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Mechanisms for Governing the Water-Land-Food Nexus in the Lower Awash River Basin, Ethiopia

Ensuring Policy Coherence in the Implementation of the 2030 Agenda

Srinivasa Reddy Srigiri

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Waltina Scheumann

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Abbreviations

ABA	Awash Basin Authority
APR	Annual Performance Report
AS	action situation
BOD	biochemical oxygen demand
CSO	civil society organisation
EDRI	Ethiopian Development Research Institute
EEA	Ethiopian Electric Authority
EEU	Ethiopian Electric Utility
EIA	Environmental Impact Assessment
EIAR	Ethiopian Institute for Agricultural Research
EPA	(Former) Environmental Protection Authority
EPRDF	Ethiopian People's Revolutionary Democratic Front
ESIA	Environmental and Social Impact Assessment
EWCA	Ethiopian Wildlife Conservation Authority
FAO	Food and Agriculture Organisation of the United Nations
FDRE	Federal Democratic Republic of Ethiopia
GNI	gross national income
GPW	Global Water Partnership
GTP	Growth and Transformation Plan
HDI	Human Development Index
HLPF	High-Level Political Forum on Sustainable Development
IAD	Institutional Analysis and Development
IGO	intergovernmental organisation
IWRM	Integrated Water Resources Management
LAND	Land Administration to Nurture Development
LNOB	leaving no one behind
M&E	monitoring and evaluation
MoA	Ministry of Agriculture and Livestock Resources
MoFED	Ministry of Finance and Economic Development
MoR	Ministry of Revenue
MoWIE	Ministry of Water, Irrigation and Electricity
NAAS	network of adjacent action situations
NBE	National Bank of Ethiopia
NGO	non-governmental organisation
NPC	National Planning Commission
OIDA	Oromia Irrigation Development Authority
PDC	Planning and Development Commission
PDO	People's Democratic Organizations

PSNP	Productivity SafetyNet Program
RIA	Rapid Integrated Assessment (UNDP)
SC	steering committee
SDG	Sustainable Development Goal
SNA	social network analysis
TC	technical committee
TPLF	Tigray People's Liberation Front
UNDP	United Nations Development Programme
UNEP-DHI	United Nations Environment Programme – DHI Centre for Water and Environment
USAID	United States Agency for International Development
USD	US dollar
VNR	Voluntary National Review
WEF-nexus	water-energy-food nexus
WLF-nexus	water-land-food nexus
WLRC	Water and Land Resource Centre, University of Addis Ababa, Ethiopia
WUA	Water User Association

Executive summary

Interdependencies among the goals and targets make the 2030 Agenda indivisible and their integrated implementation requires coherent policies. Several approaches to study the interlinkages among goals and targets have established both synergies and conflicts at global, regional or national levels. Few approaches such as the water, energy, food (WEF) nexus are applied in order to understand the interdependencies arising from the use and management of natural resources for attaining different goals and targets. While the Sustainable Development Goals (SDGs) span almost all the sectors, the WEF-nexus reflects many important interdependencies among the water, energy and food sectors in achieving the 2030 Agenda. While the nexus concept has received some attention from scholars in understanding the interlinkages across the water, energy and food sectors and in identifying optimal policy mixes and governance arrangements for achieving policy coherence and coordinated outcomes, fragmented sectoral policies and centralised hierarchic political regimes are often seen as reasons for policy incoherence. Coordination across sectors (horizontal) and across levels (vertical) are crucial if trade-offs are to be avoided and to achieve synergies among the SDGs associated with the WEF-nexus. However, there is insufficient understanding of the factors that determine the emergence and effectiveness of institutions and governance mechanisms that achieve coherent policy design and implementation. While the WEF-nexus, as a conceptual approach, is centred mainly on the security of water, energy and food ecosystem services derived from crucial land and water resources, the prominence of the various different ecosystem services varies across differing ecological, economic and political contexts. In this paper, we aim to understand the conditions that determine the effectiveness of institutional arrangements for water and land governance in the lower Awash River Basin in Ethiopia in achieving an integrated implementation of the most relevant ecosystem services and the related SDGs. As we identify and explain the interlinkages between water, land and food security at the location studied, we focus on the governance of the water, land, food (WLF) nexus and the related SDGs.

