

Local knowledge and institutions in land resources management in Ethiopia

Evidence from three complementary Halaba publications and Sustainable Land Management for Improved Livelihoods in the Ethiopian Rift Valley (SMILE) project experience

Summary

Local knowledge is a decisive yet under-recognized asset for sustainable land management (SLM) in Ethiopia's Rift Valley landscapes. This brief synthesizes three complementary Halaba publications: a study of farmers' perceived benefits and disbenefits of adopted SLM practices (Mekuria et al., 2025), a participatory resource-mapping study of gully rehabilitation (Mekuria et al., 2026), and a mixed-method assessment of inclusive land restoration (Tegegne et al., 2026). The evidence

shows how knowledge held by farmers, elders, women, youth, watershed committees and local practitioners improves decisions throughout the SLM cycle. Lessons from documented REDAA - SMILE project activities further demonstrate practical entry points: participatory resource mapping, validation of land and water management options, community-based restoration planning, field demonstrations, outreach, local rules and follow-up.

Key findings

DESIGN FIT

Communities match measures to gully size, soil and water-flow conditions, available materials and livelihood value. For example, Gabions are associated with large or severe gullies, loose rock with medium gullies, and vegetation, sandbags, wooden check dams and soil bunds with smaller or early-stage gullies.

SEASONAL FEASIBILITY

Community calendars reveal when water, feed, seedlings, grasses, stones and labor are available. They help separate dry-season construction from rain-linked planting and stabilization and expose competition with household livelihood demands.

COLLECTIVE ACTION

Watershed committees, Sera¹ and Iddir² translate knowledge into labor mobilization, locally agreed rules, sanctions, conflict resolution, access control and maintenance.

EARLY PRIORITIZATION

Local degradation histories identify where erosion began, how gullies expanded and why delayed action increased rehabilitation difficulty.

INCLUSION

Women, poorer households and other less influential groups may depend on different resources and experience different costs. Separate consultation and participatory mapping prevent aggregate priorities from hiding these needs.

MONITORING AND ADAPTATION

Continuous observation detects poor siting, construction defects, overtopping, damage and maintenance gaps. Locally meaningful indicators—vegetation recovery, soil-moisture retention, gully stabilization, sediment accumulation, productivity and livelihood benefits—guide corrective action.

¹ The traditional, unwritten legal code and governance system of the Halaba people of southern Ethiopia. It serves as a community-led judicial framework to resolve conflicts, maintain social order, enforce moral standards, and administer customary justice through council elders.

² A widespread, indigenous mutual aid association in Ethiopia, primarily focused on providing financial, material, and emotional support during funerals and burials. Members contribute regular dues to a communal fund, ensuring that any family facing a loss receives immediate assistance with funeral arrangements and community mourning.

1. Introduction

In Halaba, Ethiopia (Figure 1), communities face soil erosion and gully expansion, declining soil fertility, water shortages, deforestation and food insecurity. Responses include terraces, bunds, trenches, check dams, water-harvesting structures, afforestation and reforestation, exclosures, fodder planting and soil-fertility management. Outcomes remain uneven when interventions do not reflect local resources, labor calendars, institutions, livelihood priorities, maintenance arrangements and social acceptance (Tegegne et al., 2026).

Local knowledge refers here to the experience-based, place-specific understanding held by farmers, elders, women, youth, watershed groups and local practitioners. It explains where erosion begins, how degradation changes over time, what resources are available, when labor and planting materials can be mobilized, which benefits matter to different groups, and why interventions succeed or fail. Treating this knowledge as a formal input to decisions makes restoration more feasible, inclusive, and durable.

