

May 2020

Governance Baseline Report

Lake Hawassa, Ethiopia

Sediment



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This project followed the guidance provided in “Implementing the Source-to-Sea Approach: A Guide for Practitioners” and “Source-to-Sea Framework for Marine Litter Prevention: Preventing Plastic Leakage from River Basins”. Both of these resources as well as many others can be found at www.sivi.org/source-to-sea.

About SIWI

SIWI's vision is a water wise world, where we recognize the value of water, and ensure that it is shared and allocated sustainably, equitably and efficiently, to meet everyone's basic needs.

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Foundations for Source-to-Sea Management

The Stockholm International Water Institute (SIWI), funded by the Federal Ministry of Economic Cooperation and Development (BMZ) conducted a project "Foundations for Source-to-Sea Management" to pilot the source-to-sea approach in the Vu Gia Thu (VG-TB) River Basin, Viet Nam and the Lake Hawassa sub-basin, Ethiopia. By focusing on the first three steps of the source-to-sea approach, the two pilots:

- Increased knowledge of priority local challenges constraining sustainable development;
- strengthened awareness of the linkages between upstream and downstream activities and their impacts;
- highlighted the opportunities and challenges associated with implementing the source-to-sea approach to management; and
- built local capacity for taking a holistic approach to natural resource management and economic development.

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Introduction

The Stockholm International Water Institute (SIWI), funded by the Federal Ministry of Economic Cooperation and Development (BMZ) conducted a project “Foundations for Source-to-Sea Management” to pilot the source-to-sea approach as it is laid out in [“Implementing the source-to-sea approach: A guide for practitioners”](#) and [“Source-to-Sea Framework for Marine Litter Prevention: Preventing Plastic Leakage from River Basins”](#). Two specific locations, Vu Gia Thu Bon River Basin (VGTB), Viet Nam, and Lake Hawassa sub-basin, Ethiopia, were selected for the implementation of pilot studies that involved the application of the first three steps within the S2S approach (Figure 1).

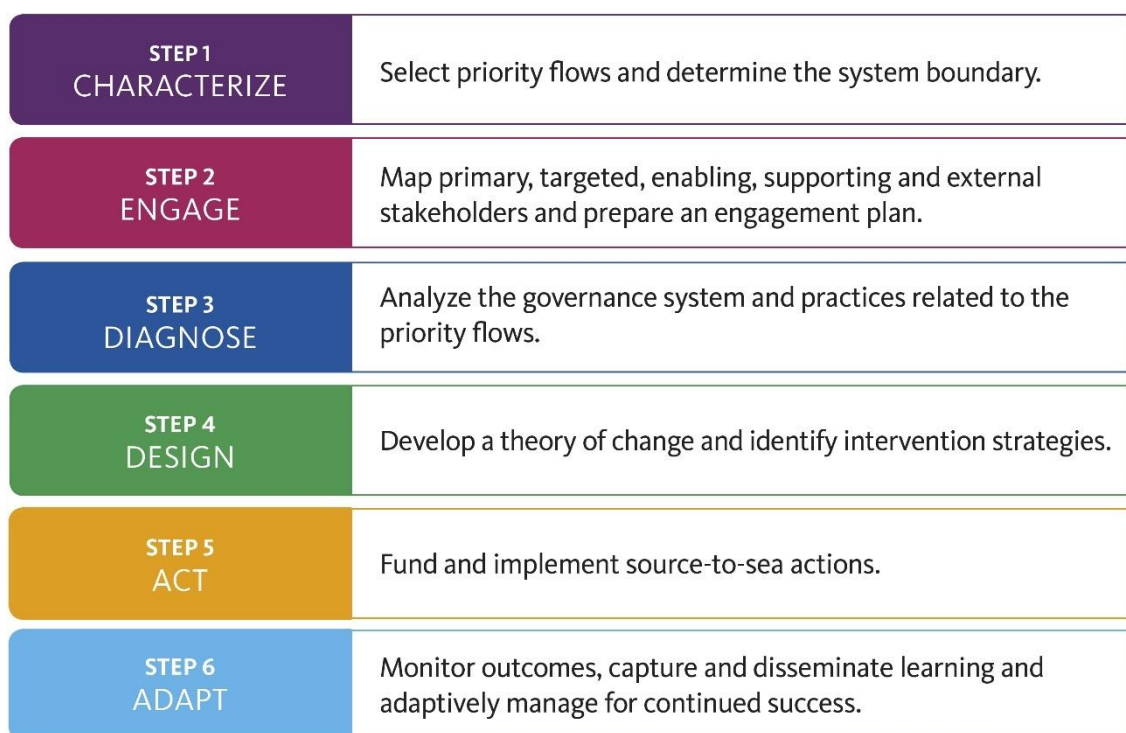


Figure 1: Six steps of the source-to-sea approach (Source: Mathews, et al. 2019)

In the Lake Hawassa sub-basin, two priority source-to-sea flows were identified as important – sediment from soil erosion and plastic pollution. In the VGTB, plastic pollution was selected as the priority source-to-sea flow for this project. These priority flows were chosen following early discussions with local partners. In both Ethiopia and Viet Nam, stakeholder workshops, capacity building workshops and field visits were conducted. Activities in the Lake Hawassa sub-basin were conducted with GIZ, and the Basin Development Authority of Ethiopia (BDA). While activities in the VGTB were conducted with IUCN, Department of Natural Resources (DONRE) and Quang Nam Provincial Peoples’ Committee. In the Lake Hawassa sub-basin, the source-to-sea approach was adapted to source-to-lake, recognizing the similarities in characteristics in an endorheic lake basin and as compared to a sea or ocean. Consultants were commissioned to prepare reports characterizing the priority flows as described in Step 1 of the source-to-sea approach. These reports were used to define the system boundary for each priority flow, and, in turn, provide a base for undertaking Step 2: Engage and Step 3: Diagnose within the pilot.

The focus of this report is the results from carrying out Step 3: Diagnose.

Lake Hawassa sub-basin

The Lake Hawassa sub-basin is located 275 km south of Addis Ababa and covers approximately 1400 km². Lake Hawassa is 90 km² in size and is the endpoint of an endorheic hydrological system, with some limited groundwater outflow. Erosion and sediment flows are considered major issues in Hawassa and have been driven by the substantial land use changes over the past 50 years. Ongoing changes in land use have led to infilling of aquatic environments, including the loss of Lake Cheleleka, and increased water turbidity in local water bodies.

The main urban area is Hawassa City and it is one of the fastest growing cities in Ethiopia. The population of Hawassa City in 2015 was estimated to be 350,000 in the urban area and was growing very quickly at 4% per annum. The population of the entire sub-basin is approximately 3 million people who mainly live in rural areas. Prominent land uses in the sub-basin include agriculture (including enset, maize and potatoes), tourism, and, most recently, industries supported by the inception of a major industrial park (Hawassa Industrial Park (HIP)).

Governance baseline

Governance related to sediment erosion is complex and fragmented. There are many different sources of sediment flow into Lake Hawassa, often from different land use types, resulting in fragmented governance. Applying a source-to-sea approach (locally called source-to-lake) helps address this fragmentation by focusing on the linkages between land, rivers and lakes. The approach considers the entire source-to-lake system – stressing upstream and downstream environmental, social and economic linkages and stimulating coordination across sectors and spatial segments – for source-to-sea key flows: water biota, sediment, pollutants, materials and ecosystem services. This analysis is then used to build commitment of critical stakeholders for designing strategic courses of action that hold greater benefits for the source-to-lake system, rather than one or two segments, sectors or specific sources of sediment flow.

The project in the Lake Hawassa sub-basin provides a good opportunity to highlight the benefits of taking an integrative approach to source-to-lake management and working with local stakeholders on developing solutions and strategic courses of action. Through the governance baseline analysis gaps and overlaps, conflicts and coordination challenges are identified in terms of governance on a long-standing issue.

Diagnosing the governance system

The purpose of Step 3: Diagnose is to better understand the governance system that has an impact on the present state of the source-to-sea system. In this step, the institutions that hold mandates for managing priority flows are identified, as well as the existing instruments related to current behaviours and practices that are resulting in alterations of the priority flow and the impacts of these alterations. The instruments are assessed for their completeness with regard to the governance needed to achieve the desired future condition of the source-to-sea system, i.e., the long-term

impact of the project or programme. The governance baseline is used to identify key overlaps or gaps between the mandates of different institutions, coordination challenges, barriers to implementing key instruments delegating the mandate to the institution and responsibilities relative to practices or behaviours that create negative impacts.

The governance baseline provides important background on limitations arising from the current situation that are then addressed through future interventions as part of Step 4: Design. In the source-to-sea approach, the governance baseline is mainly concerned with understanding the impacts, mandates, and activities by the enabling stakeholders identified in Step 2: Engage.

Local context

Land use

Land degradation, erosion, and sediment flows are long-standing issues in the Lake Hawassa sub-basin. Sources of sediment are scattered and widespread, with close to 750 km of gullies found across the sub-basin, generating close to 67875 m³ sediment per annum flowing into Lake Hawassa from this source. Belete (2019) estimates that close to 87% of the sub-basin is used for agricultural purposes, including cropping, pasture, horticulture and agroforestry. Other estimates for land use include Degife (2019) who estimated 62% of land in the sub-basin is specifically for cultivation or agroforestry in 2017. The area of cultivated land has expanded substantially over the past 50 years. For example, in 1972, it was estimated that cultivated land and agroforestry activities represented 9.5% and 14.7% of land uses, respectively. By 1992, these land uses accounted for approximately 36.5% of the sub-basin, and by close to 62% of the sub-basin, respectively. Much of these land use changes have been at the expense of forest, woodland, shrubland and wetland. Forest, woodland, shrubland, and wetlands comprised approximately 61% of the sub-basin in 1972, 46.5% of the sub-basin in 1992, and 20.7% of the sub-basin in 2017 (Degife 2019). The resultant land use change, often found in locations with erodible soil conditions or marginal slopes, has been a substantial contributor to the increase in sediment erosion.

Belete (2019) outlines several behaviours or practices that contribute to many of these land use changes, and these are important for understanding the governance baseline and lead into Step 4 Design. Behaviours and practices include the conversion of forest or woodlands to agriculture either through planned approaches endorsed by government or unplanned expansion through times of political instability; increased intensity of land uses or techniques associated with key crops grown in the Lake Hawassa Basin; ongoing demand for wood fuel that leads to vegetation removal¹; limited resources for managing early stage erosion or difficulties in applying context specific management to latter stage erosion; increases in livestock needs under pastoralism affecting riparian areas, and the exacerbation of already exposed sources by increased sand-mining in the vicinity, either through the use of lengthier gullies as transport networks or as sources of sand that is used to supply the building boom taking place in Hawassa City, which was the fastest growing city in Ethiopia. Future hotspots for sediment sources include presently forested locations that are under pressure from wood collection or are close to larger settlements.

Sources of sediment

¹ Fuelwood supplies close to estimated 80% of local energy needs

Whilst the sources of sediments are widespread, Belete (2019) noted three key continuums in terms of sediment flows into Lake Hawassa: Continuum 1: Source-Gully-Lake, Continuum 2: Source-Urban Lake, and Continuum 3: Source-Lake Cheleleka-Lake Hawassa.



Figure 2 Typical source-to-lake continuum characterising sediment flow into Lake Hawassa

The first continuum represents the most substantial flows of sediment, estimated to deliver 68375 m³ sediment per annum into Lake Hawassa. This continuum begins in hills found in the upper sub-catchments surrounding the lake that then flow through the lowland areas until reaching Lake Hawassa. Erosion and sediment flows are often found on soils that were already susceptible to erosion but, following land use changes over the last 50 years, the soils are more exposed to water flows, which then allows for the formation of gullies.

Different stakeholders were identified in connection with this continuum, with primary stakeholders² being farmers and fisherman reliant on Lake Hawassa for their livelihoods; targeted stakeholders³ including farmers, the local construction industry, fuelwood collectors, and forestry interests; enabling stakeholders⁴ including various regional state bureaus; supporting stakeholders⁵ such as Hawassa University; and external stakeholders⁶ such as Ethiopian Airlines that services tourism in the area. This continuum is under the responsibility of institutions and instruments that are involved in land management – especially those relating to agriculture, forestry, and minerals.

The second continuum noted in Belete (2019) was the *Solid waste-buffer-lake continuum*. Earlier work undertaken by Hawassa City (RiPPLE, 2014 2014) noted that urban areas were substantial

² Primary stakeholders are those individuals or communities who are affected by changes in the priority flow

³ Targeted stakeholders are those individuals or communities whose practices or behaviours are creating or exacerbating the problem

⁴ Enabling stakeholders are those who have roles in managing practices and behaviours that impact on the priority flow

⁵ Supporting stakeholders are those who already provide support for addressing plastic leakage and solid waste management but may not have legislative powers or formal mandates

⁶ External stakeholders include those whose interests may be aligned in managing the priority flow but may sit outside the biophysical boundaries or may be unaware of opportunities for involvement

sources of sediment flow through connections with solid waste directly into Lake Hawassa, but these are not the only flows from urban locations. Between 1973-2015, built-up areas of Hawassa City expanded by 24%, along with an expansion of peri-urban landscapes, whilst the population grew quickly. These land use changes exposed soils to water and wind related exposure and increased the sediment rate and deposition in Lake Hawassa, especially from locations near or beside Lake Hawassa. In addition to the land use changes generating sediment, Belete (2019) noted that solid waste found in Hawassa City contains substantial amounts of ash, with an estimated 43% by composition and that much of this ash also finds its way into Lake Hawassa. Hotspots include touristic areas, stormwater catchments that directly connect to Lake Hawassa, or locations close to water undergoing land development.

The primary stakeholders within this continuum tend to be the urban communities that suffer from flooding when blocked stormwater outlets flood the streets during the rainy season; targeted stakeholders are the members of the communities that dispose of ash within their solid waste, as well as the city administration that should be providing solid waste management services, developers of land near water bodies, and the construction industry that is fuelled by the urbanisation boom in Hawassa City. Enabling stakeholders in this continuum tend to be urban authorities and urban kebeles in terms of administration, but potentially also regional state bureaus relating to urban development and housing that are overseeing the population expansion. Supporting stakeholders in this continuum tend to be organisations that support activities to reduce poorly managed solid waste. These sector actors are important for the governance baseline, i.e., the institutions and instruments relating to urban land management, urban planning, and other urban services. This analysis also provides a connection to the first continuum in that much of the sand used for building construction in Hawassa is sourced from and through the gullies identified under Continuum 1.