We have conceptualised that the systems for providing water, energy, food and other securities in the nexus exhibit features of polycentric governance as this involves decision-making centres across different sectors and at various levels. While these centres may be formally independent, they are often functionally dependent and may sometimes consist of overlapping actors. Thus, applying polycentricity from an analytical perspective, we investigated the interactions and coordination among different decision-making centres in the Ethiopian context and assessed in how far they complied with the 2030 Agenda's core principles of (1) indivisibility and interconnectedness of the SDGs; (2) inclusiveness; (3) leaving no one behind (LNOB); and (4) accomplishment of the SDGs through multi-stakeholder partnerships. In order to operationalise the concept, we have adapted the Institutional Analysis and Development (IAD) framework and the concept of network of adjacent action situations (NAAS). In the Awash River Basin, we identified multiple interlinked action situations (ASs) that spread across operational, collective- and constitutional-choice levels. Land and water use and management situations form the key action situations at the operational-choice level, which include actors such as small farmers, pastoralists, commercial state-owned farms, conservation actors, community (*kebele*) and district (*woreda*) administrations, and so on. We labelled the action situations at the operational level collectively as AS0, as we did not dig deeper into the external contextual factors affecting the choices of actors in differing action situations, which included pastoralism, smallholder farming, commercial large-scale farming, ecological

conservation, operation and maintenance of water storage, and irrigation infrastructure. As we aimed to explain the factors influencing the land and water allocation decisions in the basin, we focused more closely on action situations at the collective-choice level, namely, land allocation (comprising of AS1a: recognition and certification of land rights; and AS1b: expropriation and compensation) and water allocation AS2, which result in operational rules by which water and land are used and managed at the operational level. We analysed the implementation of the key instrument “environmental impact assessment” (EIA) as an adjacent action situation AS3, also at the collective-choice level. Finally, the national planning process – including the mainstreaming of the 2030 Agenda – was analysed as an adjacent action situation AS4 at the constitutional-choice level. We assessed the interactions and outcomes of action situations and the institutions that determined them, based on the evaluative criteria following selected principles of the 2030 Agenda, namely, indivisibility; leaving no one behind; inclusiveness; and participatory decision-making.

The upper and middle Awash Basins are the most utilised and modified river basins in Ethiopia, with multiple and competing water users. The lower Awash Basin shows peculiarities such as a lower population density, arid and semi-arid climate conditions and, above all, the predominant pastoralism, which is a mode of production and a cultural way of life. Conversion into cropland of prime dry-season grazing areas has restricted pastoralists’ customary access to riverine resources, and customary resource governance systems coexist with formal governance in this region. Competition exists over land between commercial state and private farms and pastoralists and smallholder farmers. Our methods mainly included semi-structured expert interviews and a social network analysis (SNA) based on a small-n survey. Reviews of policy documents pertaining to land, water, environment regulation, national strategies and plans, as well as progress reports on SDG implementation were part of the analytical strategy.

Ethiopia is a low-income country with significant regional disparities in development indicators. Further, it faces challenges regarding democratisation, governance and human rights, and is classified as an autocratic state. After two major political transitions, the new constitution adopted in 1995 enabled a federal structure of government based on ethnic criteria. The measures towards democratisation that were underway during the field research of this study are yet to be assessed for their results.

The successive Growth and Transformation Plans (GTPs) have focused on increasing the area under irrigation in the Awash Basin. Simultaneously, poor water management at different reaches of the basin negatively affects agriculture, wetlands, natural lakes, and national parks. Salinisation of soils is leading to the decline in productivity of agricultural lands and their abandonment. There are clear interlinkages between the upstream and downstream uses of land and water. Deforestation and other unsustainable land-use practices cause sedimentation in downstream reservoirs, reducing their water storage capacities and affecting both downstream water availability (SDG 6) and hydro-power generation (SDG 7). Unabated pollution from industries and sugar factories upstream also affect human health (SDG 5) and the functioning of ecosystems (SDG 15). In addition, the policy-led change of land use from pastoral and rainfed agro-pastoral systems to irrigated agriculture is creating conflicts between the goals of economic growth (SDG 8) and food security (SDG 2) of the marginalised communities. Further, the lack of maintenance and repairs of water storage and delivery structures, and the inefficient water use by both large state farms and agro-pastoralist smallholder schemes result in water losses (SDG 6), increasing competition over the scarce water resources.

