector (6)	Stakeholders engaged in groundwater well drilling, brewery and textile industries

Notes: The number in the parenthesis indicates the number of stakeholders grouped in the respective category.

Table 2. Criteria and approaches used for stakeholder analyses.

Types of stakeholder analysis	Description
Stakeholder mapping	Involved stakeholder identification and assessing the agenda, arena and alliance of identified stakeholders.
Investigating strategic options	Involved ten criteria outlined by Zimmermann and Maennling (2007).
Power and power resources	This focused on two aspects: the stakeholders' legitimate power and power resources.
Stakeholders' interests and scope of action	This analysis assessed whether the interests of the stakeholders and the assertion of stakeholder interests were likely to impact the use and management of water resources and AWM.
Stakeholder influence and involvement	This posed two questions on: i) stakeholder attitudes to the vulnerability of SSPs, the role of WRP and implementation of AWM in addressing vulnerability, and ii) stakeholder influence on achieving all project activities under consideration in the catchment.
Trust building	This analysis focused on investigating trust among and between stakeholders, discussing options for strengthening the cooperation network and analyzing specific stakeholder relationships.
Exclusion and empowerment	This analysis identified disadvantaged and marginalized stakeholders and discussed empowerment strategies. It employed two indicators: access to and control of resources and basic competencies of the stakeholder.

Notes: AWM - agricultural water management; WRP - water resource planning; SSP - small-scale producer

Findings and implications for the implementation of AWM and WRP

Responses implemented to address the vulnerability of SSPs need improvement

The multiple drivers and their diverse environmental, economic and social impacts (Figure 2) suggest that natural resources and agricultural systems are not functioning well in multiple sectors, including forest management, policies and strategies, planning, design, implementation, monitoring and evaluation, and management of water infrastructures,

agricultural land management, and land use and land conversion. Such failures indicate that the system in the two catchments is fragile, unable to support the livelihoods of SSPs and increasing their vulnerability. Multiple responses were implemented to address the vulnerability of SSPs (Figure 2). These responses provide multiple economic (e.g., increasing income and job opportunities, creating a resilient economy), social (e.g., reducing conflict over resource use and farmers' vulnerability to climate change, and ensuring equitable and sustainable use of natural resources) and environmental (e.g., improving water use efficiency, reducing water losses) benefits.