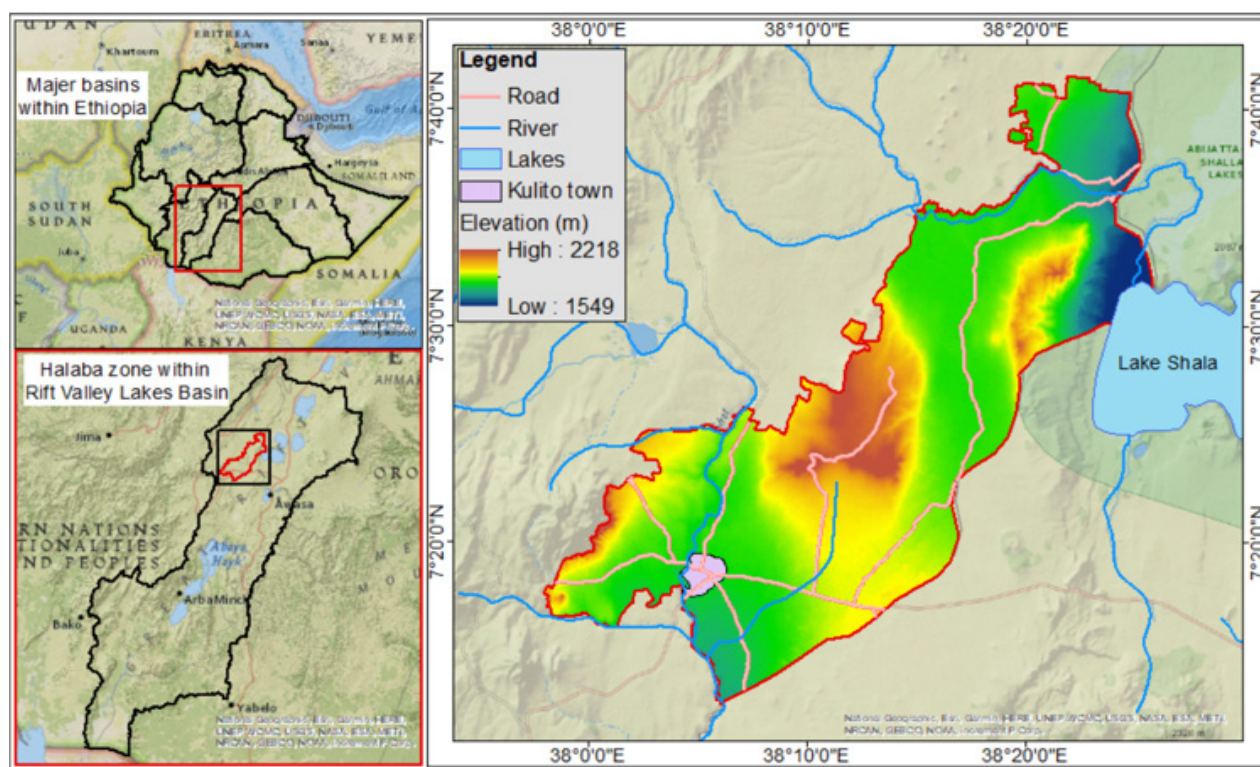


Figure 1: Location map of the study area.

Source: Authors creation

2. Why local knowledge matters

Sustainable land management (SLM) practices are implemented in particular places, seasons, and institutional settings. Local knowledge connects those conditions to practical choices. It makes visible the factors that often determine performance but can be missed in standardized planning: household labor constraints, maintenance capacity, access inequalities, perceived

costs, locally available materials, customary rules and the livelihood value of restored land. Because these conditions differ among locations and social groups, local knowledge must be documented through participatory mapping, seasonal calendars, group-specific consultation and regular community reflection—not treated as a one-time consultation.



3. Local knowledge across the sustainable land management cycle

3.1 Design: match measures to place and livelihoods

Local knowledge translates broad menus of SLM options into site-, landscape- and livelihood-specific designs. Communities draw on soil characteristics, gully dimensions, water-flow patterns, historical land-use change and the observed performance of earlier measures. For gully rehabilitation, stakeholders associate gabion check dams with large, deep or severe gullies; loose-rock check dams with medium gullies; and sandbags, vegetation, log/wooden check dams and soil bunds with small or early-stage gullies (Mekuria et al., 2026, Figure 2). This local classification discourages uniform application and directs each measure to the conditions for which it is considered suitable.

Farmers also assess whether interventions can restore land while supporting household needs. Their experience favors dual-purpose vegetation that stabilizes structures and supplies fodder, and it recognizes that vegetation often performs best when combined with physical measures (Mekuria et al., 2026). Design decisions therefore account for both restoration and the resource flows on which households depend.

Local assessments also surface trade-offs before implementation. Most practices were viewed positively overall, but gabion check dams were assessed negatively because of high construction costs and the need for skills beyond local capacity. Other reported drawbacks included heavy labor demand, loss of cultivable land, guard fees, movement restrictions, conflict over resource use, accident risks around water-harvesting structures and possible waterborne disease (Mekuria et al., 2025; Tegegne et al., 2026). Considering these issues early improves affordability, maintainability, and acceptance.