The land governance system (AS1a and AS1b) in the Ethiopian lowlands, part of which is the lower Awash River Basin, is characterised by the presence of multiple legal systems (statutory and customary), and unclear allocation of roles and responsibilities among federal and regional authorities. Regulatory gaps allow socially unjust practices, and principles of the federal as well as the regional constitutions allow expropriation of peasants, pastoralists and semi-pastoralists from their statutory and customary rights to land and its grazing resources. Although, the recognition and formalisation of communal rights to pastoral lands is endorsed in regional proclamations, substantial scale-up of the initiatives is hampered by the vast extent and spread of the rangelands and migration routes, which cut across multiple jurisdictions, requiring considerable capacities for delineating and recognition. Guidelines for compensation payments, and a comprehensive resettlement policy framework are in the process of being developed. Furthermore, the unclear distribution of roles and responsibilities between federal and regional authorities leads to tensions across different levels. Local authorities, which are expected to execute expropriations and address the grievances, are confronted with social distortions and lack capacities to implement the national policies.

The legal framework for water governance (AS2) is a permit-based water allocation and utilisation system. River basin councils, authorities, and Water User Associations (WUAs) have been instituted following reforms based on Integrated Water Resources Management (IWRM) principles. The allocation of water permits has been a challenging issue since hydrological studies, data on permits allocated, and the actual use of water and demand projections are incomplete and inconsistent. Due to defunct infrastructure and measurement devices, and the lack of human and financial capacities, data on actual water use is not generated and, hence, allocation decisions are not based on scientific data. Even the quantity of water allocation is not specified in the water permits. Further, the allocation regime is affected by the unclear allocation of roles and responsibilities of basin authorities vis-à-vis the regional and federal authorities. While pastoralists and smallholder farmers are exempted from water permit applications and can hence use water without formal titles, this informality weakens their legal standing and causes them to forfeit their rights to resources to the advantage of permit holders. Further, the management of irrigation schemes also suffers from the unclear definition of mandates at different levels of governance as regards operation and maintenance of structures. There is no institutionalised coordination among headwork operators, irrigation managers in commercial farms, and WUAs. Although its responsibilities include operation and maintenance as per transfer contract, a WUA's management committee has limited authority and financial means to do so. Moreover, farmers lack capacities to adopt efficient irrigation technologies and practices while the local authorities are also not capacitated to provide irrigation advisory services.

The Environmental Impact Assessment (EIA) is a regulatory instrument that can mitigate the negative impacts of projects on the environment. The process of assessment and reporting (AS3) is shared among the environmental bureaus at federal and regional levels, and environmental units of the sectoral agencies. However, the final authority to approve a particular project rests with the respective authorising sectoral agency. Studies found that the Ethiopian EIA process is weak and ineffective due to various reasons. First, the EIA was found to be non-binding, as projects were approved at a higher level even before the clearance report was produced. Second, the delegation of EIA responsibilities to sectoral agencies also dilutes the main rationale behind the EIA process. Third, the weak and subordinate position of the environment commission in the hierarchy also renders the environmental legislations

ineffective. Fourth, severe constraints in human capacities, financial resources, data deficits and so on at various levels result in poor quality EIA reports and processes in general.

The national planning process consists of a series of action situations (AS4) at the constitutional-choice level for drafting and ratification of GTPs and the mainstreaming of SDGs in the GTP-II. The measures to include regional governments and non-government stakeholders into the planning process is insufficient and ineffective as the regional governments are only involved at a much later stage of approval. The Planning and Development Commission (PDC), which is responsible for drafting GTPs and for integrating SDGs into the planning process, is not effective in facilitating the horizontal and vertical coordination to achieve policy coherence due to its unsuitable structure and composition. The lack of human and technical capacities hamper evidence-based approaches to support SDG implementation and monitoring of progress. The autocratic regime type and the ethnic-federalist political structure in Ethiopia are hampering coordination, especially across levels.

The results of our social network analysis shows that the *woreda* (district) governments play an important role in vertical coordination given that they act as a bridge between several local actors that do not have a direct connection to higher levels of government. The huge array of tasks pertaining to land administration, water management, and environmental regulation assigned to the *woreda* authority makes it a key actor, at least in operational and collective-choice arenas. However, the ability of *woreda* governments to fulfil their mediating role and their overall performance is hampered by a lack of sufficient human and financial capacities.

This study shows that the existing institutions and governance mechanisms for water and land do not comply with the core principles of the 2030 Agenda, in particular the principles of inclusiveness and of leaving no one behind. The focus on economic growth and social equity is leading to the achievement of economic growth at the expense of the marginalised pastoralist communities. The coordination mechanisms for implementing centrally designed strategies are not inclusive and representative of the interests of the lower-level governments and non-governmental actors.