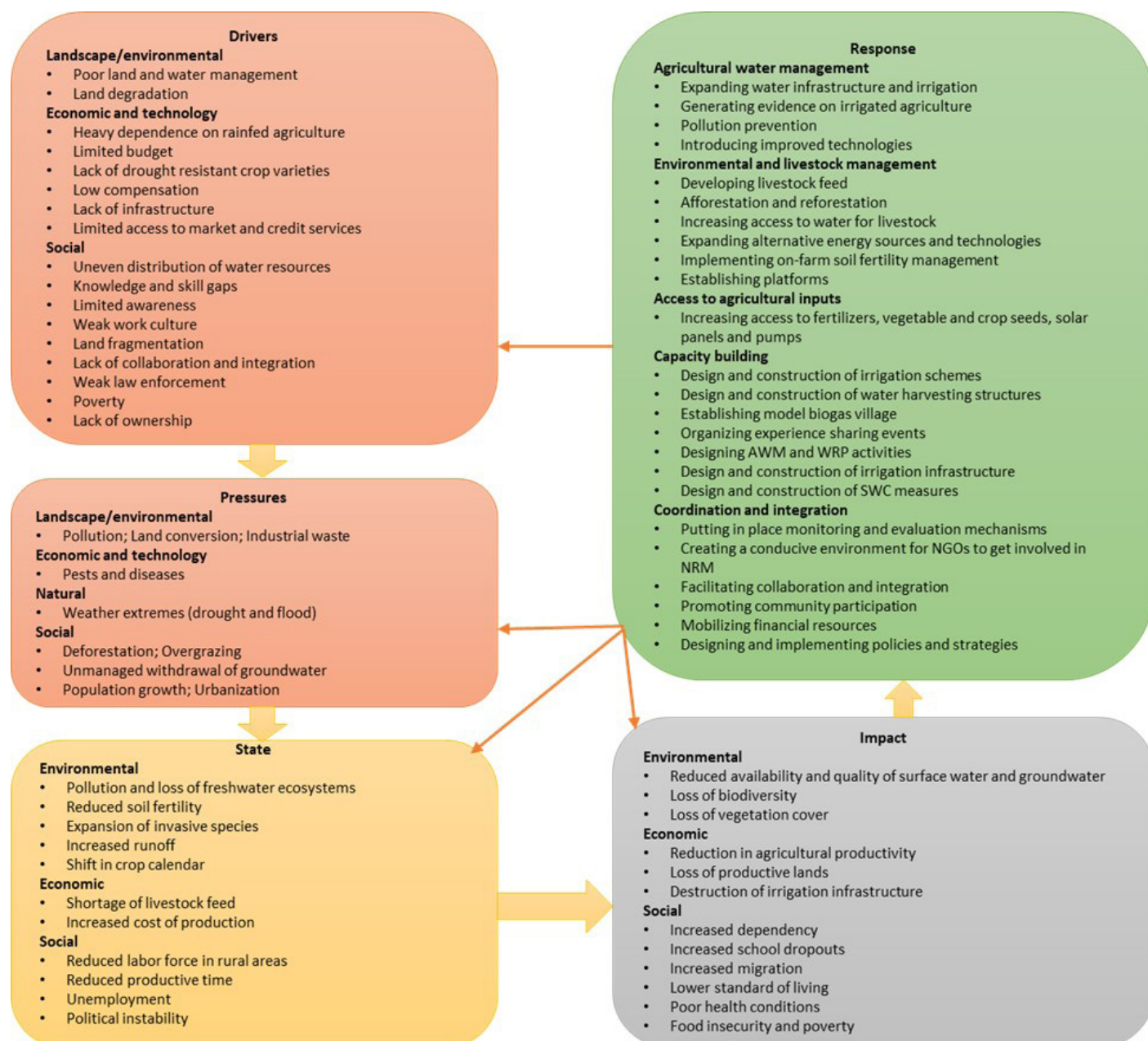


Figure 2. The DPSIR framework for the vulnerability of small-scale agricultural producers in Borkena and Mille catchments as perceived by local communities.

Notes: AWM - agricultural water management; WRP - water resource planning; SWC - soil and water conservation; NGOs - nongovernmental organizations; NRM - natural resource management

Stakeholders indicated multiple areas where improvements are needed and identified strategies to improve the planning and implementation of AWM and WRP (Table 3). The stakeholders did not have different opinions on the resources required to improve the implementation of multi-scale AWM and WRP. Most stakeholders stated that resources such as skilled manpower,

finance and increased access to appropriate technologies, materials and equipment could ensure improvement in AWM and WRP. The results also indicated that actors in the private sector were not considerably different in their opinions on improving the implementation of AWM and WRP. This suggests that there is a good opportunity to engage the private sector.

Table 3. Strategies to improve the planning and implementation of AWM and WRP.

Areas needing improvement	Strategies
• Level of coordination and engagement of stakeholders • Diversity and coverage of infrastructure • Evidence-based and demand-driven planning • Access to technologies and best practices • Coverage and diversity of capacity building training • Reducing water losses and ensuring efficient use of water resources • Developing irrigation infrastructure for multiple uses • Capitalizing on indigenous knowledge • Impact-oriented planning and strengthening institutions • Ensuring equity in benefit sharing • Management of the buffer zone of freshwater ecosystems	• Community participation and participatory decision-making • Aligning plans with communities' priorities and interests • Enhancing collaboration and integration • Improving the allocation of resources (financial, human and material) • Providing targeted capacity building and continuous awareness raising • Enhancing implementation of policies and strategies

Improving stakeholder access to resources and capacity building training is required

All stakeholders categorized as government development organizations had perceived strong legitimacy but were weak in resources and connections (Figure 3). The stakeholders categorized under local administrative bodies showed a higher proportion of stakeholders with perceived strong control over resources and connections. Only 50% of the stakeholders under subregional policymakers and decision-makers had strong control over resources and connections. Communities and community-based organizations were not strong in the two core functions of control over resources and connections. The strong legitimacy of many stakeholders indicates they have strong agency to change the course of events or influence the decisions of others. This could facilitate their access to political support and the mobilization of local communities. Local governments with strong legitimacy enhance the participation of stakeholders and can promote intermediary roles for partnerships with multiple stakeholders. However, the weakness of most stakeholders in control over resources and connections suggests the need for financial and material support and capacity building to effectively implement AWM and WRP.