Local design rule: match the measure to gully size

SMALL / EARLY-STAGE	MEDIUM	ARGE / DEEP / SEVERE
Soil bunds Vegetation Sandbag Log/wooden check dams	Loose-rock check dams	Gabion check dams

Figure 2. Community-identified matching of gully-control measures to gully size.

Source: Mekuria et al., 2026.

3.2 Planning: use history, seasons and differentiated priorities

Communities and elders provide historical and spatial context for prioritization, identifying declining soil fertility, water scarcity, gully expansion, vegetation loss, and changing land-use practices. Elders' accounts of long-term land-use legacies and early drainage structures help reconstruct degradation pathways. The gully resource mapping study documented worsening over 15–25 years and identified neglect of small gullies as a missed opportunity that allowed manageable features to develop into severe systems (Mekuria et al., 2026). This evidence supports early action and locally informed sequencing.

Seasonal calendars (Figure 3) improve timing and feasibility by showing when water, stones, seedlings, grasses, forage species and labor are available. Water was reported as sufficient mainly during May–September and insufficient during November–March; livestock feed was sufficient mainly during May–January and scarce during February–April. Seedlings, forage grasses and other biological materials were more available during the rainy season, while watershed construction was commonly scheduled during the dry period. Planning should therefore distinguish dry-season structural work from rain-linked planting and stabilization and account for competing livelihood and labor demands (Tegegne et al., 2026).

Community seasonal calendar

Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Livestock feed	●	×	×	×	●	●	●	●	●	●	●	●

● Sufficient × Scarce/insufficient – Not specified.

Figure 3. Locally reported seasonal resource availability.

Source: Tegegne et al., 2026

Inclusive planning must also recognize differentiated resource needs. Better-resourced households tend to prioritize cropland and grazing land, whereas poorer households depend more on diverse communal assets such as forests and ponds. Aggregate consultation can conceal these differences. Participatory mapping and separate consultations with women, poorer households and other less influential groups are therefore needed to identify hidden priorities, determine intervention locations and clarify how communal resources can support rehabilitation (Tegegne et al., 2026).

3.3 Implementation: mobilize local capacity and institutions

Implementation is most feasible when intervention requirements match locally available labor, skills and materials. Nature-based and locally constructed measures draw more readily on community capacity, whereas gabion structures require specialized inputs and skills. A measure may therefore be regarded as effective yet remain difficult to implement or scale (Mekuria et al., 2026).

Watershed committees organize participation and communal labor. Customary institutions such as Sera and Iddir support rule enforcement, conflict resolution and collective action. Household labor obligations, locally agreed sanctions and rules governing access to rehabilitated areas turn participation into an operational system for implementation and protection rather than a one-off consultation (Mekuria et al., 2026).

Local capacity nevertheless has practical limits. Participants reported shortages of tools and construction materials, limited access to equipment and weak financing for demanding structures. Before construction, stakeholders should agree on labor and material commitments, maintenance responsibilities, access rules and benefit-sharing arrangements. External support should target gaps that communities cannot fill without displacing local leadership.

3.4 Monitoring and evaluation: make observation actionable

Community members and local practitioners are front-line monitors because they observe interventions continuously and understand how terrain, rainfall and land use behave. Their observations can identify poor site selection, inappropriate matching of structures to gully conditions, weak construction quality, overtopping and insufficient maintenance. Monitoring should begin during construction and continue through the rainy season, when structures are tested by peak flows, rather than being confined to completion checks (Mekuria et al., 2025; Mekuria et al., 2026).

Community rules and bylaws give monitoring authority, while watershed committees provide day-to-day oversight by tracking labor contributions, enforcing grazing restrictions, recording damage, flagging maintenance needs and checking compliance with local agreements. This links observation directly to responsibility and corrective action.

Locally meaningful indicators include vegetation recovery, soil-moisture retention, reduced gully expansion, gully stabilization, sediment accumulation behind structures, improved land

productivity and tangible livelihood benefits. Reviewing these signs over time helps communities judge performance, maintain successful measures and respond early when conditions change.

3.5 Adaptive management: learn, adjust and continue

Adaptive management uses experience to revise intervention choice, sequencing and maintenance. Across the studies, material- and skill-intensive structures were sometimes considered effective but difficult to implement, while locally available nature-based measures were viewed as more feasible and scalable. A phased strategy can begin with biological and small-structure measures that communities can implement and maintain, while reserving gabions for critical sites where materials, financing, skills and maintenance are assured (Mekuria et al., 2025; Mekuria et al., 2026).