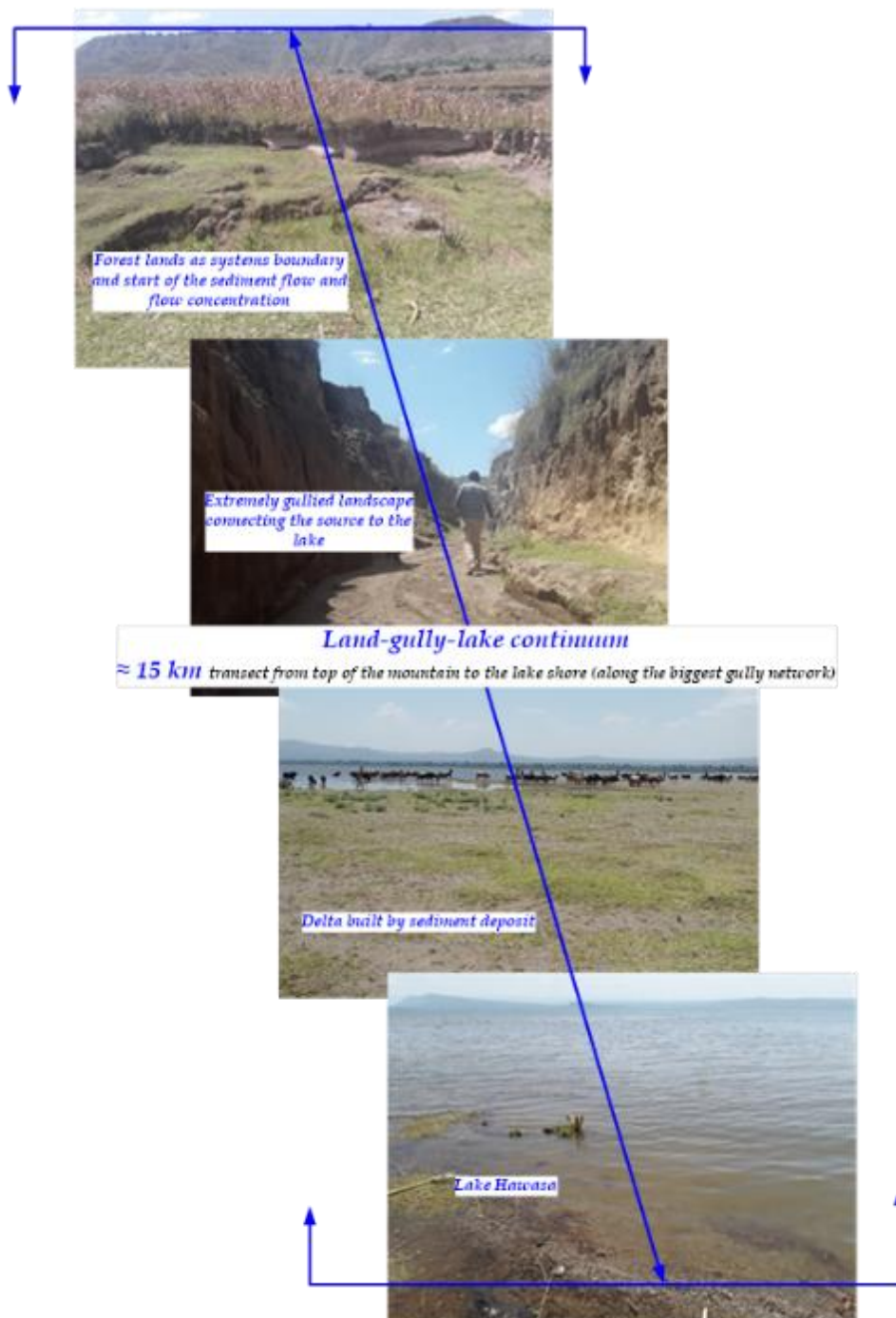


Figure 3 Pictorial representation of land-gully-lake continuum

The third continuum noted by Belete (2019) is Land-Wetland-Lake. In this continuum, sediment sources in the eastern hills, around Wondo Genet for example, have traditionally been a source of sediment to Lake Hawassa through the various rivers and streams, but Lake Cheleleka and associated wetlands increasingly became a sink for much of the sediment flow. The gradual infill of Lake Cheleleka occurred following land use changes in contributing sub-catchments to the east to the extent that the lake disappeared and continues to be a sediment sink. Local communities have since moved into the former lake area and wetland, although there continues to be water flow carrying sediment from the eastern hills through Tika-Wuha River in the northern part of the former lake. Much of the area to the east of Lake Hawassa has seen significant land use changes since 1972

(Belete 2019), leading to substantial sediment flows that eventually impacted on the wetlands in this area.

Primary stakeholders in this continuum include farmers affected by gully erosion but also communities who have moved onto the wetland and taken steps to entrench the changes to the landscape. The targeted stakeholders include farmers whose practices continue to contribute to the sediment flows from the upper catchment, as well as the pastoralist communities now found in the former lake and remnant wetland area. Whilst upstream agricultural activities are the main source of sediment in this continuum, ongoing changes in Lake Cheleleka suggest that these remnant wetlands, and their ongoing conversion to pastoral and other agricultural purposes, reduces capacity as a sediment sink for sediment sourced from upstream, and may become a source of sediment over time.

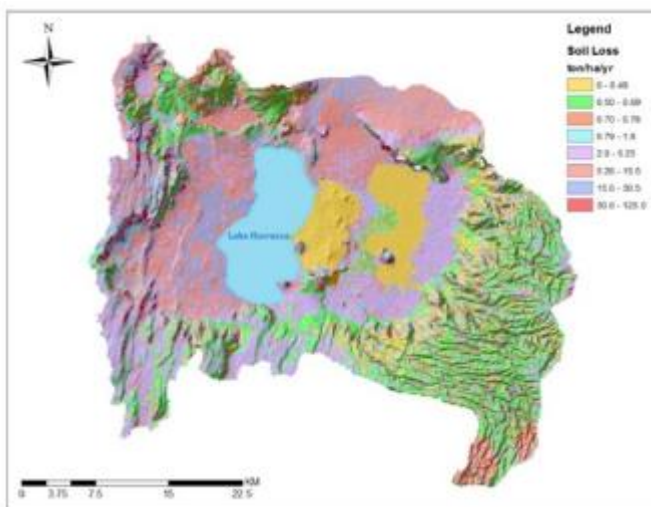


Figure 4 Results from Universal Soil Loss Equation modelling

Impacts

During stakeholder engagement workshops as part of the project, stakeholders were asked to identify impacts from excessive sediment flows as well as some of the key geographical locations or practices that they thought contributed to the erosion. It is noted that the sources of sediment identified in this process were very widespread, touching on most parts of the sub-basin and have been derived from many sectoral activities. Of note also was that the impacts were widespread, but concerns relating to health impacts and ecosystems were uppermost in many participants minds. Further results from both Step 1 Characterize and Step 2 Engage also indicate that the sources and geographical locations of sediment erosion are very widespread, and that there is a range of stakeholders whose practices and behaviours contribute to those flows.

Table 1: Stakeholder identified impacts and sources of sediment

Impacts	Sources of Pollution
<ul style="list-style-type: none"> • Pollution of the lake (increasing turbidity) • Increased evaporation from shallow water locations • Decreasing farmland due to gullies • Degradation of fishing stocks in the lake • Increased fertilizer use on other land, • Agrochemical attached to sediments affecting the ecosystem • Industrial and urban sediments carrying chemicals that affects eutrophication • Reduce agricultural production (peppers and maize) on agricultural lands • Reduced lake macrophyte growth 	<p>Geographical sources</p> <ul style="list-style-type: none"> • Western areas: Hawassa Zuria (incl. Galo Argisa (airport), Dore Bafano, Shafo and Rukessa Kebeles), Anolo-Ljara Mountains (over mining of sands for building purposes), Shalla and Boricha Woreda, Shashemene Woreda. Western watersheds have large open gullies. • Eastern areas: Wondo Genet Woreda, Shalla / Shaamene Chelelek Kes Woreda, Tula sub city • Solid waste from Hawassa town <p>Sectoral sources</p> <ul style="list-style-type: none"> • Excavation of airport project (without mitigation) • Lakeshore farming • Deforestation in Watershed • Soil nature is very fragile • Quarry sites

Source-to-sea approach to management

Conventional governance frameworks are structured around managing individual segments of a source-to-lake system and/or focused on one sector and often address these segments in isolation, making them poorly suited tools for managing the source-to-lake system. Segmented management can result in benefits for one sector but often at the cost of another - consequences that are often not adequately accounted for in present governance and practice. For example, agricultural cultivation and agroforestry have expanded substantially in scale in many parts of the Lake Hawassa sub-basin over the last fifty years, often at the expense of forests and shrublands, through efforts to increase agricultural capacity and food security. This resulted in reduced vegetation cover in many parts of the sub-basin, often on unsuitable soils, leading to increased sedimentation that then affects other sectoral interests downstream, such as fishers or lower sub-catchment communities.

The assessment revealed that many institutions and instruments influence governance around sediment flows, erosion, and land use change or degradation due to the many different sources or practices, the geographical location, and the involvement of several tiers of government. That sediment flows into Lake Hawassa are ongoing implies that the present approach is proving insufficient or is only working in part, therefore positive interventions made by some stakeholders are overshadowed by environmental impacts elsewhere. Taking a source-to-lake approach will provide four main benefits for addressing the sediment issue:

- Firstly, it will help identify priority actions for the reduction of sediment flows on the sub-basin, rather than being restricted to an action space whose parameters are governed by a single institution or instrument.
- Secondly, it will help to identify and, more importantly, coordinate activities or actions taken by different institutions to ensure that interventions are coherent and not solving problems in one place while exacerbating them elsewhere. Whilst this helps to ensure that priorities are being addressed, it also fosters collective action.
- Thirdly, it will help identify overlaps or gaps in governance, leading to conflicts between institutions in the former, and failure to act in the latter.
- Lastly, through an understanding of the connections between different segments of the source-to-lake system in Lake Hawassa, and the stakeholders involved, it may be possible to build support and advocacy for addressing sediment issues collectively, thereby obtaining resources for this purpose.

Conducting a governance baseline

Chapter 4 in the Practitioners Guide contains leading questions related to governance used to help guide this process. These include:

- Which institutions, legal and regulatory frameworks, rights, ownership, informal agreements have management mandates for priority flows, targeted activities and/or source-to-sea segments?
- Are those management mandates in conflict with each other and are they supportive of achieving the desired source-to-sea outcomes?
- Are there other actors, e.g., companies or non-governmental organizations, that may influence the priority flows, targeted activities and/or source-to-sea segments?
- What is the relative power and impact of government, the private sector and civil society in affecting the condition of the source-to-sea system?
- Are the practices being used by the targeted stakeholders in line with the institutional mandates or is there a failure in enforcement?
- Are there mechanisms for stakeholders to be involved in decision-making, are there procedures in place for resolving conflicts that may arise between stakeholders and are they being effectively applied?

For the governance baseline, two broad types of categories were used, institutions and instruments. Whilst institutions can be very broad and can include organisations, legislation, formal and informal agreements etc, this report uses this categorisation to identify organisations or agencies that have an influence on the decision-making space, including both formal and informal. These are often public institutions. In general terms for the Lake Hawassa example these include federal ministries, regional state government and bureaus, weredas, urban authorities, kebeles, and river basin authorities. These institutions would fit into the Enabling Stakeholders categorisation that is conducted as part of Step 2: Engage of the source-to-lake approach.

Annex 1 includes further information on the institutions that were assessed in the governance baseline and includes information and discussion on their mandate, tier of government,, applicable source-to-lake segment or sub-segment, key instruments, level of implementation, implementation barriers, and other information.

The other broad category used in this baseline are instruments. Instruments include legislation, regulation, constitutions, bylaws, and plans etc. relevant to the management of the potential sediment source. to the sediment priority flow. These various instruments may be applicable generally, providing direction to decision-making or priority making on environmental issues, or may specifically relate to a particular sector. Some instruments may be administered by one or more institutions, or outline roles and responsibilities for several tiers of governance. Some instruments may be prepared at a Federal level but are applicable nationally, whereas other instruments are prepared by the Regional State Governments or lower tiers of governance.

In addition, some instruments may contain provisions that are only applicable to certain segments of the source-to-lake system. In terms of sediment flows, there are no singular instruments solely devoted to sediment management. Instead governance is fragmented across different instruments. Annex 2 includes information on the different instruments applicable to sediment management, and includes information on whether the instrument is general, sector specific, site or area specific, or specific to a particular segment. Many of the instruments that are general in nature form the foundation of subsequent legal instruments, such as legislation or regulations that are more specific in nature, bylaws which may be locally driven rules, plans that are rules-based or strategic, and funding strategies.

Examples of generally applicable instruments include the Constitution of Ethiopia or Environmental Impact Assessment Proclamation, whereas an example of locally applicable instruments include the SNNPR Rural Use Proclamation. It is noted that no specific singular instrument is used to manage sediment, but instead a piecemeal approach is used.

Methods

In order to undertake Step 3 of the source-to-lake approach and identify key institutions and instruments, three different research approaches were used. The first was through the Step 1 Characterization study prepared by local consultants (Belete 2019). While the focus of this report was on analysing sediment erosion, its sources and impacts, it also included sections on stakeholders and governance. The second approach was through engagement with stakeholders in workshops held as part of the project in late 2019 and early 2020. These workshops included representatives from various institutions and communities from the Lake Hawassa sub-basin and beyond and focused on enhancing knowledge about sediment erosion and the identification of impacts, relevant stakeholders and institutions as applicable. The third approach was through desk-top research and direct access to various instruments identified through this approach, where available. In terms of restrictions, whilst the combination of the three approaches has helped build the baseline, the project team was intending to hold further workshops in Lake Hawassa to verify and endorse the findings. These were cancelled due to travel restrictions related to the Covid-19 pandemic.