There is high potential for collaboration among stakeholders to implement AWM and WRP

Most stakeholder groups did not diverge in their strategic options. For example, of the nine stakeholder groups, eight strongly agreed (i.e., $\geq +1.5$) with statements describing that (a) their organization implements development interventions based on participation and balancing of interests, (b) their organizations are operationally effective, (c) they act based on transparent guides and strategies, (d) they are quick to flag tensions and resolve conflicts, and (e) evaluate their experience and capitalize on it (Figure 4). Forty-four percent of the development and research organizations, donors, NGOs and private sector groups strongly agreed that they are flexible and innovative, 66% claimed to have strong relationships and connections with other stakeholders and 77% asserted that they work toward building trust. However, most of the stakeholders did not agree with the statement that their organization is flexible and innovative (56%).

The results indicate a high potential for collaboration among stakeholders because those with similar strategic options support the achievement of organizational objectives more effectively through collaboration than through competition. This helps the range of stakeholder groups develop a better understanding of the issues and challenges related to achieving improved water resource management.

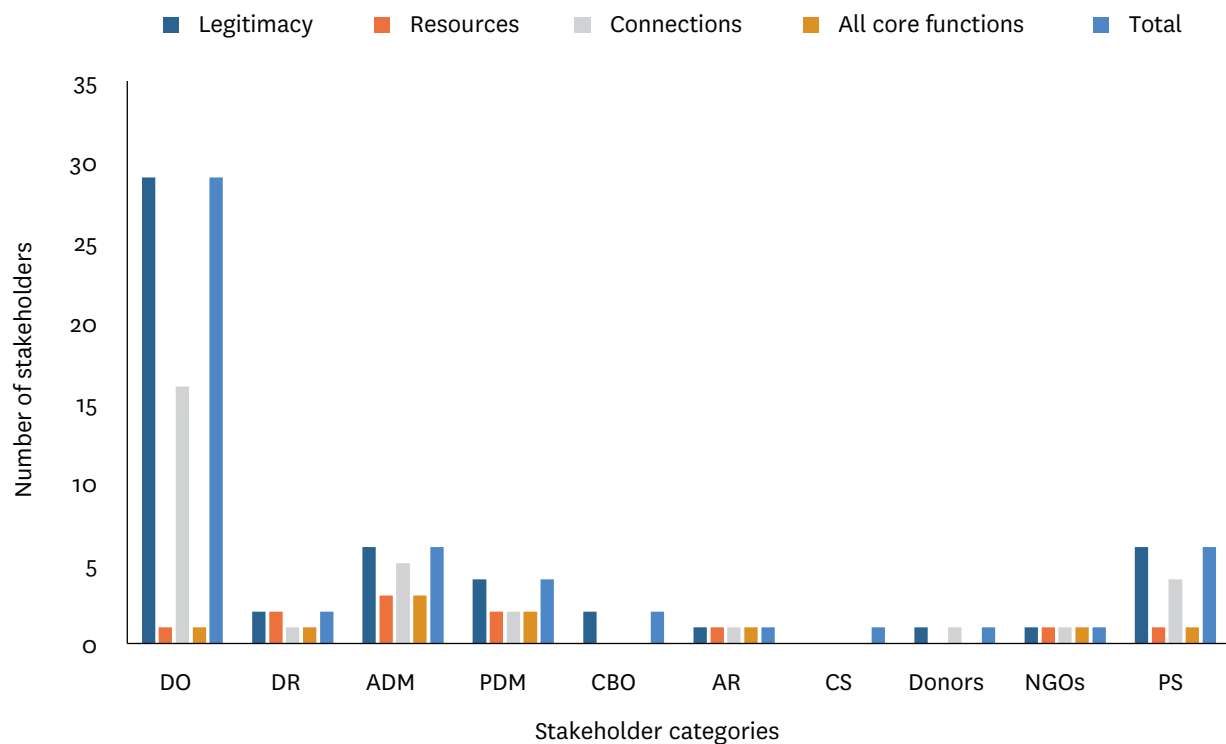


Figure 3. Core functions of identified stakeholders.

Notes: DO - development organizations; DR - development and research organizations; ADM - local administrative bodies; PDM - policymakers and decision-makers; CBO - communities and community-based organizations; AR - academic and research institutions; CS - civil society organizations; NGOs - nongovernmental organizations; PS - private sector