Seasonal reflection meetings should review local indicators, emerging disbenefits, resource availability, labor arrangements and the performance of community rules. Findings can then guide changes in site selection, combinations of measures, implementation calendars, maintenance priorities and support packages. In this way, local knowledge remains a living management system rather than a static record.

4. Recommendations: apply local knowledge across the SLM cycle

The recommendations below translate the evidence from the three publications and documented SMILE activities into a focused set of stakeholder actions.

4.1. Policymakers and government decision-makers

Priority: Institutionalize local knowledge in SLM policy, watershed planning and monitoring.

Require participatory resource mapping and community consultation in planning guidance; include locally meaningful indicators in M&E and reporting; dedicate budgets to engagement, documentation and participatory monitoring; and support exchange of local experience within and across communities.

4.2. Local governments and watershed authorities

Priority: Make community knowledge the starting point for site selection, scheduling and implementation.

Hold annual participatory planning forums; map degradation histories, resource availability and past successes or failures before choosing sites; consult women, youth, elders and poorer households separately where needed; include watershed committee representatives in review meetings; and maintain accessible community feedback channels.

4.3. Extension services

Priority: Facilitate co-design, demonstration and follow-up rather than one-way prescription.

Use elders' and farmers' knowledge in recommendations; document local design rules and seasonal calendars; establish jointly selected demonstration sites; organize field-based peer

learning; and make follow-up during construction and rainy-season performance a routine extension task.

4.4. Communities and customary institutions

Priority: Strengthen local leadership, accountability and inclusive participation.

Use watershed committees, Sera and Iddir to mobilize labor, manage access, resolve conflict and enforce agreed rules; establish community monitoring groups; document observations and lessons; and hold seasonal reflection meetings to update priorities, bylaws and maintenance actions.

4.5. Development partners and NGOs

Priority: Finance gaps while reinforcing local systems.

Fund participatory planning, community engagement,

tools, materials and institutional strengthening; prioritize options that build on local resources and skills; support peer-to-peer learning and accessible communication products; include local-knowledge use in project performance frameworks; and align activities with relevant government annual plans.

4.6. Researchers

Priority: Document, analyze and communicate local knowledge in accessible forms.

Incorporate participatory resource mapping, seasonal calendars, group-specific consultation and long-term participatory monitoring in research protocols; document locally informed practices and disbenefits; and develop usable products for communities and decision-makers.



Intensively used landscape in the Sidama region, Ethiopia.
Photo by Wolde Mekuria

5. Key next steps: a local knowledge action cycle

The brief's evidence points to a continuous five-step cycle. Each round of implementation generates observations that update community knowledge and improve the next round of planning.

1 DOCUMENT

Record degradation histories, local design rules, seasonal calendars, priorities, disbenefits and earlier lessons.



2 PLAN AND PRIORITIZE

Use participatory mapping and inclusive consultation to select sites, measures, timing and responsibilities.



3 IMPLEMENT

Match actions to local labor, skills, materials and institutions; confirm access, maintenance and benefit-sharing rules.



4 MONITOR

Track construction, rainy-season performance, damage, maintenance and locally meaningful environmental and livelihood indicators.



5 REFLECT AND ADAPT

Review observations seasonally; adjust locations, combinations, calendars, rules, maintenance and support; feed lessons back into documentation.

6. Conclusion

The Halaba evidence shows that local knowledge and institutions are not simply contextual information collected before implementation. It guides the full management cycle: communities distinguish among sites and gully types, identify feasible combinations of structural and biological measures, reveal costs and disbenefits, align work with seasonal resources, mobilize collective action through watershed committees and customary institutions, and monitor change through locally meaningful indicators. These functions directly influence whether interventions are accepted, maintained

and adjusted over time (Mekuria et al., 2025; Mekuria et al., 2026; Tegegne et al., 2026).

The practical implication for wider SLM programming is clear: local knowledge should be documented systematically, used to shape decisions, embedded in implementation and monitoring arrangements, and revisited through regular community reflection. When local knowledge and institutions have a defined role, adequate resources and institutional recognition, it becomes a continuing basis for locally feasible, inclusive and durable land restoration.



Bibliography

Mekuria, W., Tegegne, D., Girma, R. and Moges, A. 2025. Landscape Management Options in Halaba, Ethiopia: Benefits and Disbenefits from Farmers' Perspective. June 2025.