Several recommendations for policy are drawn with a view to achieving coordination at different levels:

Operational-choice level: i) Strengthen the capacities of *woreda* (district) administrations; ii) develop operational guidelines with clear definitions and mandates for water infrastructure operation and maintenance; iii) strengthen capacities for measurement and efficiency of water use; iv) support livelihoods and income diversification for pastoralists and smallholder farmers; and v) foster capacities for awarding compensation and resettlement upon expropriation.

Collective-choice level: i) Continue with developing a water permit system; ii) develop and adopt operational guidelines for issuing water permits; iii) strengthen capacities of basin authorities; iv) develop a resettlement policy framework; v) scaling-up of certification of communal land rights; and vi) strengthening institutions to perform Environmental and Social Impact Assessments (ESIAs).

Constitutional-choice level: i) Adopt evidence- and science-based approaches for SDG implementation; and ii) clear definition of “public purposes” in the legislation for expropriation.

1 Introduction

The 2030 Agenda is unique in its proclamation of “indivisibility” of the sustainable development goals (SDGs) that cover the social, ecological and economic dimensions of sustainable development, as well as those goals that manifest the institutional and political preconditions. Given that the interdependencies among different SDGs are well recognised, it is also widely acknowledged that the integrated implementation of the Agenda requires coherent policies (Le Blanc, 2015; Pahl-Wostl, 2019). There have been several scholarly efforts to address interdependencies among different SDGs that have led to several different tools and approaches to identify and assess the interlinkages (ICSU [International Council for Science], 2017; Le Blanc, 2015; Miola, Borchardt, & Buscaglia, 2019; Nilsson, Griggs, & Visbeck, 2016; Pradhan, Costa, Rybski, Lucht, & Kropp, 2017; Weitz, Strambo, Kemp-Benedict, & Nilsson, 2017). While these approaches offer a necessary initial step in understanding the interactions (mostly in terms of synergies or trade-offs), their strengths and directions, the design and implementation of coherent strategies require moving beyond the generic matrix of interactions to analyse context-specific interdependencies with sound theoretical and methodological rigour (Breuer, Janetschek, & Malerba, 2019).

The demand for coherent policies has also been raised in earlier contexts prior to the advent of the SDGs. Popular among them, the water, energy, food (WEF) nexus concept originating in 2011, aims “to promote policy coherence through identifying optimal policy mixes and governance arrangements across the water, energy and food sectors” (Weitz et al., 2017, p. 165; WEF [World Economic Forum Water Initiative], 2011). Although, the WEF-nexus concept apparently seems to primarily address the SDGs 2 (food), 6 (water), and 7 (energy) (Altamirano et al., 2018; Mohtar & Lawford, 2016), these SDGs are further found to have strong interlinkages with most other SDGs (ICSU & ISSC [International Social Science Council], 2015). Therefore, focusing on the interlinkages among the SDGs related to the WEF-nexus in a selected context could offer an “issue-based entry point” to unravelling the nature of the complex interdependencies and the factors determining them (Breuer et al., 2019).

Simultaneously, addressing the existing and projected increase in insecurities of water, energy and food in the developing world will increase the competition for the finite natural resources, especially land and water. Achieving the WEF securities while sustaining the natural resources is within the reach of possibility if trade-offs among different goals, which are aligned to different sectors, are mitigated through the coherent design and implementation of strategies. However, in most parts of the world, fragmented regulations and governance systems for natural resources along sectoral lines hinder the design and implementation of coherent policies (Herrfahrdt-Pähle, Scheumann, Houdret, & Dombrowsky, 2019; Scheumann & Phiri, 2018). The Integrated Water Resources Management (IWRM) framework which was initiated in the early 1990s and is reflected in its application as one of the SDG targets (6.5.1) has suffered from very low, low or medium-low implementation levels in 60 per cent of the countries as of 2018 (UN [United Nations], 2020). Although, coordination mechanisms exist as part of IWRM, they rarely translate into coordinated outcomes in managing water resources. Even if coordination occurs at the national level in some cases, the ground level implementation is often devoid of any coordination (UN, 2020). In addition to horizontal fragmentation across sectoral lines, centralised, hierarchic regimes result in policies that may not represent the values and aspirations of the communities using and managing the natural resources.