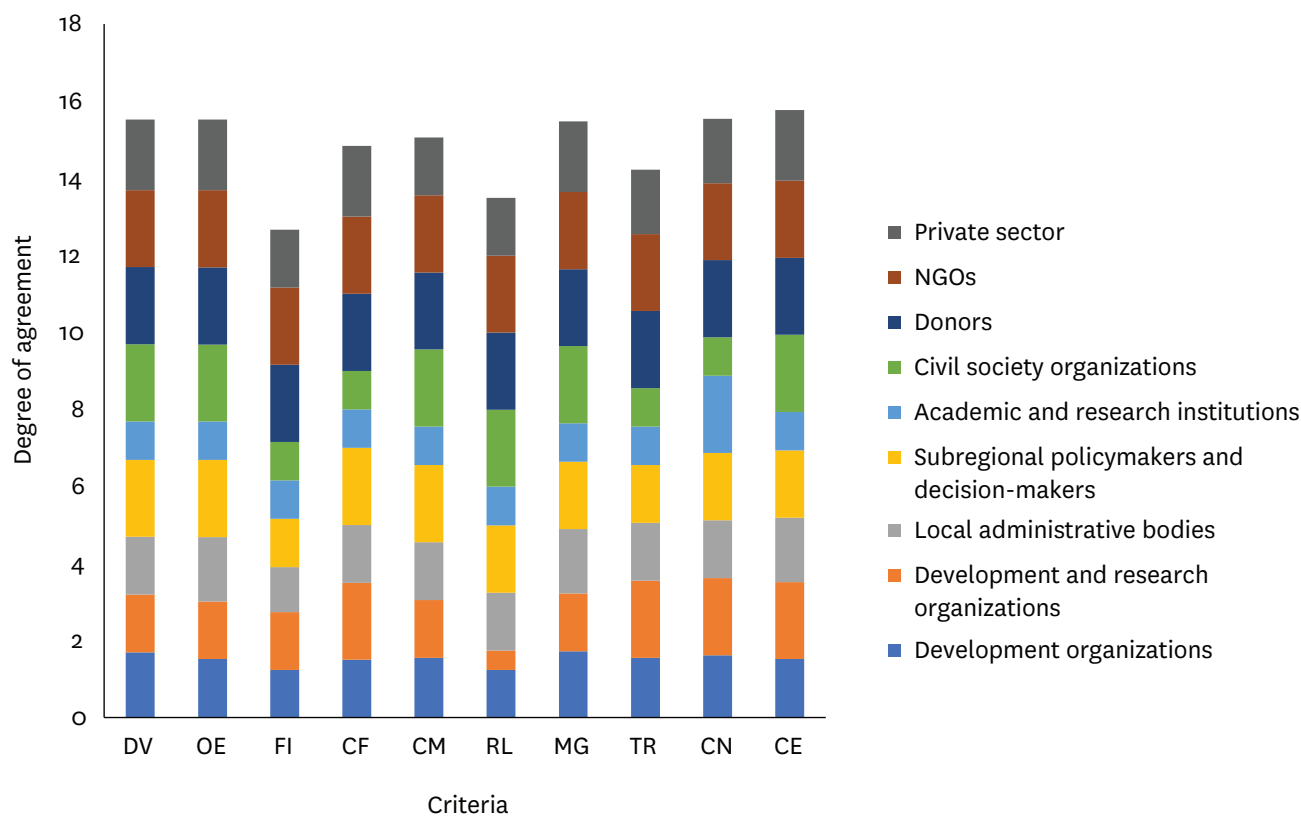


Figure 4. Strategic options of stakeholder categories.

Notes: DV - development vision; OE - operational effectiveness; FI - flexibility and innovation; CF - contractual fidelity; CM - communication; RL - relationships; MG - management; TR - trust; CN - conflicts; CE - capitalizing on experience; NGOs - nongovernmental organizations

The degree of agreement of each stakeholder with the statements (or strategic options) varied between - and ++. The sum of the ratings of the nine stakeholder groups could range from -18 to +18.

Stakeholders vary considerably in power and power resources

The analysis of the perceived legitimate power based on seven types of authority showed that multiple stakeholder groups did not vary considerably in their legitimate power (i.e., the values out of 21 varied between 18 and 2) (Figure 5). This indicates that the stakeholder groups have relatively similar access to information, practical relevance and social relations and do not vary considerably in their negotiation skills. The private sector and civil society actors showed legitimate power comparable

to the other stakeholder groups. This could be attributed to the nature of the private sector which is parastatal and close to government organizations. The results also demonstrated that most of the power resources all the stakeholder groups acquired could be used without major additional inputs. However, it still requires the empowerment of a coordinating and implementing agent (i.e., the local administrative bodies and development organizations). Such analyses support regulating or balancing the influence of powerful stakeholders on the outcomes of the participatory process for marginalized stakeholders.