As well as the identification process of key institutions and instruments, various components of governance were evaluated in terms of overlaps, gaps, conflicts and coordination challenges. An overlap in mandate occurs when more than one institution or instrument is managing the same environmental location or issue, for very similar purposes. The result of such overlap is that resources may split to an extent that there is limited impact by either institution, or it may result in mixed messages may be sent to the target audiences, leading to confusion.

As well as overlaps, there may be a definable gap within governance. It can emerge as a result of changes in behaviours or practices that weren't anticipated when legislation or institutions were mandated, or it may occur as the legislation covering the activity is very general or the opposite,

highly targeted. Gaps may also occur in terms of implementation, such as a lack of enforcement capacity due to lack of human or financial resources or that it is not a priority.

In some cases, there may not be specific instruments or institutions managing all aspects of the priority flow but instead governance is reliant on a piecemeal approach. This can result in significant issues if institutions fail to implement their mandate in the same time period, or when one institution relies on another to carry out their associated function, and therefore coordination challenges emerge. Another coordination challenge occurs when objectives and targets are poorly defined or very generic, meaning that the individual institutions are not clear how their components fits into the wider challenge.

Conflicts may occur when one or more institutions hold responsibilities over the same issue, but their mandates or objectives can negatively impact on activities or mandates of another institution. This can have a geographical component, where the management of one segment by one institution can result in upstream and downstream impacts, or it can occur within the same source-to-lake segment, such as in upper catchments. Sometimes conflicts can occur between institutions, or it can also occur within one larger institutions where different departments are granted conflicting mandates.

Governance in Lake Hawassa sub-basin

Instruments

In many countries, water and land governance is fragmented over multiple institutions and instruments. Ethiopia has a complex political system that includes federal entities, regional state entities, and multiple layers of local entities including weredas, kebeles, and urban authorities. The powers and mandates granted to each tier of governance may differ, especially from Regional State Governments through to lower levels of government.

Following political regime changes in the 1990's, core instruments were enacted that include the Constitution, the Environment Policy, the Conservation Strategy, and Integrated Water Resource Management proclamation. Among other provisions, these instruments outline rights, obligations, and mandates in terms of individuals, institutions and the environment. These instruments are used to provide direction for environmental decision-making, priority setting, and the formulation of specific legislation and regulation.

This core framework has been supplemented by various National Proclamations on Environment Impact Assessment, Environmental Pollution Control, Water Resource Management, and Rural Land Uses that continue to detail Federal expectations and obligations. More recently, the River Basin Councils Proclamation emerged in 2007, and the main function of this is to provide for an institution and associated mandate that helps coordinate responses to different activities that impact on water. The Lake Hawassa sub-basin crosses regional state boundaries between Oromia and the Southern Nations, Nationalities and Peoples Regional State, creating additional complexity in its local governance. This means that the federal ministries should play a greater role in governance than those basins that only fall into one regional state.

Each regional state has the mandate to release proclamations and regulations applicable to their area, and whilst these may be reflective of any national proclamations they can differ significantly when developed in-state. In addition, weredas and urban authorities may also have powers to develop bylaws, initiate local courts, and other activities that comprise the overall governance baseline.

Institutions

There are several key institutions that are seen as important for governing sediment ranging from national institutions through to local institutions. The governance mapping identified ten institutions involved in some capacity in the management of sediment. Below a short description is given of the institutions found to be the most relevant and influential.

Ministry of Agriculture and Rural Development: This ministry is responsible for multiple activities, including rural development policies, plans, and strategies, that have an impact on sediment flows in the Lake Hawassa sub-basin. These include the administration of the Sustainable Land Use Management Programme (found in many other parts of Ethiopia but not found in this sub-basin), Food Security Strategy, Agricultural Development-led Industrialisation Strategy, and agricultural and pastoralism extension services. The Ministry supports an expansion of agriculture and networks designed to support agricultural enterprises, which has contributed to both land use changes from forestry to agriculture or increased intensification of agriculture of land uses in many locations. Responsibilities for undertaking agricultural activities, including extension, devolve to counterparts in the regional state governments. Measures taken by this ministry can have a significant influence on the development of agriculture across both upper and lower sub-catchments, as well as the development of industrial infrastructure that process agricultural inputs. There may be conflict between the mandate of this Ministry and ministries involved in managing forests and freshwater systems.

Ministry of Environment, Forest, and Climate Change This ministry is responsible for managing various activities that impact on the environment. This includes the development of policies, plans, and strategies that will influence the way that regional state governments control issues such as environment pollution, administer environmental impacts assessment, and manage forests. In terms of sediment, its chief influence will be to affect the way that forests are used, managed or removed. Over time, climate change, through the alignment of planning and actions under the National Adaptation Plan will increase in importance and the role of forests in mitigating climate change. This ministry has an important impact in providing direction in terms of managing sand mining, through setting standards, and changes in land use in forests. There may be conflict between the mandate of this institution and those promoting expansion or intensification of agricultural activities.

Ministry of Water, Irrigation and Energy (Incl. Basin Development Authority) This ministry is responsible for multiple activities around water, including rural development policies, plans, and strategies, that will have an impact on sediment in Lake Hawassa as well as being the host institution for the Basin Development Authority. Activities of relevance to sediment include water supply and sanitation, medium and large-scale irrigation and drainage, river basin study, water quality and hydrology, and water sector research and development. In addition, responsibilities around energy means that it has an indirect influence on wood loss. It shares some irrigation responsibilities with regional bureaus. Through the Basin Development Authority, the Ministry has an important role in coordination and strategic planning that supports Integrated Water Resource Management.

Basin Development Authority (incl. Rift Valley Lakes Basin Development Office): This institution is housed within the Ministry of Water, Irrigation and Energy and has a number of responsibilities including undertaking policy studies, surveys and research needed for the implementation of integrated water resource management and activities within basins, developing plans for protection and sustainable uses of basins, and follow-up implementation once it is approved by the relevant institution of government. It also includes measures that should be taken against pollution and damage to a basin's natural resources, working in collaboration with regional state government

institutions and other relevant bodies by setting up a forum for effective networking. As well as the Authority hosted at the federal level, there are local offices working in different basins across Ethiopia, including the Rift Valley Lakes Basin Development Office. The local offices have an important role in coordinating different interventions on the sediment flow at the local level.

Bureau of Agriculture and Natural Resources (Oromia): This bureau supports the administration of proclamations and regulations relating to agriculture and rural development at a state level. As part of its role, it administers fishing regulations, and therefore is connected from the upper catchment to the endpoint of the system. In terms of sediment in the sub-basin, the conversion of forest and marginal lands to agriculture, as well as the increase in intensity of land uses, has been a significant driver in sediment flows. Belete (2019) noted this institutions importance in terms of preventing soil erosion from the landscape and, given that this is a main source of sediment, the participation of this Bureau is critical in terms of addressing issues. However, there may be some conflicts or overlaps between this bureau and others housed within the Oromia Regional State Government.

Environmental Protection Agency (Oromia): This regional bureau is responsible for the management of the environmental impact of new activities, controlling pollution as well as monitoring the state of the environment. Belete (2019) notes that this bureau is responsible for developing, conserving, and utilization of forests which is one of the key components of the land-to-lake continuum noted in that report. Wetlands identification, delineation, and implementation of community-based management are also done by this bureau. In terms of sediment in the sub-basin, its chief influence will be through managing activities that impact on water quality from point sources such as new development or sand-mining as well as the forests.

Bureau of Agriculture and Natural Resources (SNNPR): This bureau supports the administration of proclamations and regulations relating to agriculture and rural development at a state level. As part of its role, it administers fishing regulations, and therefore is connected from the upper catchment to the endpoint of the system. In terms of sediment in the sub-basin, the conversion of forest and marginal lands to agriculture, as well as the increase in intensity of land uses, has been a significant driver in sediment flows. Belete (2019) noted this institution's importance in terms of preventing soil erosion from the landscape and, given that this is a main source of sediment, the participation of this Bureau is critical in terms of addressing practices that result in sedimentation. However, there may be some conflicts or overlaps between this bureau and others housed within the SNNPR Regional State Government.

Environmental Protection Agency (SNNPR): This regional bureau is responsible for the management of the environmental impact of new activities, controlling pollution as well as monitoring the state of the environment. Belete (2019) notes that this Bureau is responsible for developing, conserving, and utilization of forests which is one of the key components in the land-to-lake continuum, supporting policies and strategies from Ministry of Environment, Forest, and Climate Change at the federal level. Wetlands identification, delineation, and implementation of community-based management are also done by this Bureau. In terms of sediment in the sub-basin, its chief influence will be through managing activities that impact on water quality from point sources such as new development or sand-mining. The participation of this bureau is critical in terms of addressing issues, especially in regard to the upper catchment forests, woodlands, and wetlands.

Hawassa City Administration - Urban Planning Sanitation and Beautification: This department within the Hawassa City Administration is responsible for managing services relating to solid waste or for urban planning in the urban areas. Inappropriately sited or poorly managed land development

can lead to significant flows of sediment directly into Lake Hawassa, and the participation of this department is seen as being important to future actions.

Weredas (Hawassa Zuria, Hawassa Shala etc.): Weredas are responsible for local land management and the administration of State Legislation and Regulation. The involvement of weredas is critical for managing sediment flows as they provide local resources and coordination of activities, and administer local bylaws, regulations or community activities. Depending on the source, the involvement of specific weredas will be critical to managing sediment flows.

Affiliation of Friends of Lake Hawassa: This is a newly emergent institution whose purpose is to support coordinated efforts to protect and rehabilitate Lake Hawassa from multiple threats. Its membership comprises representatives from multiple different institutions including public, private, and civil society.

Hawassa University: Hawassa University is specifically noted as part of the governance baseline as the University system in Ethiopia has several public obligations as part of their role. In this case, they provide some support to the development of Basin Plans, such as that of Lake Hawassa.

Key Instruments

There are several key instruments that are important for governing sediment ranging from national instruments through to local instruments. The governance mapping identified ten instruments involved in some capacity in the management of sediment. Below a short description is given of the instruments found to be the most relevant and influential.

Ethiopia's Constitution of 1994: The Constitution underpins all legislation in Ethiopia and provides a basis for the development and enactment of legislation, regulation and Proclamations, mainly at federal and regional state levels. As well as outlining rights, it also notes obligations on governments and citizens that underpins provisions found in other proclamations (e.g. relating to rural land use or forestry) in terms of providing or removing access to land. The Constitution is applicable across the whole sub-basin. Whilst the Constitution is of high relevance to vertical coordination of governance across Ethiopia, it is less relevant on a sectoral level but can be used to supporting actions by Enabling and Supporting Institutions⁷. Its relevance is rated medium in the present case study, as it provides a foundation for activities rather than directing specific actions.

Environmental Pollution Control Proclamation No. 3001/2002: This proclamation deals with environmental pollution in its many forms, including effluent, management of municipal waste, and monitoring and evaluation of its impacts. It provides for the initiation of an environmental protection agency at the federal level, as well as regional state environmental agencies found at state levels. The Proclamation refers to the role of Courts dealing with environmental matters at Federal and State levels, and this is further taken up through other proclamations. In terms of responsibilities, federal authorities are responsible for preparing standards, including waste management, nationally. The Proclamation also recognizes that that regional states may prepared standards more stringent than federal standards, taking into account local context. However, given that the Lake Hawassa sub-basin crosses state boundaries, this could result in differing standards being applied.

Whilst this proclamation may be more relevant to managing plastic litter, solid waste may be responsible for significant amounts of sediment going into Lake Hawassa, especially as ash, as noted

⁷ Enabling stakeholders provide the enabling conditions for behaviour changes to occur and benefits to be sustained over time while supporting stakeholders include development partners or financiers whose strategies are aligned with and can support the source-to-lake objectives.

in Belete (2019) and therefore it of medium relevance for managing this priority flow. As well as outlining roles of different authorities in managing environmental pollution in terms of vertical coordination, the Proclamation provides for the role of environmental inspectors within the respective institutions. These inspectors may be important for managing sediment flows from urban development and sand mining, especially on environmentally compromised sites, if they trigger intervention. The Proclamation is also applicable to managing ongoing sources of pollution, unlike the EIA Proclamation which is more focussed on new activities. It is most applicable within the lower catchment and also in relation to the riparian areas.

Environmental Impact Assessment Proclamation No. 2991/2002: This proclamation is concerned with managing activities that have an environmental impact on receiving environments but is more focused on managing larger-scale or more significant activities and projects as opposed to managing small-scale land uses. In terms of sediment, the proclamation may be relevant for managing sediment flow from development activities as well as managing sand mining occurring in lower and upper sub-catchments. However, the scale of most sand-mining activities and localised rural development may be too limited in scale to trigger control efforts. The proclamation grants a strong role to regional state government and respective state bureaus/agencies in managing environmental impacts derived from development. The definition of Impact and Pollutant would mean that sediment is included, and this implies a role for EIA units from regional state governments in managing processes or activities that significantly increase sediment flows, including e.g., large-scale urban development processes or the assessment of structure plans or development plans prepared under urban planning legislation. Other applications are on infrastructure development such as roading projects that create sediment erosion. The proclamation may also apply to land use changes, and therefore may be in conflict with provisions that support growth in agricultural land uses. In terms of the sub-basin, sand-mining is found mainly in the lower catchments, although the gullies can act as access points meaning some connections to the upper catchment can be found. Globally, sand mining can be an issue in riparian areas or riverbeds but this has not emerged as an issue in this basin at present.

Forest Development, Conservation and Utilization Proclamation No. 1065/2018: The proclamation notes the importance of forests and forestry to Ethiopia, and includes provisions for managing state forests, community forests, protected forests, preserved forests, private forest developers, amongst others. The proclamation contains detail on rights and obligations for different forest users, according to the types of forest under different managements regimes. Given the key role deforestation and afforestation have in managing sediment flows noted in Belete (2019), negatively and positively, the implementation of this provision by regional institutions is an important part of management. The gullies that form an important sediment source have often emerged from deforestation activities, whilst the ongoing sourcing of fuelwood indirectly supports land use change as biomass is removed. Some of its provisions may come into conflict with provision supporting the expansion of agriculture onto forested lands, which are increasingly rare in the sub-basin.