The evolution and effectiveness of governance mechanisms for achieving coherent policies depends on the broader social, political, and institutional context in a country. In how far the context provides an enabling environment for the governance mechanisms to emerge and effectively result in coherent strategies is a matter of inquiry. Increased policy coherence is a prerequisite for the integrated implementation of the 2030 Agenda. Since the adoption of the 2030 Agenda, many signatory states have established national SDG implementation bodies. While these bodies often take the form of inter-ministerial committees, they sometimes also include representatives from sub-national levels of government and/or civil society organisations and academia. Such *multi-stakeholder bodies* can foster cross-sectoral and inclusive discussions that contribute to mitigating policy trade-offs and harnessing synergies in the process of implementing the SDGs. Besides the socio-political context, financial and administrative capacities play a role in developing an evidence-based evaluation and management of the interdependencies among multiple goals.

While the WEF-nexus, as a conceptual approach, is centred mainly on the security of water, energy and food ecosystem services derived from crucial land and water resources, the prominence of different ecosystem services varies across different ecological, economic and political contexts. In this paper, we aim to *assess* the effectiveness of the institutional arrangements for water and land governance in the lower Awash River Basin in Ethiopia, in managing the interdependencies among SDGs dependent on land and water, mainly SDG 2 (food security), SDG 6 (water security), SDG 8 (economic growth) and SDG 15 (sustainable ecosystems). We explore the interdependencies among multiple national goals that are related to food and water security SDGs and examine the adherence of the Ethiopian strategies to achieve economic growth and transformation, to the 2030 Agenda's core principles of i) indivisibility and interconnectedness of the SDGs; ii) inclusiveness; iii) leaving no one behind; and iv) accomplishment of the SDGs through multi-stakeholder partnerships. Furthermore, we aim to *understand* the social, political, and institutional factors that determine the effectiveness of land and water governance system in the basin in achieving an integrated implementation of the most relevant ecosystem services and the related SDGs. As we identify and explain the interlinkages between water, land, and food security in the study location, we focus on the governance of the water, land, food (WLF) nexus and the related SDGs. We pursue the following research questions in order to achieve the stated aims:

- What are the key natural resource (land and water) use conflicts/interdependencies in pursuing water-, and land-based SDGs in the lower Awash Basin?
- To what extent do the current institutions and governance mechanisms in Ethiopia manage the interdependencies among the key SDGs (2, 6, 8 and 15) dependent on water and land in the lower Awash Basin?
- In how far does the existing land and water governance system in the Awash River Basin comply with the principles of the 2030 Agenda?
- How do political regime type, state capacity, and other institutional factors influence coordination for achieving WLF nexus-related SDGs?

2 Coordination across networks of water, land, food (WLF) nexus action situations – an analytical framework

Over the past decade, the WEF-nexus has attracted a lot of academic attention resulting in a number of studies from different disciplinary perspectives. However, the scientific discourse has been dominated by a technical-managerial view of the WEF-nexus problem which does not account for the power relations and social inequalities as determinants or consequences of WEF-nexus interactions (De Grenade et al., 2016; Pahl-Wostl, 2019; Weitz et al., 2017; Wiegler & Bruns, 2018; Dombrowsky & Hensengerth, 2018; Srigiri & Dombrowsky, 2021). Allouche et al. (2014) highlight the need for inclusion of issues of governance and political economy of the concerned policy fields. Studies on WEF-nexus governance have further indicated the importance of both horizontal (cross-sectoral) and vertical (cross-scale and -level) coordination as being crucial in addressing the interdependencies in the nexus (Pahl-Wostl, 2019; Weitz et al., 2017). Understanding the factors determining the decisions and actions of actors in different sectors and levels and the different ways in which coordination among multiple decision-making centres is achieved is also crucial for avoiding trade-offs and to create synergies (indivisibility) among SDGs related to WEF securities.