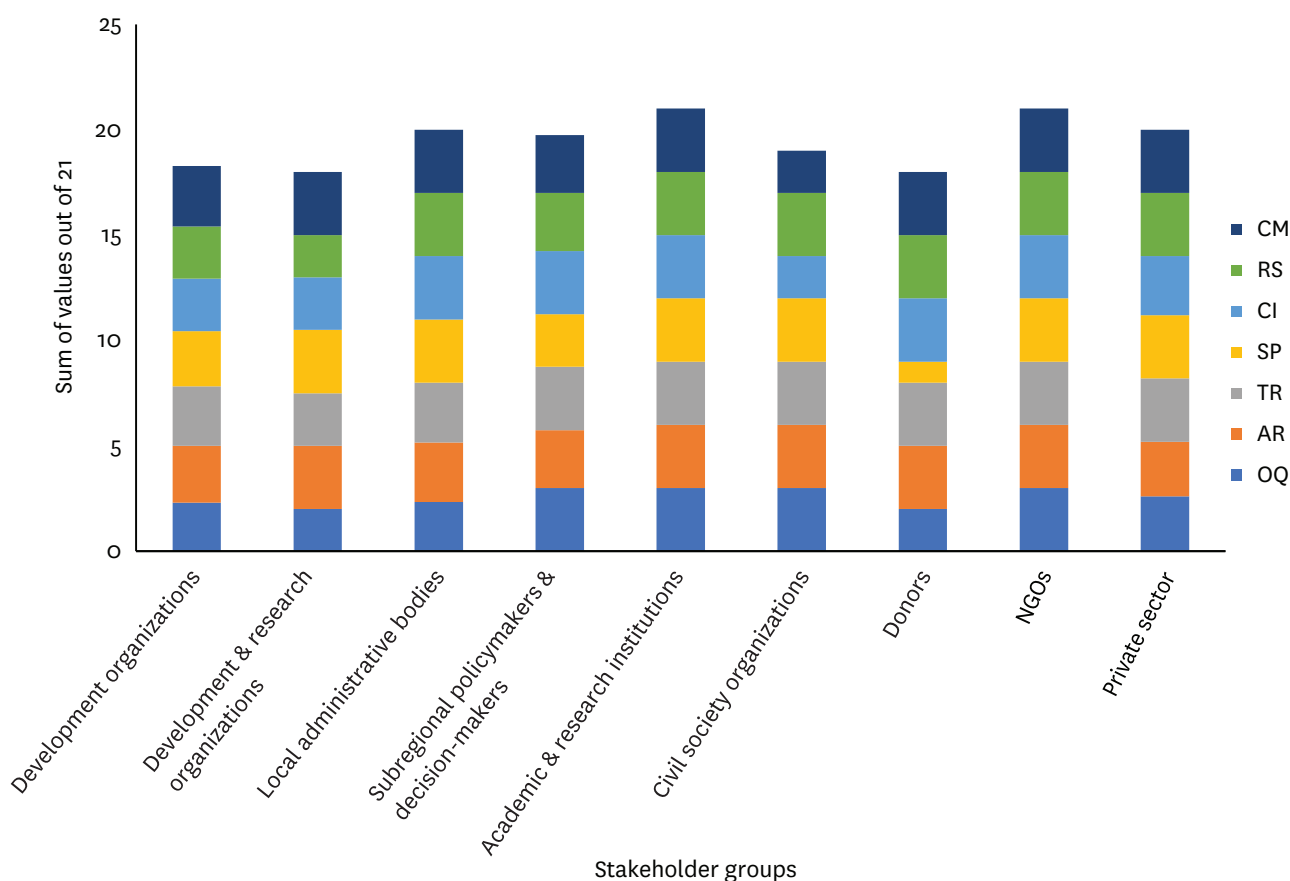


Figure 5. Perceived legitimate power of stakeholders based on seven types of authority.

Notes: CM - channeling messages to superiors and external bodies; RS - allocating rewards, recognition and sanctions; CI - controlling access to information and knowledge; SP - structuring the participation in decision-making processes; TR - defining roles, tasks and responsibilities; AR - allocating or denying resources; OQ - setting objectives, norms and quality control; NGOs - nongovernmental organizations
Score 3 denotes strong, score 2 intermediate and score 1 weak authority.