Mekuria, W., Gebreab, Y., Teshale, T. and Moges, A. 2026. Participatory Resource Mapping of Gully Rehabilitation: Insights from Community and Institutional Perspectives from Halaba, Central Ethiopia. March 2026.

Tegegne, D., Sieber, S., Uckert, G., Girma, R., Moges, A. and Mekuria, W. 2026. Using local knowledge and scientific assessment for inclusive land restoration in Halaba, Central Ethiopia. *Discover Sustainability*, 7(1), 943. <https://doi.org/10.1007/s43621-026-03681-0>.

SMILE/REDAA. 2026. Annual Narrative Report: SMILE project activities, outputs and progress. Internal project report.

SMILE Project. 2026. Impact and Sustainability Showcase. Internal project document.

Authors

Wolde Mekuria, Senior Researcher – Environment and Development, International Water Management Institute (IWMI), Addis Ababa, Ethiopia
Desalegn Tegegne, Research Officer, IWMI, Addis Ababa, Ethiopia
Awdenest Moges, Professor, Hawassa University, Hawassa, Ethiopia
Yitna Tesfaye, Researcher, Hawassa University, Hawassa, Ethiopia
Tirusew Teshale, Head of Department of Agricultural Economics, Hawassa University, Hawassa, Ethiopia
Rediet Girma, Assistant Professor, Hawassa University, Hawassa, Ethiopia

Author Contributions

Conceptualization: Wolde Mekuria; Data curation: Desalegn Tegegne, Yitna Tesfaye, Tirusew Teshale, Rediet Girma; Formal analysis: Wolde Mekuria, Desalegn Tegegne, Yitna Tesfaye, Tirusew Teshale, Rediet Girma, Awdenest Moges; Methodology: Wolde Mekuria, Desalegn Tegegne, Yitna Tesfaye, Tirusew Teshale, Rediet Girma, Awdenest Moges; Project administration: Wolde Mekuria, Awdenest Moges; Writing – original draft preparation: Wolde Mekuria; Writing – review and editing: Wolde Mekuria, Desalegn Tegegne, Yitna Tesfaye, Tirusew Teshale, Rediet Girma, Awdenest Moges; Visualization: Wolde Mekuria; Funding acquisition: Wolde Mekuria, Awdenest Moges; Supervision: Wolde Mekuria; Validation: Wolde Mekuria, Awdenest Moges.

Acknowledgments

This report was supported by the Local-Level Land Degradation Assessment Towards Sustainable Land Management for Improved Livelihood in the Ethiopian Rift Valley (REDAA-SMILE) project; funded by the Reversing Environmental Degradation in Africa and Asia (REDAA) program; and implemented by the International Water Management Institute (IWMI), Hawassa University, and the University of Aberdeen. The REDAA-SMILE project is a community-driven initiative focused on combating land degradation and building climate resilience. REDAA, is a program that supports locally led research and action for nature restoration and climate resilience in Africa and Asia. It is funded by UK International Development from the Foreign, Commonwealth, and Development Office and managed by IIED. For more information, visit www.redaa.org

Contact

Wolde Mekuria, Senior Researcher - Environment and Development, IWMI, Colombo, Sri Lanka (W.Bori@cgiar.org)

Suggested citation

Mekuria, Wolde, Desalegn Tegegne, Awdenest Moges, Yitna Tesfaye, Tirusew Teshale, and Rediet Girma. 2026. *Local Knowledge and Institutions in Land Resources Management in Ethiopia*. International Water Management Institute.

© 2026 International Water Management Institute. Some rights reserved. This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

Disclaimer

Responsibility for editing, proofreading, opinions expressed, and any possible errors lies with the authors and not the institutions involved. The boundaries, colors, denominations and any other information shown on maps do not imply any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, on the part of IWMI, its funders, or its partners.

Please send inquiries and comments to IWMI-Publications@cgiar.org
For access to all IWMI publications, visit www.iwmi.org/publications/



The International Water Management Institute (IWMI) is an international, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center with offices in 16 countries and a global network of scientists operating in more than 55 countries.

International Water Management Institute (IWMI)

Headquarters

127 Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka

Mailing address:

P. O. Box 2075, Colombo, Sri Lanka
Tel: +94 11 2880000
Fax: +94 11 2786854
Email: iwmi@cgiar.org
www.iwmi.org