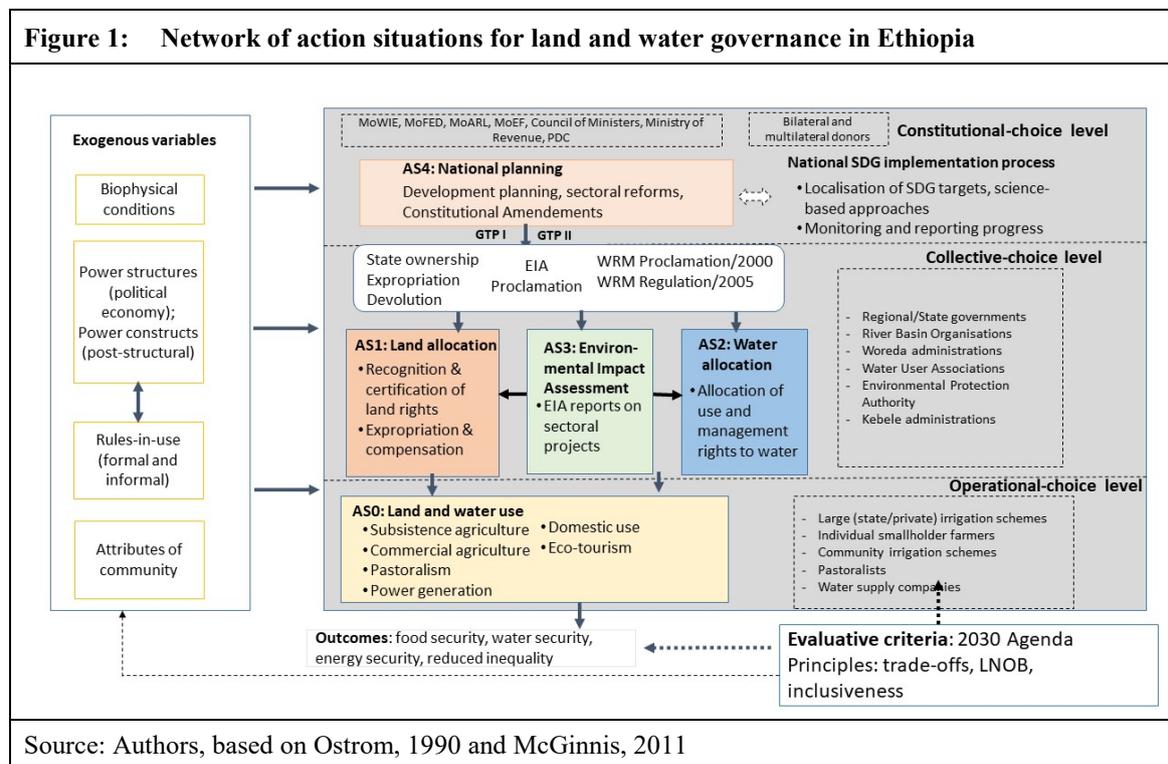
In all countries across the globe, the provision of water, energy and food security is organised in different sectors and at various levels of governance. Different, sometimes overlapping actors make decisions in different situations that are spread horizontally on the same level as well as across different levels. Such situations might be, for example, on the use and management of common pool resources (such as grazing land or water); a forum for designing rules for resource use; or another forum at a higher level where broader rules influencing the choices for actors in situations at lower levels are designed. While these decision-making situations may be formally independent, they are functionally interdependent as the outcomes of one action situation determine in many ways the choices of actors in another situation. Such systems are characterised as polycentric governance systems according to Ostrom, Tiebout and Warren (1961). The type of coordination mechanisms among different decision-situations and their effectiveness in managing the interdependencies are a matter of inquiry. Heikkilä, Villamayor-Tomas and Garrick (2018) state that, except for pure centralised or decentralised systems (which do not exist practically), all governance systems for environmental resources can be characterised as polycentric. In how far polycentric systems adhere to the core principles laid down in the preamble of the 2030 Agenda (in particular the principles of “indivisibility” of the SDGs, “inclusiveness”, “leaving no one behind”, and “multi-stakeholder partnerships”) (United Nations, 2015) depends on the type of mechanisms or modes of coordination among different decision-making centres.

In order to assess the outcomes (synergies and trade-offs among SDGs) of the existing governance structure of the WEF-nexus and the processes or mechanisms for coordination (adherence to the 2030 Agenda principles), we adapted the Institutional Analysis and Development (IAD) framework (E. Ostrom, 1990) and the concept of the network of adjacent action situations (NAAS) (McGinnis, 2011; Srigiri & Dombrowsky, 2021). The IAD framework is one of the most widely used analytical frameworks for operationalising the polycentricity approach, especially in analysing the management of local common pool resources. While the IAD framework is most often applied to analyse the behaviour of actors in singular “action situations” of interest and to identify the causes and outcomes of

behaviour, McGinnis (2011) highlights the importance of considering the nested characteristic of the action situations which perform the distinct functions of polycentric governance system, namely: production, provision, financing, coordination, monitoring and enforcement, and dispute resolution. In the remainder of this section, we adapt the IAD framework and the concept of NAAS to structure the empirical analysis of the Ethiopian case.