A Proclamation to Provide for the Establishment of Oromia Bureau of Land and Environment Protection. Proclamation 147/2009: This proclamation is applicable to activities occurring within the Oromia component of the Lake Hawassa sub-basin. It outlines the framework for managing land uses and planning along with the initiation of bureaus to help manage this process. The proclamation is particularly relevant to the implementation of environmental impact assessment and environmental pollution measures. This proclamation supports the creation of bureaus that can apply environmental impact assessment and environmental pollution control in parts of the sub-basin, but more importantly, outlines and defines the role of these Bureaus in applying land use planning. It has

relevance across the whole area of Oromia found in the sub-basin and would be highly relevant across upper and lower sub-catchments and riparian areas.

Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation No. 456/2005: The proclamation provides for the rights and obligations around land use across Ethiopia, including the development of rural land use plans, use of degraded or marginal lands, and the various roles of Federal and Regional State authorities. This Proclamation sets the basic conditions of rural land use across Ethiopia, and the responsibilities of various agencies and institutions. Whilst it is primarily interested in the appropriate distribution of land, it still outlines why certain lands may or may not be available for use. The Proclamation also outlines the responsibilities of the Targeted Stakeholders⁸ in terms of managing the land appropriately. Belete (2019) notes that Rural Land Administration and Land Use Proclamations define the rights and obligations of users of rural land, including traditional subsistence farmers. Thus, protection of land becomes an obligation and failure to look after the land can lead to loss of title. Rural land use proclamations are a primary tool for managing sediment.

The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Use Proclamation No.110/2007: This Proclamation is highly significant for the governance framework in Lake Hawassa as it sets out the various responsibilities of different institutions within the SNNPR state. The Rural Land Use plan is important for demarcating appropriate activities for different parts of the sub-basin, including for soil conservation and mining. Plans developed under this proclamation are obliged to take a watershed approach, and all users will have rights and obligations under its auspices. Of note are the provisions surrounding activities that can be undertaken in already degraded locations. This Proclamation enacts the similar parallel proclamation found at the Federal level, Proclamation No. 456/2005, and repeats many of those provisions found therein. It does, however, differ slightly as there is more attention paid to the needs of women and youth in terms of rural land distribution compared with the former document. The Proclamation is important in managing existing activities that create sediment, not just new activities or land use change, and is an important component of governance.

A Proclamation to Provide for Urban Plans Proclamation No. 574/2008 The main strength of this Proclamation is its highly integrated approach with regards to urban planning, and relatively high detailing of the roles and responsibilities of urban authorities. Such an approach allows for a wider perspective on the challenges relating to managing solid waste. In addition, ongoing land use changes moving from rural to peri-rural to urban land uses can generate sediment, depending on local conditions. Sediment often collects within local drainage systems and the way this is managed will have an impact on sediment flows drawn from urban areas. The proclamation was assessed as medium relevance in terms of managing land development and sediment sources from solid waste in urban areas.

Ethiopian Water Resources Management Proclamation No. 197/2000: The Proclamation sets out the national approach to water resources management, including the use of basin management planning, controls around water pollution, and the promotion of Integrated Water Resource Management. It sets out provisions in relation to both waterbodies and the bank or riparian areas of waterbodies. The key strength of this Provision is that it provides legislative support for undertaking Integrated Water Resource Management across Ethiopia, including the roles and responsibilities of different institutions as well as the use of master plans. Belete (2019) noted that the Proclamation

⁸ Targeted stakeholders are actors or sectors whose practices are contributing to the alteration of priority flows and whose behaviour intervention strategies are aimed at changing.

covers certain elements of water resources management including soil and water conservation measures to reduce sediment soil erosion and lakes siltation; local community participation in sub-basin management and water conservation measures and practices; and a recognition of wetlands as a key feature in watershed management. It is applicable to most parts of the sub-basin, but with an emphasis on waterbodies and associated banks and sediment derived from this source.

River Basin Councils and Authorities Proclamation No. 534/2007. This proclamation brings into force a more integrated approach to water resources management in Ethiopia and helps enact various provisions found in the Constitution and other strategies, policies and proclamations across Ethiopia. The River Basin Councils were set up as a new component of governance within Ethiopia, in order to give effect to the ongoing promotion of Integrated Water Resource Management. Using water as the integrating concept, the river basin councils should help Regional States and other tiers of governance address water challenges. The river basin councils have an important role in providing knowledge and guidance to other regulatory agencies, especially through the vehicle of the mandated basin plans as well as the role of activity coordination. This is especially relevant in addressing sediment as there are many different sources of sediment found in a basin, each being governed under different proclamations and by different institutions.

The main strength of this Proclamation is its highly integrated approach, and relatively clear detailing of the roles and responsibilities of the river basin councils. Such an approach allows for a wider perspective on the challenges relating to managing water compared with regional states. The basin plan is an important tool for coordinating activities from many different agencies, especially with the provisions for setting up a forum and the provision for policy guidance designed to implement integrated water resource management across the sub-basin. The Proclamation has a direct connection to the lake, river, and riparian areas, and an indirect connection through IWRM needs to the upper and lower sub-catchments in terms of managing sediment. Its relevance is assessed as high as it is supportive of coordinated actions in managing impacts of land-based activities on water, predominantly through the basin plans created throughout the Rift Valley Lakes Basin, but may be medium in terms of the upper catchment.

Climate Resilient Green Economy Climate Resilience Strategy: Water and Energy: The strategy provides national and economy-wide measures for responding to climate change. This component of the programme includes measures and funding relating to irrigation and to reducing reliance on wood fuel, both of which can influence sediment flows. It notes that irrigation can cause issues in lower catchments in terms of erosion whereas land use changes relating to fuelwood removes vegetation cover, which in turn contributes to erosion and sediment loads from upper catchments. Across Ethiopia, it is estimated that 81% of households rely on wood for domestic use, and Belete (2019) estimates this to be 83% in the Lake Hawassa sub-basin.

This strategy also noted that climate change may reduce biomass, putting further pressure on woodlots and forests. This may mean that if wood fuel biomass continues to be the main source of domestic energy in Lake Hawassa, deforestation (by area) will continue to expand as the same area of forest will not produce as much biomass for fuel compared with the present time. This has implications for erosion in the forested hillsides around Lake Hawassa. The Strategy also notes the need to enhance rainfed agricultural activities, and there are techniques which may reduce sediment erosion. It would support some level of horizontal coordination through the connections between erosion, deforestation and energy needs. This Strategy, in terms of water and energy, is implemented by both MoWIE and State Governments, and would be of medium relevance.

Environmental Policy 1997: This policy enacts the Constitution and prepares the way for further legislative activities such as environmental impact assessment. It sets out the institutional framework for managing environmental impacts through Policy 5.1. (Institutional Framework, Responsibilities and Mandates) with management for effectiveness at the federal, regional, zonal, wereda and community levels. The Environment Policy provides significant general support and direction for managing sediment generated from many different sources. Whilst sediments sourced from forestry and agricultural activities are the focus within the Policy, the Policy also notes challenges relating to mining, and this may include sand mining activities, and support for managing those activities through Federal or State Proclamations. This policy is applicable across the whole of the sub-basin and has been given a medium relevance as it supports most actions by enabling or targeted stakeholders.

Hawassa sub-basin plan(s): Basin Development Authorities are granted a number of powers under the River Basin Council legislation, mainly in terms of providing longer term strategic planning for water resources that is implemented according to IWRM approaches, and for the protection of water resources from overallocation or in the physical vicinity of waterbodies. Both the original basin plan as well as the present draft make extensive reference to sediment, especially in terms of its impact and source, but are more limited in terms of responses, except for recognising the role of MEFC. While the basin plan recognises the role of different institutions in managing sediment, it does not appear to act as a coordination mechanism of different agencies.

Overall:

This set of instruments provide the framework for managing sediment in the Lake Hawassa sub-basin. Of note is that all these instruments are concerned with general environmental impacts as opposed to specific aspects of sediment erosion or sediment itself. Whilst there are other instruments that may be important for specific aspects in regard to sediment management , these are relatively minor compared to the instruments listed here and how they are interpreted and administered by the various institutions.

Discussion

Erosion and inadequate sediment management are long-standing issues in the Lake Hawassa sub-basin, as they are in many parts of Ethiopia. The sources of sediment are widespread and varied, with both rural and urban sources contributing to the problem. Different behaviours and practices contribute, including land use changes from forests/woodland/scrubland to agricultural and pastoral uses, demand for wood as fuel, urban land development, sand mining and poor management of existing and emergent gully systems throughout the basin. Many problems are a result of land use changes, or as a by-product of regular activities such as agriculture, or as a result of activities related to resource harvesting, such as fuelwood collection or sand mining. This means that better control of land uses, improved land management and rehabilitation, and increased alternatives to informal sand mining or wood as fuel are the most important responses.

The previous section outlined key instruments and institutions of relevance to the sediment management in the Lake Hawassa sub-basin. Here analysis of several gaps, challenges and conflicts is provided, followed by recommendations for future actions.

Gaps

Challenges in coordination

Coordination challenges are likely the biggest issue for managing sediment flows. Given the breadth of sediment sources throughout the basin, the practices and behaviours that drive sediment erosion, and the variety of governance institutions and instruments that have some relevance to this issue, it is clear that more coordination is necessary to develop common objectives, align resources, and design interventions that successfully reduce the erosion. Coordination would need to be both horizontal and vertical, especially as Hawassa city crosses regional boundaries and hosts to an industrial park of national significance.

Regulation and oversight of sand-mining

Sand mining is done to supply building materials for the rapid expansion of Hawassa City. It is found across the sub-basin in both upper and lower catchments. It appears to be highly prevalent in the extensive gully systems that have formed as a result of erosion derived from land use changes and poor land management in the upper basins. The gullies allow easy access to sand resources, either as a transportation corridor or as a source themselves. Ongoing sand mining also interferes with the rehabilitation of gullies. However, it is unclear who has the mandate for managing this source, especially as the size of operations may mean that enforcement activities from institutions such as environmental protection agencies are not triggered.

Environmental enforcement over fuelwood collection

Regulation of fuelwood collection, and its continued impact on the state of remnant forests and woodlands in the sub-basin is an important issue that requires more attention. Wood as fuel continues to play an important role in the local energy mix, and while it is recognised as a concern for forestry activities, there appears to be limited enforcement of the provision found in Proclamation 1065/2018. However, it is noted that the Proclamation is very new and may take time to be properly implemented.

Limited resources for forest rehabilitation

Limited resources are made available for rehabilitation purposes. Whilst there may be institutions that can facilitate rehabilitation, and this is recognised under various instruments, other priorities may come first for investment.

Conflicts

Agriculture and food production versus forest conservation

The Hawassa sub-basin has seen significant land use change from forest, woodlands, and scrublands to different forms of agricultural use. Belete (2019) estimates close to 83% of the sub-basin is used for these purposes, including in the upper catchments where remnant forests and woodlands are generally found.

Institutions and instruments that may support the expansion of agriculture in order to meet national and regional objectives around food security can have conflicting objectives to other institutions, such as the Ministry of the Environment, Forest, and Climate Change or regional environmental protection agencies that seek to protect and enhance forests to address climate change adaptation. Conflicts can also emerge within institutions. For example, the expansion of agriculture on inappropriate soils that increases sediment erosion can impact on the fisheries for which agricultural departments are also responsible.

Recommendations

Develop a sediment management action plan

A key tool to improve *coordination* would be the development of an action plan centred on sediment management that includes all relevant actors and outlines various roles, objectives, and targets for each, within their respective mandates. Whilst the basin plan prepared by the RVLBDO or other plans prepared by the Regional States reference sediment concerns and responses, a standalone plan and agreement amongst key institutions is necessary to support coordinated actions in respect to their mandates.

The development of an action plan should be led by either the respective Bureaus of Agriculture in Oromia and SNNPR, due to their mandates in regards to land use change, or it could be led by the Rift Valley Lakes Basin Development Office, who has a stronger coordination mandate granted to it under various instruments. Irrespective of the lead institution, such an action plan would be able to set joint objectives and targets in terms of reducing sediment load over the whole sub-basin, establish agreement on the alignment of activities by different agencies within their focus areas, and provide a basis for monitoring overall progress.

Increase oversight over environmental impacts of sand-mining and fuelwood collection

Sand-mining and fuelwood collection activities pose significant challenges to sediment management throughout the sub-basin, driven by building material needs and domestic energy needs, respectively. Both activities are often individually small in scale and widespread across the sub-basin, but collectively they have a significant impact. It is observed, however, that these activities are also

important income-generating activities for youth and households. It is recommended that there is more focused attention on these issues by the Regional Environmental Protection Agencies. Activities include increased monitoring, working with other institutions to identify suitable alternatives to wood fuel for domestic energy needs, and identifying appropriate resource zones for sand mining that minimise impact.