Engaging stakeholders in planning and decision-making is required

Most stakeholders had moderate to strong interest in engaging in activities focusing on reducing the vulnerability of SSPs through improved implementation of AWM and WRP. Differences in the degree of their influence were observed within and between stakeholder groups. For example, 10% of stakeholders categorized as development organizations are only influential in some areas, 41% are considered influential and 49% are seen as very influential, suggesting differences within a stakeholder

group in speeding up or obstructing the implementation of the change objective. Comparisons between stakeholder groups indicated that 100% of the local administrative bodies, NGOs, and subregional policymakers and decision-makers, 49% of development organizations and 40% of the private sector were very influential. Such diverse interests and influences support the principle of engaging all stakeholders when planning and implementing an intervention and in decision-making. Here, the involvement of development organizations, local administrative bodies and subregional policymakers and decision-makers from project inception to monitoring and evaluation would be crucial.

Ensuring such meaningful participation of stakeholders could support reducing the vulnerability of SSPs through effective implementation of AWM and WRP.

Implementation of AWM and WRP can be achieved with low transaction costs

The overall analyses on the level of trust among stakeholder groups suggested that implementing AWM and WRP could be carried out with low transaction costs, as the level of trust among stakeholders ranged from moderate to pronounced (Figure 6). Trust partially mediates the relationship between stakeholder behavior and management and has an important role in driving cooperation intention and behavior. Trust is an ideal lubricant for smooth and effective coordination and it reduces harmful conflicts and transaction costs.

Strengthening collaboration and integration among stakeholders is needed

The alliance or relationship of most stakeholder groups in terms of institutionally regulated dependency and ongoing information exchanges was found to be strong compared to their relationship in terms of coordinated action and co-production with common resources (Figure 7). The relatively weak relationship or alliance regarding coordinated action and co-production with common resources could affect the successful implementation of AWM and WRP. It may also affect the efficient use of limited resources and reduce productivity. This supports the need for strengthening collaboration and integration, which the stakeholders suggest as one strategy to improve the implementation of interventions.