2.1 Network of action situations for WEF governance in Ethiopia

The analytical framework has three broad components, which further entail various sub-components (for details, see Srigiri & Dombrowsky, 2021). These are i) action situations and their networks across different levels; ii) exogenous variables, providing the biophysical, political, socio-economic and institutional context for action situations; and iii) outcomes, which can be operational or institutional in nature and refer to the wellbeing of the actors involved and their access to key resources and to the sustainability of natural resources. A further important component of the framework is the “evaluative criteria” by which the observed outcomes and the processes that lead to outcomes are evaluated (see Figure 1).



2.1.1 Action situations and their networks

An *action situation* in the IAD framework is “an analytical concept that enables the analyst to isolate the immediate structure affecting a process of interest to the analyst for the purpose of explaining regularities in human actions and results...” E. Ostrom (2011, p. 11). It is a situation in which two or more actors participate by taking specific positions and choosing from a set of possible actions that lead to outcomes which, in turn, have different payoffs for each participant in the situation. *Actors* may be individuals or an organised entity of individuals who participate in a given action situation. Participants act upon information

available to them about the costs and benefits of actions, outcomes and their individual payoffs that depend on the rules for distribution of costs and benefits (E. Ostrom, 2005). The information about the actions and outcomes and the rules that determine the individual payoffs in a given action situation may be generated or devised in a different action situation, which may have the same, overlapping, or different participants depending on the type of institutional arrangement in place. For example, different users appropriate water from a resource system in one action situation, subject to the rules designed by the same users that formed a water user association (WUA) in a functioning (or not) decentralised self-governance system. In other cases, where the authority to design rules of appropriation or management is not devolved to local communities, different set of actors, mostly from governmental authorities participate in the action situation for designing rules.

McGinnis (2011) further elaborates the concept of action situations in the IAD framework by stating that various functions of polycentric governance such as production, provision, financing, coordination, and dispute resolutions, all occur in distinct action situations adjacent to each other. He states that “an action situation X_i is adjacent to Y if the outcome of X_i directly influences the value of one or more of the working components of Y ” (McGinnis, 2011). These action situations may be spread across different action arenas or conceptual levels of analysis (E. Ostrom, 2005, pp. 58-62): i) operational-choice level, wherein the outcomes of action situations are more tangible, related to the wellbeing of actors involved and natural resource conditions; ii) collective-choice level, wherein the outcomes of action situations are institutions or rules that define the set of action choices at operational-choice level; and iii) constitutional-choice level, wherein the action situations result in procedures for processes or action situations at collective-choice level. The outcomes of actions at this level also legitimise the participation of actors (individuals or organisations) in different action situations at collective- and operational-choice levels.

In a system of nested action situations, it is important to choose a focal action situation, considered critical for the intended analysis (McGinnis, 2011). Most studies focusing on the management of common pool resources analyse the behaviour of actors pertaining to the use and management of natural resources, and therefore focus primarily on action situations at the operational-choice level, which yield tangible outcomes. In the current study, we intend to explain the choices of actors in action situations at operational-choice level by focusing on the processes of water and land allocations in Ethiopia. To do this, we focus on land allocation (AS1) and water allocation (AS2) as two focal action situations at the collective-choice level which are interlinked, just as water and land use are interdependent in agriculture. We also include an adjacent action situation on the environmental impact assessment (AS3) as a key governance function to ensure coherence of social, environmental and economic dimensions of sustainable development. Further, at the constitutional-choice level, we explain the national planning process which includes processes for mainstreaming the 2030 Agenda as another set of interlinked action situations (AS4). The outcomes of the action situations in the constitutional-choice arena which are mostly institutional in nature, determine the conditions and choices in collective and operational arenas. The action situations of land and water use (AS0) at the operational-choice level are described as situations of conflict among different user groups. In order to evaluate the processes and outcomes in different arenas, we apply a set of indicators based on the 2030 Agenda’s principles of “indivisibility” of the SDGs, leaving no one behind (LNOB), inclusiveness and participatory decision-making (see subsection 2.2).