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Annex 1: Sediment governance worksheet for Lake Hawassa (Institutions)

STEP 3: Diagnose governance institutions

Governance institution	Mandate	Type	Level	S2S segment	S2S sub-segment	Key instruments	Level of implementation	Implementation barriers	Additional comments
Ministry of Agriculture and Rural Development (since 2001)	The Ministry is responsible for a number of activities, including rural development policies, plans, and strategies, that will have an impact on sediment in Lake Hawassa. These include the administration of the Sustainable Land Use Management Programme that is found in many other parts of Ethiopia, food security, Agricultural Development-led Industrialization Strategy, and agricultural and pastoralism extension services. The Ministry supports an expansion of agriculture and networks designed to support agricultural enterprises, which has contributed to both land use changes from forestry to agriculture or increased intensity of land uses in some locations that leads to soil erosion.	Government	National	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Fisheries Development and Utilization Proclamation No. 315/2003, Agriculture and Natural Resources Sector Growth and Transformation Plan II (2015-2020), Climate Resilient Green Economy National Adaptation Plan (2019), Agricultural Development Led Industrialization, Rural Development Policy and Strategies (2002), Food security strategy (2002), Sustainable Land Management Investment Framework	Strong		Responsible for undertaking agricultural activities, including extension, devolved to counter-parts in the Regional State Governments. Measures taken by this Ministry can have a significant influence on the development of agriculture across both upper and lower catchments, as well as the development of industrial infrastructure that process agricultural inputs. There may be conflicts between the mandate of this Ministry and ministries involved in managing forests and freshwater systems. Given the extent of agricultural expansion in Ethiopia, this Ministry has been effective.
Ministry of Urban Development and Construction	The Ministry is responsible for a number of activities in relation to the urban areas of Ethiopia. This includes the development of policies, plans, and strategies that will influence the way that urban areas develop, and are funded. In terms of sediment, its chief involvement is through providing guidance on solid waste management and other urban services that can be a source of sediment into Lake Hawassa as well as promoting industrial activities.	Government	National	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), A Proclamation to Provide for Urban Plans Proclamation No. 574/2008	Moderate		This Ministry is less relevant in terms of sediment issues, but may have an impact through urban planning and services management. Main role is through policy guidance.
Ministry of Environment, Forest, and Climate Change	This Ministry is responsible for managing various activities that impact on the environment. This includes the development of policies, plans, and strategies that will influence the way that Regional State governments control issues such as environment pollution, administer environmental impacts assessment, and manage forests. In terms of sediment, its chief influence will be to affect the way that forests are used and managed. Over time, climate change, through the alignment of planning and actions under the NAP will increase in importance. This Ministry has an important impact in providing direction in terms of managing sand mining, through setting standards, and forestry land use changes. There may be conflict between the mandate of this institution and those promoting expansion or intensification of agricultural activities.	Government	National	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Environmental Impact Assessment Proclamation No. 2991/2002, Environmental Pollution Control Proclamation No. 3003/2002, Forest Development, Conservation and Utilization Proclamation No. 1065/2018, Climate Resilient Green Economy National Adaptation Plan (2019),	Moderate		This Ministry may have an important impact in terms of managing sand mining and forestry land use changes. Main role is through policy guidance.
Ministry of Water, Irrigation and Electricity (incl. Basin Development Authority)	The Ministry is responsible for a number of activities, including rural development policies, plans, and strategies, that will have an impact on sediment in Lake Hawassa as well as being the host institution for the Basin Development Authority. Activities of relevance to sediment include water supply and sanitation, medium and large scale irrigation and drainage, river basin study, water quality and hydrology, and water sector research and development. It also shares some irrigation responsibilities with Regional Bureau.	Government	National	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), CRGE Climate Resilience Strategy: Water and Energy, Irrigation Water Users' Associations Proclamation No. 841/2014, River Basin Councils and Authorities Proclamation No. 534/2007, Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005, Ethiopian Water Resources Management Proclamation No. 197/2000, National Integrated Water resources management Program (Draft)	Moderate		Through the BDA, the Ministry has an important role in coordination and strategic planning that supports IWRM.
Ministry of Industry	This Ministry is responsible for policies, plans and strategies in relation to industrial investment across Ethiopia, include some activities involved with the Agricultural-Development Led Industrialization strategy.	Government	National	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Agricultural Led Industrialization Strategy,	Weak		In particular reference to the Lake Hawassa sub-basin, the support of activities associated with the Hawassa Industrial Park will be of high interest to this Ministry. Its role in terms of mining, and therefore sand-mining could also be of importance.
Basin Development Authority (incl. Rift Valley Lakes Basin Development Office)	As well as the Authority hosted at the Federal level there are local offices working in different basins across Ethiopia. The Office has an important role in coordinating different interventions on the sediment flow at the local level.	Government	National	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), CRGE Climate Resilience Strategy: Water and Energy, Irrigation Water Users' Associations Proclamation No. 841/2014, River Basin Councils and Authorities Proclamation No. 534/2007, Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005, Ethiopian Water Resources Management Proclamation No. 197/2000, National Integrated Water resources management Program (Draft)	Moderate	Limiting factors include local capacity and availability of resources	

Governance institution	Mandate	Type	Level	S2S segment	S2S sub-segment	Key instruments	Level of implementation	Implementation barriers	Additional comments
Bureau of Agriculture and Natural Resources (Oromia)	This Bureau supports the administration of proclamations and regulations relating to agriculture and rural development at a state level. As part of its role, it administers fishing regulations, and therefore is connected from the upper catchment to the endpoint of the system. In terms of sediment in the sub-Basin, the conversion of forest and marginal lands to agriculture, as well as the increase in intensity of land uses, has been a significant driver in sediment flows.	Government	National	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Fisheries Development and Utilization Proclamation No. 315/2003, Agriculture and Natural Resources Sector Growth and Transformation Plan II (2015-2020), Climate Resilient Green Economy National Adaptation Plan (2019), Agricultural Development Led Industrialization, Rural Development Policy and Strategies (2002), Food security strategy (2002), Sustainable Land Management Investment Framework, Oromia Region Rural Land Administration and Use Regulation No.151/2012, Oromia Plans			Belete (2019) noted their importance in terms of preventing soil erosion from the landscape, and given that this is a main source of sediment, the participation of this Bureau is critical in terms of addressing issues. However, there may be some conflicts or overlaps between this Bureau and others housed within the Regional State Government.
Bureau of Water Resources Development (Oromia)	This regional bureau is responsible for the management and promotion of water activities at a state level. It mainly focuses on the development, operation and maintenance of rural (and urban) water supply systems in the regions; and also irrigation developments.	Government	State	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Irrigation Water Users' Associations Proclamation No. 841/2014, Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005, Ethiopian Water Resources Management Proclamation No. 197/2000, Oromia Plans	Weak		In terms of sediment in the sub-Basin, its chief influence will be through managing expansion of irrigation or activities that are reliant on water and may be a future source of sediment flows.
Environmental Protection Agency (Oromia)	This regional bureau is responsible for the management of the environmental impact of new activities, controlling pollution as well as monitoring the state of the environment. Belete (2019) notes that this Bureau is responsible for developing, conserve, and utilization of forests which is one of the key components in the land-to-lake continuum, supporting policies and strategies from MECC at the Federal level. Wetlands identification, delineation, and implementation of community-based management are also done by this bureau.	Government	State	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Environmental Impact Assessment Proclamation No. 2991/2002, Environmental Pollution Control Proclamation No. 3001/2002, Forest Development, Conservation and Utilization Proclamation No. 1065/2018, Climate Resilient Green Economy National Adaptation Plan (2019), A Proclamation to Provide for the Establishment of Oromia Bureau of Land and Environment Protection. Proclamation 147/2009, Oromia Plans	Moderate		In terms of sediment in the sub-Basin, its chief influence will be through managing activities that impact on water quality from point sources such as new development or sand-mining. The participation of this Bureau is critical in terms of addressing issues, especially in regard to the upper catchment forests, woodlands, and wetlands.
Bureau of Agriculture and Natural Resources (SNNPR)	This Bureau supports the administration of proclamations and regulations relating to agriculture and rural development at a state level. As part of its role, it administers fishing regulations, and therefore is connected from the upper catchment to the endpoint of the system. In terms of sediment in the sub-Basin, the conversion of forest and marginal lands to agriculture, as well as the increase in intensity of land uses, has been a significant driver in sediment flows.	Government	State	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Fisheries Development and Utilization Proclamation No. 315/2003, Agriculture and Natural Resources Sector Growth and Transformation Plan II (2015-2020), Climate Resilient Green Economy National Adaptation Plan (2019), Agricultural Development Led Industrialization, Rural Development Policy and Strategies (2002), Food security strategy (2002), Sustainable Land Management Investment Framework, SNNPR Regional Government Fisheries Development, Management & Control Regulation (Proclamation No. 62/1999; 78/2004) & Directive (2007) , SNNPR Plans, The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Use Proclamation No.110/2007.	Strong		Belete (2019) noted their importance in terms of preventing soil erosion from the landscape, and given that this is a main source of sediment, the participation of this Bureau is critical in terms of addressing issues. However, there may be some conflicts or overlaps between this Bureau and others housed within the Regional State Government.
Bureau of Water Resources Development (SNNPR)	This regional bureau is responsible for the management and promotion of water activities at a state level. It mainly focuses on the development, operation and maintenance of rural (and urban) water supply systems in the regions; and also irrigation developments. .	Government	State	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Irrigation Water Users' Associations Proclamation No. 841/2014, Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005, Ethiopian Water Resources Management Proclamation No. 197/2000, SNNPR Plans.	Weak		In terms of sediment in the sub-Basin, its chief influence will be through managing expansion of irrigation or activities that are reliant on water and may be a future source of sediment flows.
Environmental Protection Agency (SNNPR)	This regional bureau is responsible for the management of the environmental impact of new activities, controlling pollution as well as monitoring the state of the environment.	Government	State	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Environmental Impact Assessment Proclamation No. 2991/2002, Environmental Pollution Control Proclamation No. 3001/2002, Forest Development, Conservation and Utilization Proclamation No. 1065/2018, Climate Resilient Green Economy National Adaptation Plan (2019), SNNPR Plans	Weak		Belete (2019) notes that this Bureau is responsible for developing, conserve, and utilization of forests which is one of the key components in the land-to-lake continuum, supporting policies and strategies from MECC at the Federal level. Wetlands identification, delineation, and implementation of community-based management are also done by this bureau. In terms of sediment in the sub-Basin, its chief influence will be through managing activities that impact on water quality from point sources such as new development or sand-mining. The participation of this Bureau is critical in terms of addressing issues, especially in regard to the upper catchment forests, woodlands, and wetlands.
Hawassa City Administration	This department within the HCA is responsible for managing services relating to solid waste or for urban planning in the urban areas. Inappropriately sited or poorly managed land development can lead to significant flows of sediment directly into Lake Hawassa	Government	Municipal	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), A Proclamation to Provide for Urban Plans Proclamation No. 574/2008, Hawassa City Bylaws, Hawassa City Administration Master Plan	Moderate		The participation of HCA is seen as being important to future actions, but the management of sediment may be a low priority compared with other parts of their mandate
Urban Planning Sanitation and Beautification - HCA	This department within the HCA is responsible for managing services relating to sediment.	Government	Municipal	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), A Proclamation to Provide for Urban Plans Proclamation No. 574/2008, Hawassa City Bylaws, Hawassa City Administration Master Plan, SNNPR Plans	Moderate		The participation of this department is seen as being important to future actions, especially in terms of reducing sediment from solid waste, but the management of sediment may be a low priority compared with other parts of their mandate

Governance institution	Mandate	Type	Level	S2S segment	S2S sub-segment	Key instruments	Level of implementation	Implementation barriers	Additional comments
Water Supply (HCA)	This department within the HCA is responsible for providing water and sanitation services. Increased sediment can result in an increased cost for the provision of water if surface water was the main source, through necessary upgrades and increased maintenance of water pumping and distribution services.	Government	Municipal	Freshwater system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), A Proclamation to Provide for Urban Plans Proclamation No. 574/2008, Hawassa City Bylaws, Hawassa City Administration Master Plan, Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005, Ethiopian Water Resources Management Proclamation No. 197/2000, SNNPR Plans.	Weak		However, most local water supply is sourced from deep boreholes at present, and therefore sediment may be seen as a low priority.
Weredas (Hawassa Zuria, Hawassa Shala etc...)	Weredas are responsible for local land management and the administration of State Legislation and Regulation. The involvement of weredas is critical for managing sediment flows as they provide local resources and coordination of activities, and administering local bylaws, regulations or community activities.	Government	Local	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Rural Development Policy and Strategies (2002), Food security strategy (2002), Sustainable Land Management Investment Framework, SNNPR Plans, Oromia Plans, The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Use Proclamation No.110/2007, Oromia Region Rural Land Administration and Use Regulation No.151/2012.	Weak		Depending on the source, the involvement of specific Weredas will be critical to managing sediment flows, but limited resources and capacity to act is a severe limitation.
Kebeles	Within urban areas, kebeles are responsible for local land management and the administration of local policies. The involvement of urban kebeles are of limited importance for managing sediment flows compared with higher levels of Governance.	Government	Local	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997), Rural Development Policy and Strategies (2002), Food security strategy (2002), Sustainable Land Management Investment Framework, SNNPR Plans, Oromia Plans, The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Use Proclamation No.110/2007, Oromia Region Rural Land Administration and Use Regulation No.151/2012.	Weak		Depending on the source, the involvement of specific kebeles will be critical to managing sediment flows, but limited resources and capacity to act is a severe limitation.
Affiliation of Friends of Lake Hawassa	This is newly emergent institution whose purpose is to support coordinated efforts to protect and rehabilitate Lake Hawassa from multiple threats. It membership comprises representatives from multiple different institutions including public, private, and civil society.	Ad hoc	Basin	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997)	Weak		This institution may provide good coordination but is mainly voluntary in membership, thereby placing limitations on its activities or coordination capacity.
Hawassa University	Hawassa University is specifically noted as part of the Governance Baseline as the University system in Ethiopia has several public obligations as part of their role. In this case, they provide some support to the development of Basin Plans, such as that of Lake Hawassa.	Government	National	Land system		Ethiopia's Constitution (1994), Conservation Strategy of Ethiopia (1997), Environmental Policy (1997)	Moderate		This institution provides technical support to other governance institutions, and is playing an important role in plan development.