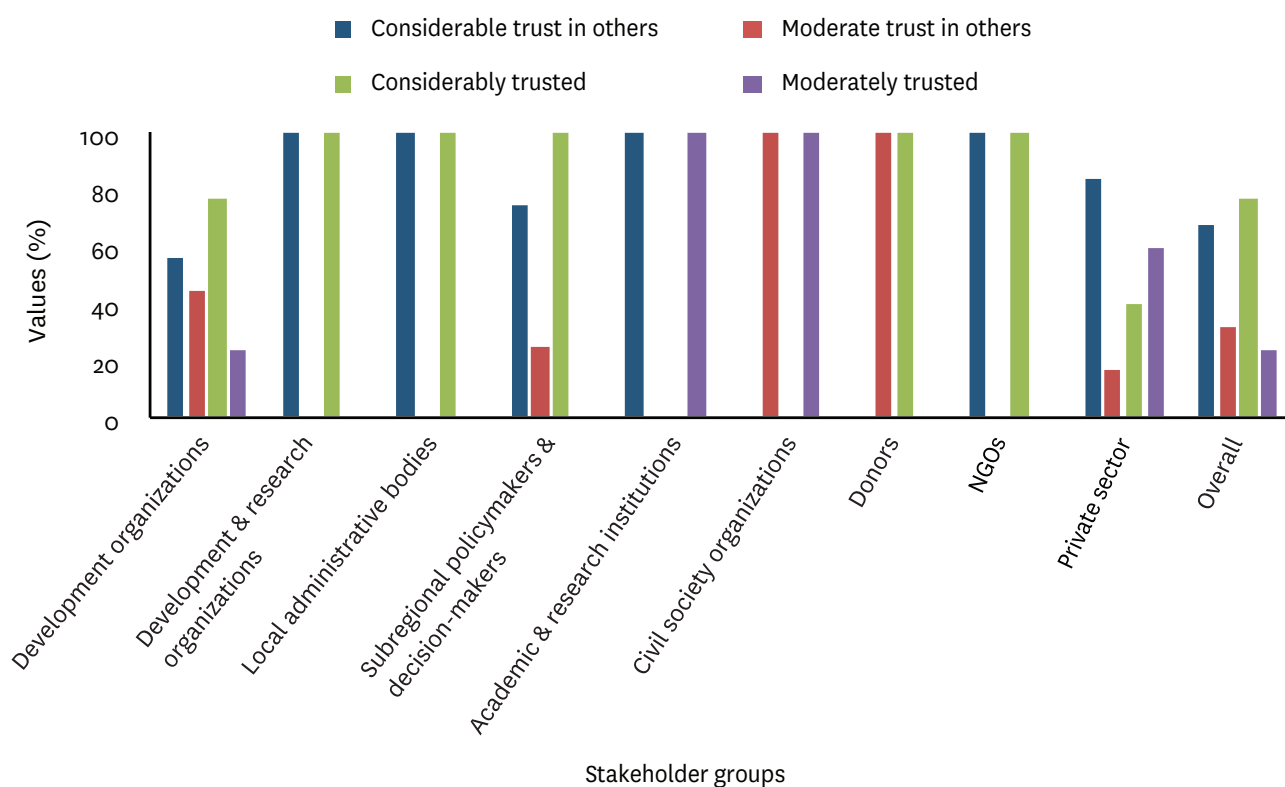


Figure 6. Level of trust among stakeholder groups.

Note: NGOs - nongovernmental organizations

Building local-level competencies and support is crucial

The analyses of the exclusion and empowerment indicators (i.e., access to and control of resources and competencies) showed differences among stakeholder categories and between stakeholders in the same category in their basic

competencies and control of resources (Figure 8). The results suggest that building local-level competencies and supporting local-level practitioners are crucial for effectively implementing the change objective. The results also suggest that empowerment measures should be concentrated on the actors' capacity to organize toward implementing the change objective.

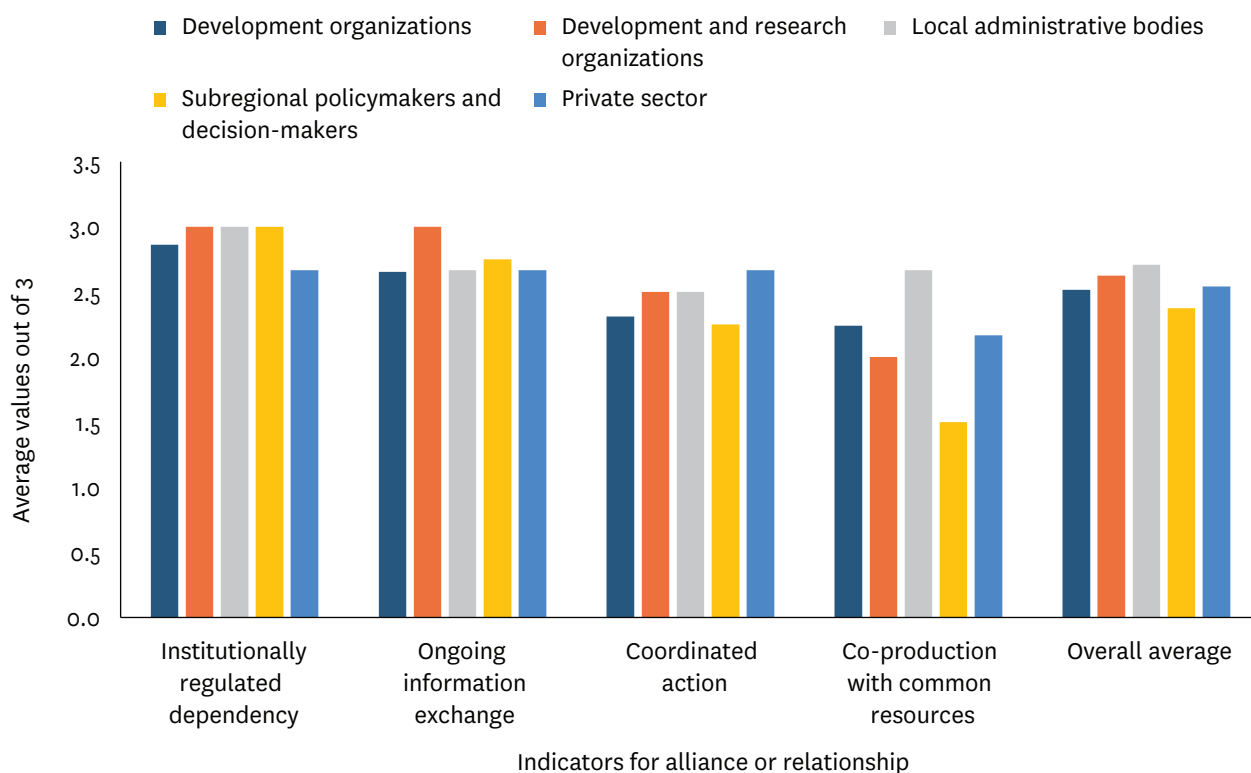


Figure 7. Alliance or relationships among stakeholder groups based on four criteria.