Annex 2: Sediment governance worksheet for Lake Hawassa (Instruments)

STEP 3: Diagnose governance instruments

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Action Plan for the National Policy on Natural Resources and the Environment (1994)	The AP recognized watershed planning and helped establish Ethiopia as an early adopter of IWRM. It included an integrated approach to land management across Ethiopia and countrywide programme on soil conservation, including preferred extension services and early concerns around the impact of charcoal burning on forests. Key sections include <i>integrated land use and on-farm soil management: Given the tremendous erosive power of rainfall on bare earth, to develop, in participation with farming communities appropriate integrated cropping and soil management systems which maximize the length of time the soil is covered with live and/or dead vegetative and other materials.</i>	Strategy	National	Land system		Weak	The AP sets the scene for an integrated approach across Ethiopia, and this purpose has carried through the following decades. It includes references to water resources, and the connections to ecosystems, although it is more focused on water as an input into economic processes. Whilst more concerned with the land system, it would apply to the whole of the Basin.		Very old and doesn't appear to have been updated. Prepared 25 years ago. Sections on water rarely considered the impact of land use on water resources. It also didn't consider impacts of pastoral farming on sediment erosion, which has increased in significance as an issue. It's relevance was rated as low on this basis.
CRGE Climate Resilience Strategy: Water and Energy	The CRGE provides national and economy wide measures for responding to climate change. This component of the CRGE programme includes measures and funding relating to irrigation and to reducing reliance on wood fuel. It noted that irrigation can cause issues in lower catchments in terms of erosion whereas land use changes relating to wood fuel removes vegetation cover, which in turn contributes to erosion and sediment loads from upper catchments. 81% of Ethiopian households nationally rely on wood for domestic use, and it may be similar percentages across Hawassa, which support the connections to sediment found in the consultants report. It also noted that climate change may reduce biomass, putting further pressure on woodlots and forests. This may mean that if wood fuel biomass continues to be the main source of domestic energy, deforestation (by area) growth will increase as the same area of forest will not produce as much biomass for fuel compared with the present time. This has implications for erosion in the forested hillsides around Lake Hawassa. The Strategy also notes the need to enhance rainfed agricultural activities, which may reduce sediment erosion. This Strategy, in terms of water and energy, is implemented by both MoWIE and State Governments. Strategic Priority 3.3 refers specifically to the role of River Basin Councils in terms of action.	Strategy	National	Freshwater system		Moderate	The CRGE is well accepted within Ethiopia and referred to across national communications and policy. Building connections to the CRGE can enhance legitimacy of actions or program designed through S2L. Strategy supported at Ministerial level and funding has been made available for implementation. The Strategy would apply to all parts of the Basin and will have a high influence on plans and strategies, and used to supporting actions by Enabling and Supporting Institutions. It would support some level of horizontal coordination through the connections between erosion, deforestation and energy needs		THE CRGE predominantly has a national focus, and may not result in significant local investment, therefore how much funding to support actions Hawassa is questionable. The document notes the need to balance water demands but actions appear to be focused on demand-side only, leaving activities such as afforestation to other programmes.
Ethiopia's Constitution (1994)	The Constitution outlines the rights and obligations for all Ethiopians, as well as key institutions important to the functioning of the Republic of Ethiopia. The most relevant sections include: <i>Article 44 Environmental Rights: All persons have the right to a clean and healthy environment</i> in relation to sediment insofar as excessive sediment will affect the health of Lake Hawassa. <i>Article 51: Powers and Functions of the Federal Government: It shall determine and administer the utilization of the waters or rivers and lakes linking two or more States or crossing the boundaries of the national territorial jurisdiction as the Basin is shared across two Regional States.</i> <i>Article 52 Powers and Functions of States: (c) To formulate and execute economic, social and development policies, strategies and plans of the State;</i> <i>Article 92 Environmental Objectives 2 The design and implementation of programmes and projects of development shall not damage or destroy the environment. 4 Government and citizens shall have the duty to protect the environment</i> as this gives support to ensuring that development programs do not add to environmental degradation.	Policy	National	Land system		Moderate	The Constitution underpins all legislation in Ethiopia and provides a basis for the development and enactment of legislation, regulations and proclamations, mainly at Federal and State levels. As well as the rights, it also notes obligations on Governments and citizens that underpins provisions found in other Proclamations (e.g. relating to rural land use or forestry) in terms of providing or removing access to land). The Constitution is applicable across the whole Basin. Whilst the Constitution is of high relevance to vertical coordination of governance across Ethiopia, it is less relevant on a sectoral level but can be used to supporting actions by Enabling and Supporting Institutions.		General and very broad but needs to be acknowledged.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Environmental Impact Assessment Proclamation No. 2991/2002	This Proclamation is concerned with managing activities that have an environmental impact on receiving environments, but is generally focused on managing larger-scale or more significant activities and projects as opposed to managing land use. In terms of sediment, the Proclamation may be relevant for managing sediment flow from development activities across the Hawassa Sub-Basin as well as managing sand mining occurring in both lower and upper catchments. However, the scale of individual sand-mining activities may be of a big enough scale to trigger such control. Regular and already established land uses, such as deforestation, afforestation, or agriculture, may not be significant enough, apart from larger investments in forestry or irrigation projects. "Impact" means any change to the environment or to its component that may affect human health or safety, flora, fauna, soil, air, water, climate, natural or cultural heritage, other physical structure, or in general, subsequently alter environmental, social, economic or cultural conditions;	Law	National	Land system		Moderate	The Proclamation gives a strong role to State Government and respective State Bureau/Agencies in managing environmental impacts derived from development. The definition of Impact and Pollutant would mean that sediment is included, and this may suggest a role of EIA units from State Governments in managing processes or activities that significantly increase sediment flows, including through the assessment of structure plans or development plans prepared under urban planning legislation. However, EIA are most concerned with new activities as opposed to managing existing activities. The most obvious application is sand-mining but large scale infrastructure projects such as roading may also create sediment flow. As the Consultant reports notes "Environmental Impact Assessment Proclamation (No. 299/2002) notified the mandatory requirements of some specified projects (public or private) to undertake timely EIA, identifying the likely adverse impacts, incorporate the means of their prevention with the support of qualified experts". The Proclamation may also apply to land use changes, and therefore may be in conflict with provisions that support growth in agricultural land uses. In terms of the Basin, sand-mining is found mainly in the lower catchments, although the gullies can act as access points meaning some connections to the upper catchment can be found. Globally, sand mining can be an issue in riparian areas or riverbeds but this has not emerged as an issue in this basin at present.		Many activities related to the generation of sediment will not be managed due to their small individual scales although they can have a significant effect through collective environmental degradation. In addition, many sources of sediment will not be controlled through this Proclamations because they are sourced from already existing activities as opposed to being new activities. The relevance of the Proclamation to sediment is assessed as medium as opposed to high as it may not support proactive action on most activities with the exception of sand-mining or new urban development.
Environmental Pollution Control Proclamation No. 3001/2002	This proclamation deals with Environmental Pollution in its many forms, including effluent, management of municipal waste, and Monitoring and Evaluation. It provides for an Environmental Protection Agency at the Federal level, as well as Regional Environmental Agency found at State levels. The definition of pollutant found in the Proclamation would potentially include sediment, but will definitely include solid waste and sediment derived from that sources. The Proclamation makes reference to the role of Courts dealing with environmental matters at Federal and State levels, and this is taken up further through other Proclamations. In terms of responsibilities, Federal Authorities are responsible for preparing standards, including waste management, nationally. The Proclamation also recognizes that that States may prepared Standards be more stringent than Federal standards, taking into account the needs in different locations. However, the status of Hawassa as crossing state boundaries could result in differing standards being applied. Whilst this Proclamation may be more relevant to managing plastic litter, solid waste may be responsible for significant amounts of sediment going into Lake Hawassa, especially as ash, as noted in the Consultants report (2019). As an example of provisions: <i>Any person engaged in any field of activity which is likely which is to cause pollution or any other environmental hazard shall, when the Authority or the relevant regional environmental agency so decides, install a sound technology that avoids or reduces, to the required minimum, the generation of waste and, when feasible, apply methods for the recycling of waste.</i>	Law	National	Land system		Moderate	As well as outlining roles of different authorities in managing environmental pollution in terms of vertical coordination, the Proclamation provides for the role of Environmental Inspectors within the respective institutions. These inspectors may be important for managing sediment flows from urban development and sand mining, especially on environmentally compromised sites, if they trigger intervention. The Proclamation is also applicable to ongoing sources of pollution, unlike the EIA Proclamation. It is most applicable within the lower catchment and also in relation to the riparian areas.		Whilst this Proclamation may be relevant to sand-mining or other activities that cause environmental pollution, it is unclear how much monitoring is undertaken by regional agencies or environmental inspectors in terms of this issue, and whether sand-mining is given a high priority. Various workshops undertaken within the S2L programme suggest that whilst sand mining is seen as a significant issue, overall control is limited as there is more support for the activity as an employment generator for youth and there are difficulties in fully allocating responsibilities.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Environmental Policy 1997	This policy enacts the Constitution and prepares the way for further legislative activities such as Environmental Impact Assessment. The Proclamation particularly notes deforestation as an important issue in the Opening Summary, and notes that that soil erosion is a very significant problem in Ethiopia with broad impacts on GDP. <i>Specific Policy Objectives include e. To promote effective ground cover as one of the most important factors in soil erosion control, taking advantage of the wide range of sustainable agronomic, pastoral and silvicultural approaches used in various areas of Ethiopia as potentially flexible alternatives to mechanical soil conservation systems; f. To promote in drought-prone and low rainfall areas water conservation which is as important as physical soil conservation for more secure and increased biomass production, including crop production; i. To find substitutes for construction and fuel wood whenever capabilities and other conditions allow, in order to reduce pressure on forests.</i>						The Environment Policy provides significant support for managing sediment generated from many different sources. This is predominantly through vertical coordination, but some level of horizontal coordination is anticipated through provisions on cross-sectoral interactions between forestry, agriculture, and wood-fuel. Whilst sediments sourced from forestry and the expansion of agricultural activities are the main focus within the Policy, the Policy also notes challenges relating to mining, and this may extend to sand-mining activities.		While the EP still underpins environmental management in Ethiopia, and enacted Proclamations, it is relatively old and may require some amendment to better support more recent governance activities undertaken in an integrated way. IWRM has been a longstanding policy focus in Ethiopia, but good examples of implementation are limited.
Fisheries Development and Utilization Proclamation No. 315/2003	This proclamation provides the framework for managing Fisheries across Ethiopia. It has limited provision are applicable to sediment management, although it may provide support for interventions through and application of 8. <i>Environmental Protection: The concerned organs of the Federal or Regional Governments shall ensure that development programmes and projects are drawn up in such a way that they will not have direct or indirect negative impact on the fisheries resource constituted in the basin where the programmes or projects are intended to be implemented.</i>						The Fishery sector is reliant on adequate fish stocks in Lake Hawassa. Sediment flows can impact on Lake Hawassa fish stock in a negative way, including smothering lake bed shallows and impede fish recruitment, increasing nutrient flow and increase or maintain algal blooms, or reduce transport options on the edges of the lake. In terms of managing sediment, the Proclamation provides support to the industry being involved in discussions around managing sediment, but overall would have a low relevance to management discussions.		Limited use in direct actions around sediment flows that are land-based, but is useful to how support indirect actions such as the development of plans.
Forest Development, Conservation and Utilization Proclamation No. 1065/2018	The Proclamation notes importance of Forests and Forestry to Ethiopia, and includes provisions for managing state forests, community forests, protected forests, preserved forests, private forest developers, amongst others. For example, <i>WHEREAS forest development, conservation and utilization has a decisive role in preventing soil erosion, desertification and loss of biodiversity.</i> The Proclamation contains detail on rights and obligations for different forest users, according to the types of forest under different managements regimes. The Proclamation also outlines various duties for the Federal Ministry and Regional Government in respect to forests. For example, for managing sediment, the most relevant includes <i>Federal Government shall: 6/ Provide technical and material support to the regions to establish a sustainable and modern forest development, conservation and utilization system ; whereas Regional Government 6/ Shall establish or provide the institutional arrangements, budget allocation and manpower required for the implementation of this Proclamation ;</i> This would indicate a key role for State Governments in sediment emerging from forests. Forests are still prominent on the eastern slopes, but the Consultants report indicates significant land use changes from forestry to agricultural activities over time, and this is expected to continue. Upper catchments, often forested, are indicated as hotspots	Law	National	Land system		Moderate	The gullies that form an important flow source have often emerged from deforestation activities, whilst the ongoing sourcing of wood fuel indirectly supports land use change as biomass is removed. Belete (2019) report noted that the forest degradation at the source of sediment erosion could have been well managed if stakeholders more strongly execute this proclamation that advocates participatory forest management planning. The report went onto note that the major constraints in forestry development in the sub-basin are land and tree tenure, population pressure, land shortage and high demand for agriculture, deforestation, and a lack of collaboration among the concerned institutions. Some of its provisions may come into conflict with provision supporting the expansion of agriculture onto forested lands, which are increasingly rare in the Sub-Basin.		Whilst forest activities should be included within IWRM planning and the Basin Plans being prepared by the RVLBDO, implementing this provision is dependent upon the coordinated involvement of State Bureaus involved in managing forests and forestry within wider planning around sediment reduction. Whilst erosion is regularly noted as a concern at Federal levels, it is unclear how much funding is made locally to carry out rehabilitation works. Observations suggest that works are usually carried out as part of community service and that there are limited physical or financial resources available.
Agriculture and Natural Resources Sector Growth and Transformation Plan II (2015-2020)	The GTPII is an important Strategy at the Federal level, especially given the project impact of climate change on Agriculture in Ethiopia, including soil erosion. <i>2. Strategic Objective 2: Reduce Natural Resource Degradation and Improve Its Productivity. 3. Enhance and strengthen watershed development works. Goal 2.2: Expanding and Strengthening Watershed Development Activities. 2.6.1 Enhance and Strengthen Watershed Works. 6.2 Watershed and Forestry Development (a) To develop an incentive structure for farming households to invest in watershed development and sustainable farming.</i>	Strategy	National	Land system		Moderate	The direct impact of this plan on activities within the Basin is mixed, but it provides strong national support for taking a watershed based approaches to development, including the involvement of communities in projects devoted to reducing sediment flows. This means that substantial indirect pressure. This support also extends to expanding capacity building and developing an incentive structure for activities related to watershed management. This Strategy supports activities in both upper and lower catchment areas, and has medium relevance for approaching the sediment issue. Funding through support for the GTPII could be directed to erosion control, but more importantly, actions need to acknowledge this plan. The plan is useful in terms of horizontal coordination.		The Plan is applied at a national level and it is unclear how much support makes it to the Basin level.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Irrigation Water Users' Associations Proclamation No. 841/2014	This proclamation helps to manage demand for limited water resources. Of note in terms of water governance is the following provision: <i>An association formed pursuant to this Proclamation shall have the objectives to: 4/ take appropriate measures to combat erosion, salinity and pollution; Each association shall operate in accordance with the following guiding principles: 2/ preventing wastage and pollution of water, combating erosion and salinity of soil and, protecting and administering irrigation and drainage system within the operation area so as to strengthen protection of the environment.</i> Large scale irrigation activities are not evident in the Lake Hawassa Sub-Basin, but community scale irrigation does occur. Should irrigation expand as part of development or through building climate resilience, more projects may emerge.	Law	National	Freshwater system		Weak	This Proclamation will be important if expansion of irrigation occurs in the lower catchments around Lake Hawassa. The workshops noted that the western side of Lake Hawassa has historically seen vegetable growing as well as maize, and there may be plans to invest in the wider basin to meet growth from the Hawassa Urban areas. It is mainly applicable to the lower catchment areas, and potentially riparian areas around the Lake and rivers, but its overall relevance is low.		No specific weakness in terms of managing sediment
Climate Resilient Green Economy National Adaptation Plan (2019)	The NAP was only released in 2019 and recognizes that investing in soil and water harvesting is an important activity. Provisions of note include <i>4. Improving soil and water harvesting and water retention mechanisms.</i> The SNNPR specifically includes <i>AO4 Improving soil and water harvesting and water retention mechanisms</i> , whilst in Oromia <i>AO3 Strengthening sustainable natural resource management through safeguarding landscapes and watersheds.</i> In addition, <i>deforestation, landslides, pest infestations, soil erosion and water pollution are among the environmental problems that have emerged in the country, creating further challenges for rural livelihoods,</i> and this NAP is intended to provide <i>budgetary support.</i>						The NAP provides an important role for managing watersheds as a major component for responses to climate change impacts. Some budget will be made available, and an action plan on sediment may be able to access funding from this source if an explicit connection to climate change exacerbating the present challenges around managing sediment can be made. Whilst it is assessed to be medium relevance, this may change to high relevance in the future as activities and plans are aligned more strongly with the NAP.		The NAP is a national document and may not result in significant resources distributed locally. The NAP has also only just been approved and it is unclear whether associated budgets and plans are also approved and how this will be managed, including the alignment of present Federal, State or Local plans.
A Proclamation to Provide for the Establishment of Oromia Bureau of Land and Environment Protection. Proclamation 147/2009	This proclamation is applicable to activities occurring within the Oromia component of the Lake Hawassa Basin. It outlines the framework for managing land-uses and planning along with the initiation of a Bureau to help manage this process. The Proclamation is particularly relevant to the implementation of Environmental Impact Assessment and Environmental Pollution measures. Provisions of note <i>"Land Use Planning," means a practice whereby the options that provide greater economic benefits without causing land degradation and environmental pollution are determined and implemented from among the different use options a land can give on the basis of physical, social and economic information.</i> <i>7) "Environmental Protection," means the protection of any resource at any place from hazardous pollution and dirt and taking care for sustainable use.</i> <i>12) Regulate and follow up that any development activity is planned and implemented without damaging the environment;</i> <i>17) Promote and develop public awareness on land use and environmental protection at all levels.</i>	Law	State	Land system		Moderate	This Proclamation supports the creation of the Bureaus that can apply environmental impact assessment and environmental pollution control in parts of the Sub-Basin, but more importantly, outlines and defines the role of these Bureaus in applying land use planning. It would have relevance across the whole component of Oromia found in the sub-Basin, and would be highly relevant across upper and lower catchments and riparian areas.		No specific weakness noted, as water and connections to water through land management are included within the definition of environment.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Oromia Region Rural Land Administration and Use Regulation No.151/2012	This Proclamation is highly significant for the Governance framework as it sets out the various responsibilities of different institutions within the Oromia Region. At the Rural Land Use plan is important for demarcating appropriate activities for different parts of the Sub-Basin, including those which may be important sources of sediment flow. The plans developed under this proclamation should take a watershed approach, and all users will have rights and obligations under its auspices. Of particular note are provisions surrounding the types of activities that can be undertaken in already degraded locations. Provisions include. 1. <i>The Bureau shall conduct study and prepare at all level land use planning based on watershed that considering the socio-economic development, the natural resources situation, current land use and etc. of the region with full participation of the community.</i> 2. <i>Any person who has the rural land use right shall be prohibited to flow his land in a way that resulted in erosion of soil.</i> 3. <i>Causing soil erosion that result in devastation of grasses due to over grazing is prohibited.</i> 22. <i>Protect and Conservation of Sloppy Lands, Mountainous, Hills and Gorges</i> 2. <i>Any person who has the right to use rural land is obliged to use the sloppy and hilly land only for the recommended purpose by keeping slopes determined by professionals.</i> 3. <i>Gorge lands or degraded lands shall be protected by planting selective plants like coffee, mango, avocado, and other fodder trees and are forbidden to use for crops or for free grazing.</i> 1. <i>The remnant forest lands on farmland, grazing land, stream banks, and hilly areas, shall not be used for farm lands by eliminating remnant forest.</i>	Regulation	State	Land system		Moderate	This State Proclamation is important for developing activities that mitigate sediment flow from land uses, including both agricultural uses as well as pastoral. It outlines roles for different institutions within the region in terms of implementation, highlighting the role of State Bureaus, thereby supporting vertical coordination. Importantly, in terms of biophysical attributes, it specifically outlines the need to protect highly sloped hillsides and forest remnants found in the upper catchments, which would include those in the Lake Hawassa basin. Watershed Plans are explicitly noted as a requirement. It also notes that role of the Bureau in providing information to Investment Offices, and therefore the connection to that Ministry. It is less likely to impact on Urban land sources, with the exception of peri-urban areas found around Hawassa and other sub-cities found in the Basin.		The key weakness found in the document is the lack of many explicit connections between land uses and associated receiving waters, with the exception of provisions found in regards to forest remnants. Whilst water connections are found throughout the proclamation, it is unclear how much these are included within watershed based land use planning undertaken by Oromia State Government, or to the Basin Plans prepared by the RVLBDO.
River Basin Councils and Authorities Proclamation No. 534/2007.	This Proclamation brings into force a more integrated approach to water resources management in Ethiopia, and helps to enact various provisions found in the Constitution and other strategies, policies and proclamations found across Ethiopia. The River Basin Councils were set up as a new component of Governance within Ethiopia, and to give effect to the ongoing promotion of IWRM. The RBCs have an important role in providing knowledge and guidance to other regulatory agencies, especially through the vehicle of the mandated Basin plan as well as the role of activity coordination, including both vertical and horizontal. This is especially relevant in addressing sediment as there are many different sources of sediment found in the Basin, each being governed under different Proclamations and by different institutions.	Law	National	Freshwater system		Moderate	The main strength of this Proclamation is its highly integrated approach, and relatively high detail of the roles and responsibilities of the River Basin Councils. Such an approach allows for a wider perspective on the challenges relating to managing water compared with Regional States, and the Basin Plan may be an important tool for coordinating activities from many different agencies, especially with the provisions for setting up a forum and the provision policy guidance designed to implement IWRM across the Basin. The Proclamation has a direct connection to the Lakes, Rivers, and Riparian areas, and an indirect connection through IWRM to the upper and lower sheds in terms of managing sediment. Its relevance is assessed as high as it is supportive of coordinated actions in terms of managing impacts of land based activities on water, predominantly through the basin plans created throughout the Rift Valley Lakes Basins, but may be medium in terms of the <i>lower catchment</i>		It is noted that the Basin Plan will strongly support direct actions in relation to water management and allocation, but is less relevant to activities such as erosion control. The Basin Plans will not be able to be used to compel actions to be taken by other authorities, with the exception of water permitting. Many of the regulatory actions or budgetary support needed to manage sediment flows are undertaken by other agencies and under different Proclamations, and while there is a duty to cooperate with the Basin Planning process, it is unclear how much provisions in these Basin Plans are operationalized through watershed and other land use plans made by Regional Authorities.
Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation No. 456/2005	The Proclamation provides for the rights and obligations around land use across Ethiopia, including the development of rural land use plans, use of degraded or marginal lands, and the various roles of Federal and Regional State authorities. Provisions of notes include: 1/ <i>A holder of rural land shall be obliged to use and protect his land. When the land gets damaged, the user of the land shall lose his use right.</i> 3/ <i>In any type of rural land where soil and water conservation works have been undertaken a system of free grazing shall be prohibited and a system of cut arid carry feeding shall be introduced step by step.</i> 7/ <i>Rural land of any slope which is highly degraded shall be closed from human and animal interference for a given period of time to let it recover, and shall be put to use when ascertained that it has recovered. Unless the degradation is caused by the negligence of the peasant farmers, semi pastoralist and pastoralist the users shall begin compensation or other alternatives for the interim period.</i> 8/ <i>rural lands that have gullies shall be made to rehabilitate by private and neighbouring holders and, as appropriate, by the local community, using biological and physical works.</i> 9/ <i>Rural lands that have gullies and are located on hilly areas shall be rehabilitated and developed communally and as appropriate by private</i>	Law	National	Freshwater system		Strong	This Proclamation sets the basic conditions of rural land use across Ethiopia, and the responsibilities of various agencies and institutions. Whilst it is primarily interested in the appropriate distribution of land, it still outlines why certain lands may or may not be available for use. The Proclamation also outlines the responsibilities of the Targeted Stakeholders in terms of managing the land appropriately. Belete (2019) notes that Rural Land Administration and Land Use Proclamations define the rights and obligations of users of rural land, including traditional subsistence farmers. Thus, protection of land becomes an obligation and failure to protect can lead to loss of title. Belete (2019) also noted that farmers are not practicing the appropriate soil and water conservation measures in their farm against their obligations set by the rural land users, and land use restrictions. It is assessed as high relevant to most sediment management activities throughout the rural parts of the Sub-Basin.		The main weakness of this document is that only concentrated on the basic aspects of rural use in Ethiopia, leaving any detail to the Regional States Governments to implement. Whilst this is expected within such a devolved approach, it can create difficulties within basins that cover two more regional states, as is the case in the Lake Hawassa Basin.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Use Proclamation No.110/2007	This Proclamation is highly significant for governance in Lake Hawassa as it sets out the various responsibilities of different institutions within the SNNPR Region. The rural land use plan is important for demarcating appropriate activities for different parts of the Sub-Basin, including for soil conservation and mining. The plans to developed under this proclamation should take a watershed approach, and all users will have rights and obligations under its auspices. Of particular note are provisions surrounding activities that can be undertaken in already degraded locations.	Law	State	Land system		Strong	This Proclamation enacts and parallels similar Proclamations found at Federal levels, and repeats many of the Provisions found therein. It does, however, differ slightly as there is more attention paid to the needs of women and youth in terms of rural land distribution compared with the former document. Belete (2019) report notes that Rural Land Administration and Land Use Proclamations define the rights and obligations of users of rural land, including traditional subsistence farmers. Thus, protection of land becomes an obligation and failure to protect can lead to loss of title. The Report also noted that farmers are not practicing the appropriate soil and water conservation measures in their farm against their obligations set by the rural land users, and land use restrictions. The Proclamation is important in managing existing activities that create sediment, not just new activities or land use change, and is an important component of governance.		The key weakness for this Proclamation is that it is mainly derived from the National Proclamation and includes little that is context specific to SNNPR. For example, unlike the similar Proclamation found in the Oromia equivalent, there are no provisions in relation to watershed planning found in this Proclamation. Whilst there may still be rural land use plans found in the region, these may be less issue connected than a watershed plan would likely be.
Urban Local Government Proclamation of the Oromia Proclamation No. 65/2003	This State level Proclamation sets out the responsibilities for lower tiers of governance when managing of urban areas. Provisions of note in respect to sediment management include 7. Objective of Urban Local Governments; 3. ensure the provision of efficient and equitable urban services to residents in a sustainable manner; 6) promote a safe and clean urban environment suitable for development, work and residence; 9) Functions of Urban Local Governments; (a) To provide efficient, effective and equitable services to the residents; especially environmental services construction and management of city roads, sewerage and drainage lines, parks and recreation areas, waste disposal, prevention and control of pollution etc.) to prepare, revise, update and implement its city plan 45. Establishment An urban local government may establish a city court severally or in conjunction with other neighbouring cities. Details shall be defined by Regulations of the Regional Executive Council. 47. Jurisdiction of the Court The city court shall have exclusive jurisdiction over the following cases: 1) Implementation of urban planning laws; 2) Housing and urban land use 4) Environmental sanitation; 5) Municipal services; and BUREAU OF INDUSTRY AND URBAN DEVELOPMENT 53. Urban Local Governments and the Bureau The Bureau shall 1) Without prejudice to other functions given to the Bureau in other laws, the Bureau shall have the power to lead the affairs of urban local governments in the Region.	Law	State	Land system		Weak	Limited applicability around Lake Hawassa in the portion of Oromia, but as the population growth, it may be required at a later date. Provisions are mainly applicable around the lower catchments where urban growth may occur.	Limited applicability to issues around sediment, especially in the relatively flat parts of Lake Hawassa.	

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A Proclamation to Provide for Urban Plans Proclamation No. 574/2008	This Proclamation provides the foundation of urban planning and activities across Ethiopia. Provisions of note include: 2/ to regulate and facilitate development activities in urban centres and thereby enhance economic development of the country; 5. Basic Principles 3/ consideration of inter-urban and urban-rural linkages; 7/ safeguarding the community and the environment; 7. 18. Urban Plan Implementation There shall be clear strategy, regulations, directives and organized executive organs to support the implementation of urban plans. 2 0. Power to Implement Urban Plans Every chartered city or urban administration shall, in the implementation of urban plans, have the powers to: 3/ coordinate, to the extent necessary for the implementation of the plan, the activities of government offices, development enterprises, service rendering institutions, private undertakings and other stakeholders operating within the area. 26. Underlying Principles The following principles shall be adhered to in any process of development authorization: 1/ ensuring economical and sustainable use of land; 2/ ascertaining the support of environmental impact assessment study with respect to development projects likely to have major environmental repercussions; 3/ provision of basic infrastructure during land allocation for development	Law	National	Land system	Urban	Moderate	The main strength of this Proclamation is its highly integrated approach with regards to urban planning, and relatively high detail of the roles and responsibilities of urban authorities. Such an approach allows for a wider perspective on the challenges relating to managing waste. The Consultants report noted the high content of ash and dust within solid waste, echoing an earlier report from the World Bank on the same matter. In addition, ongoing land use changes moving from rural to peri-rural to urban land can generate erosion, depending on local conditions. In addition, sediment often collects within local drainage and the way this is managed will have an impact on sediment flows from urban areas. It was assessed as medium relevance in terms of managing land development and sediment sourced from solid waste in urban areas.		Limited applicability to issues around sediment beyond the urban areas, especially in the relatively flat parts of Lake Hawassa.
Ethiopian Water Resources Management Regulations Council of Ministers Regulation No. 115/2005	This Proclamation is primarily concerned with the policy framework around the issuance of water permits, the transmission of wastewater into receiving bodies, the development of new water sources, and the Water User Cooperative Associations that may initiate irrigation infrastructure. There are limited provisions applicable to sediment, although ill-managed irrigation can result in sediment issues.	Regulation	National	Freshwater system		Weak	Limited applicability with the possible exception of managing irrigation works construction and possible erosion around watercourses that emerge from that source. Provisions are mainly applicable around the lower catchments. However, the Regulation could have more impact in the future if there is increased investment in irrigation as part of the NAP.		Limited applicability
Ethiopian Water Resources Management Proclamation No. 197/2000	The Proclamation sets out the national approach to water resources management, including the use of Basin management, controls around water pollution, and the promotion of IWRM. It sets out provisions in relation to both water bodies and the bank or riparian areas of water bodies. Several provisions in the Proclamation are of note in regards to sediment flows. These include: 16) "Banks of water bodies" means land whose boundaries and/or distance is determined by the Supervising Body and by the relevant Public authority and includes any area on which water body exists. 19) "Water resource management" means activities that include water resources development, utilization, conservation, protection and control. 2) The social and economic development programmes, investment plans and programmes and water resources development activity of any person, shall be based on the country's Water Resources Policy, relevant Basin Master Plan Studies and Water Resources laws 25. Protection of Banks of Water Bodies The Supervising body, in collaboration and in consultation with the appropriate public body may: 1) Delimit the boundaries of the banks of certain water bodies; 2) Prohibit clearing, cutting trees or vegetation and construction of residential houses within the delimited banks of water bodies. The date of delimitation shall be determined by the Supervising Body.	Law	National	Freshwater system		Moderate	The key strength of this Provision is that it provided legislative support for undertaking IWRM across Ethiopia, including the roles and responsibilities of different institutions as well as the use of master plans. Belete (2019) noted that the Proclamations covers certain elements of water resources management including soil and water conservation measures to reduce sediment soil erosion and lakes siltation; local community participation in sub-basin management and water conservation measures and practices; a recognition of wetlands as a key feature in watershed management. It is applicable to most parts of the sub-basin, but with an emphasis on water bodies and associated banks and sediment derived from this source.		The main weakness of this Proclamation is that it doesn't clearly delineate the management roles of different agencies in relation to some sources of sediment such as forested areas and this may need to be taken into account in future action planning.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
Conservation Strategy of Ethiopia	<p>This Strategy, in concert with the Environment Policy and the Constitution provides the foundation for environmental management and associated Proclamations and institutional agendas, and activities across Ethiopia. A number of the sections and policies may reference to concerns over erosion and land degradation. These include:</p> <p><i>Here in this ecologically fragile environment rainfed cropping is causing soil erosion on unsuitable soils and increasingly sedentarised herds are causing both soil and pasture degradation.</i></p> <p><i>Land degradation has many expressions including soil removal by sheet and gully erosion, nutrient depletion due to burning of dung and other forms of biomass, nutrient loss due to crop removals without replacement and the continued loss and degradation of forest areas contributing to all of the above. Effective ground cover should be seen as one of the most important factors in soil erosion control and a wide range of sustainable agronomic, pastoral and silvicultural approaches used in various areas of Ethiopia. The underlying and deep rooted causes of land degradation have been to a very large degree the result of government and policy failures over the millennium with particular respect to natural resource management.</i></p>	Strategy	National	Multiple		Moderate	As noted in Belete (2019), the Conservation Strategy of Ethiopia provides a framework for integrating environmental planning into new and existing policies, programmes and projects. The Conservation Strategy of Ethiopia and the environmental policy of Ethiopia (EPE 1997) provides a framework for integrating environmental planning into new and existing policies, programmes and projects. It recognizes the importance of incorporating environmental factors into development activities from the outset, so that planners may take into account environmental protection as an essential component of economic and social development. Whilst applicable to Enabling Stakeholders in terms of providing support on sediment management actions and applicable legislation or regulation, it was assessed as low relevance as it isn't directly relevant.		The Conservation Strategy underpins most environmental legislation in Ethiopia, and recognizes the important issue of land degradation. But many of the activities in the strategy may be outdated.
Agricultural Development Led Industrialization	<p>This Strategy is a longstanding instrument for Ethiopia. It envisages using agricultural development as the engine for economic diversification and industrialization. It is still the government's core policy for rural development as well as overall economic development throughout Ethiopia. The Strategy helps to encourage an expansion of agricultural activities that may exacerbate soil erosion through land use changes or more intensive uses of land.</p>	Strategy	National	Land system		Strong	This strategy stresses the importance of improvements in existing agricultural land productivity, in order to increase agricultural activities and to catalyse the expansion of industries that process agricultural outputs. It has formed a key part of Ethiopia's development strategy since its inception. This strategy has limited impact in terms of managing sediment flows but as it has an impact in driving increases in <u>agriculture land conversion across Ethiopia</u> .		As the Strategy helps to encourage an expansion of agricultural activities that may exacerbate soil erosion through land use changes or more intensive uses of land, it is dependent on other strategies or Proclamations to managed the impact from this expansion.
RURAL DEVELOPMENT POLICY AND STRATEGIES(2002)	<p>This strategy outlines Ethiopia's position on rural development and how it is based upon the Government Ownership and allocation of land. The various Proclamations promulgated at Federal and State level support this position, along with the rights and responsibilities with being allocated land. It also details the roles of different institutions in rural development. The Strategy displays a preference for improving productivity of established land as opposed to increasing the amount of land devoted to agricultural and horticultural uses. For example: <i>Our agricultural development strategy seeks to increase productivity on lands suitable for farming through the use of improved technologies and water conservation measures. As output per land holding increase, farmers will be less likely to expand into forests and hillside, which would otherwise aggravate soil erosion. Nevertheless, hillsides and forested land will be most effectively protected only if suitable and appropriate uses can be found for them.</i></p> <p><i>Hence, we will promote the use of hillsides for pasture, or for various plants, which do not require farming proper, but will allow farmers to obtain some income from such lands.</i></p>	Policy	National	Land system		Moderate	This Strategy continues to play a role in the development and implementation of other strategies and regulation relating to rural land use and development. It is quite clear that soil erosion should be avoided but also notes the need to take measures that make the hillsides more productive. Federal Rural Development Policy pays attention to the land tenure issue and the proper use of land, although these standards are left to other documents. The objective of this policy is that it promotes the expansion of agricultural activity, but mainly on existing lands.		As the Strategy helps to encourage an expansion of agricultural activities that may exacerbate soil erosion through land use changes or more intensive uses of land, it is dependent on other strategies or Proclamations at State or Federal levels to manage impact from this expansion.
Food security strategy (2002)	<p>The improvement of food security and agriculture has been a longstanding commitment by the Republic of Ethiopia. Whilst much of the strategy is concerned with increasing agricultural production, it also raise a concern in regards to the impact of pastoralism. Provisions of note include: <i>57. Increases in human and livestock populations have put pressure on rangeland resources resulting in soil erosion, deforestation and bush encroachment, thus increasing the vulnerability of pastoral communities. Improving livestock development and diversification outside pastoralism or directing to agro-pastoralism will strengthen their economic base and reduce their food insecurity.</i></p>	Strategy	National	Land system		Strong	This strategy continues to underpin other efforts in building food security in Ethiopia, but also recognizes the pressure that this has in terms of land degradation.		No Specific weakness.
Hawassa City Bylaws	<p>Hawassa city bylaws give effect to Regional States legislation. These bylaws are likely to include solid waste provisions, and this may effect sediment being sourced from urban areas.</p>	Regulation	Municipal	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained