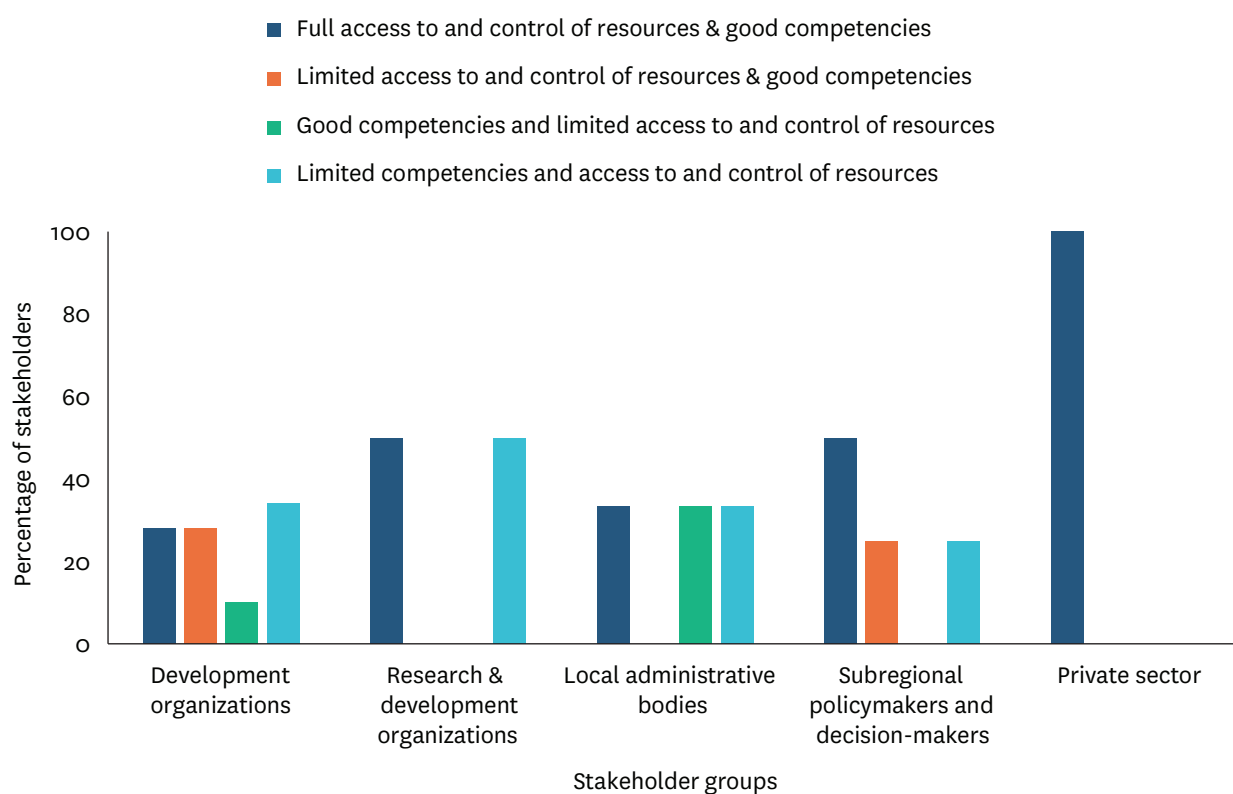


Figure 8. Differences in access to and control of resources and competencies within selected stakeholder groups.



Mountainous landscape in Borkena catchment, Ethiopia (Photo: Wolde Mekuria).

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Further Reading

- Mekuria, W.; Admasu, W.; Abebe, S.; Negash, D.; Getachew, T.; Seid, A.H.; Hailelassie, A. System understanding and stakeholder analyses for the vulnerability of small-scale agricultural producers in Awash River Basin, Ethiopia. *People and Nature*. Under review.

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The project

This study was undertaken as part of the project *Prioritization of Climate-smart Water Management Practices*, funded by the Bill & Melinda Gates Foundation aimed to contribute to country-led inclusive agricultural transformation by improving the evidence base for adaptation practice and supporting government-level decision-making to enhance or protect agricultural productivity and small-scale producer income under projected climate change. At the country and system levels, this will improve national- and state-level resource allocation and policies related to water resource management interventions. It is also aimed at supporting further investments to refine and release the prioritization tools (as Global Public Goods), pilot priority water management practices in the selected geographies, and assess impacts according to predefined cross-sector indicators for agriculture and natural resource development. The project is led by the International Water Management Institute (IWMI) and implemented in partnership with Wollo University and Samara University, Ethiopia.

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