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Wereda Bylaws	Wereda is the next level of governance below regional states and bylaws give effect to the Regional State legislation. 70% of local funding is sourced from the State, and local plans are developed and enacted at the local level. Most of the sediment generated in the Lake Hawassa Basin is sourced from various rural weredas, and local bylaws may be in existence.	Regulation	Local	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained
Kebele Bylaws	Kebeles are the level of governance that sits below Weredas, and may have provisions or bylaws applicable to the management of sediment.	Regulation	Local	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained
Oromia Plans	Oromia Regional State prepared a number of plans and strategies in accordance with the powers granted it, along with key Proclamations made nationally. Funding and resources are made available through funding used to support the States activities, and there for this will have an influences on funding made available for addressing sediment issues, both state-wide and at lower governance levels. Only a small proportion of the Basin is found in Oromia State.	Plan	State	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained
SNNPR Plans	SNNPR Regional State prepared a number of plans and strategies in accordance with the powers granted it, along with key Proclamations made nationally. Funding and resources are made available through funding used to support the States activities, and there for this will have an influences on funding made available for addressing sediment issues, both state-wide and at lower governance levels. Most of the wereda and kebeles found in Lake Hawassa Basin are found in the SNNPR region.	Plan	State	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained
RVLDDO Basin Plans	Basin Development Authorities are granted a number of power under the Rivers Basin Council legislation, mainly in terms of providing longer term strategic planning for water resources that is implemented according to IWRM approaches, and for the protection of water resources from overallocation or in the physical vicinity of water bodies. Both the original basin plan as well as the present draft make extensive reference to sediment, especially in terms of its impact and source, but are more limited in terms of responses, except for recognising the role of ME FCC. While the basin plan recognises the role of different institutions in managing sediment, it does not appear to act as a coordination mechanism of different agencies.	Plan	Basin	Freshwater system		Moderate	Present and Future Basin Plans should be assessed		Present and Future Basin Plans could be assessed
Hawassa City Administration Master Plan	Sediment derived from urban locations can be highly significant for Lake Hawassa, and due attention should be paid to land development activities that generate sediment that flows into Lake Hawassa.	Plan	Municipal	Land system		Moderate	Specific provisions should be obtained		Specific provisions should be obtained
NatureRes Protecting Lake Hawassa Stewardship Project	This Project, supported by GIZ provides for the collaboration of multiple public and private stakeholders in protecting and rehabilitation of Lake Hawassa, mainly through managing land impacts in the contributing sub-Basin.	Agreement	Basin	Freshwater system		Moderate	The main strength of this agreement is that it can help coordinate a wide variety of institutions efforts in the pursuit of improved outcomes, identify priorities for action, and funnel resources to priority actions. It is applicable across the whole Sub-Basin.		The main weakness of this group is that there is limited resources available.
Sustainable Land Management Investment Framework	This longstanding national approach and framework is aimed at the restoration, maintenance, and enhancement of the productive function of land across Ethiopia. The improved use and management of land is supported to leading to improved economic and social well-being of those who depend on these resources while preserving the ecological functions of these lands. The Framework has long recognized that that land degradation is a serious issue with economic, social, and environmental problem consequences in Ethiopia. It supports efforts to protect and rehabilitate the stability, functions of, and services derived from natural ecosystems. This is carried out through actions at community planning levels, through enhance monitoring of land, and to share experience and knowledge across Ethiopia. Improved land tenure is also a feature of the Framework.	Strategy	National	Land system		Moderate	The main strength of this Strategy is that it provides resources and investment for strengthened land management across Ethiopia. It is applicable throughout the rural areas of the Lake Hawassa Basin.		The main weakness of this is that clear connections to water are not articulated.

Governance Instrument	Description	Type	Level	S2S segment	S2S sub-segment	Relevance	Strengths of instrument	Gaps in instrument	Additional comments
SNNP Regional Government Fisheries Development, Management & Control Regulation (Proclamation No. 62/1999; 78/2004) & Directive (2007)	The State Proclamation has some relevance to sediment management, especially close to water bodies. Provisions of note include: 3. <i>Without Prejudice to the provision of this Article sub-Article 2 for the purpose of maintaining of natural balance in the in the water bodies, it is forbidden to till any surroundings land of any water body in radius of 1 km.</i> 4. <i>The bureau shall ensure that development programs and projects are drawn up in such a way that they will not have direct or indirect negative impacts on the fisheries resources constituted in the basin where the programs or projects are intended to be implemented.</i>	Regulation	State	Freshwater system		Weak	The Fishery sector is reliant on adequate fish stocks in Lake Hawassa. Sediment can impact on the Lake Hawassa fishery in several ways, including smothering lake bed shallows where fish recruitment is found, affecting fish gills and growth, or potentially creating transport issues. The Proclamation gives support to the industry being involved in discussions around managing sediment, but more importantly sources of sediment close to water bodies. Some use in direct actions around sediment flows that are land-based and within 1km of the water bodies.		The main weakness is that there are fewer direct actions that connect fisheries with solid waste management.
National Integrated Water resources management Program	At present, this appear to only be a draft version, but it is likely to provide direction of water management in Ethiopia. It outlines the basic structure of water governance in Ethiopia, supports consistency in managing environmental pollution, and allocation of responsibility to different institutions that influence waste management. Provisions of note include: 4. <i>To support major towns to come with systems for safe disposal of urban liquid and solid waste management The Basin Administration Directorate of MoWE carry out watershed development activity, particularly in areas where reservoirs are vulnerable to erosion the co-benefit of which is improving agricultural productivity. Although the priorities in the intervention may differ, the activity could be harmonised to address both concerns.</i>	Strategy	National	Freshwater system		Weak	This programme will underpin investments made at the national level in regards to water management, including wastewater, sanitation and solid waste. However, until it comes into effect, it will have little direct influence in terms of planning and budgeting.		Not in effect