Through their actions, actors within an action situation or across action situations engage in *patterns of interaction* with each other. The coordination of actions or patterns of interaction both within or across action situations may take various forms, namely: coercive, competing, and cooperative, depending on the type of institutional arrangement that exists for coordination. Koontz and Garrick (2019, pp. 111-114) describe three factors that provide incentives to actors and decision centres for engaging in different interactions between each other: authority, information, and resources. There are opportunities for all three kinds of interactions – competition, cooperation and coercion – to occur in a system where multiple centres exist under a common set of overarching rules (Koontz & Garrick, 2019). How the three vital elements are distributed among the different actors and decision centres is further contingent on the social, political, cultural context.

2.1.2 Relevant exogenous variables – the biophysical and socio-political context

The *biophysical* context of an action situation includes conditions of resources (land and water), their abundance, scarcity, temporal and spatial distribution, availability and access to different actors, particularly relevant to the action situations at the operational-choice level. It also includes climatic conditions, as well as their short- and long-term variability and change. The characteristics of resources determine the use patterns of different actors for different purposes (E. Ostrom, 1990). Incentives for the appropriation of resource units are based on the attributes of rivalry and excludability of the resources. Common pool resources (such as common grazing land and water) elicit high rivalry, meaning that one actor's use diminishes the quantity or quality of the resource for another actor. At the same time, excludability is costly, and therefore typically low.

Rules-in-use impose constraints on the actions of actors and their mutual interactions (North, 1993). They include both formal rules (laws, regulations, statutes, and so on) and customary rules (for instance, societal norms, customs, values, beliefs) and their enforcement characteristics. It is important to understand both formal and customary rules-in-use to explain the behaviour of actors in different action situations and their outcomes. Further, Ostrom (2005) identifies seven different types of rules-in-use, which correspond to different working components of the action situation. The boundary, position, choice, information, aggregation, payoff, and scope rules emerge as outcomes of interactions in distinct action situations in different arenas or choice levels of analysis (Ostrom, 2005).

Power relationships, which are embedded in the social structure, provide some insights into the opportunities and constraints faced by actors in their choices of interactions or coordination with other actors (Stein, Pahl-Wostl, & Barron, 2018). Stein et al. (2018) assert that three forms of embeddedness of actor interactions – namely, positional, relational and structural – create conditions for coordination and cooperation through multiple network mechanisms at different network levels. While a network approach can unpack power relations to some extent through identifying powerful actors in terms of their centrality, it is not sufficient to explain the cultural, historical, and political context crucial for understanding the meanings and dynamics of social networks. “Power and justice” affect interactions, outcomes, and performance in a governance system. Therefore, political dimensions must be better integrated into the analytical concept, while Skelcher (2005) suggests integrating polycentricity theory with the theory of democracy as one useful approach.

2.1.3 Outcomes

Patterns of interactions within different action situations generate joint (intermediate) outcomes. They feed into other action situations as rules, resources and information forming the feedback loops within the network of action situations. The outcomes of a resource governance system as a whole are a combined result of different intermediate outcomes of independent action situations and are affected by the contextual factors which are external to the network of action situations. Such outcomes can be both material and institutional in nature. Material outcomes may include changes in the social or economic situation of involved actors or changes in the condition of natural resources used. Institutional outcomes include changed perceptions, values and beliefs resulting from patterns of interaction, which are further internalised by actors participating in the action situations. The institutional outcomes occur over longer time periods and therefore cannot be easily observed or measured.

2.1.4 Evaluative criteria – principles of the 2030 Agenda

Evaluative criteria are those criteria which may be used by the participants or analysts to assess the effectiveness of the governance system in achieving the shared or desired policy goals. Evaluative criteria used by policy actors themselves are outcomes of separate action situations occurring at collective- or constitutional-choice levels. Ostrom (2005, 2011) leaves the definition of evaluative criteria open to analysts, while outlining broader categories of criteria for consideration. These are: efficiency, equity, accountability, conformance to values of local actors, and sustainability (E. Ostrom, 2011, p. 16). She also cautions that evaluative criteria need to be developed and applied for both outcomes as well as for the processes necessary to achieve these outcomes. In the current study, we apply the principles of the 2030 Agenda as evaluative criteria as indicated in Table 1.

Principle	Outcome/ process	Level/arena	Indicator(s)
Indivisibility	Outcomes	Operational choice	Mitigated trade-offs among outcomes contributing to SDGs 6 (water security), 2 (food security), 8 (economic growth), 1 (poverty eradication) and 15 (sustainable ecosystems)
Leaving no one behind (LNOB)	Outcomes	Operational choice	Weak and marginalised groups are included and not alienated from the benefits/resources
Inclusiveness and participatory decision-making	Process	Operational, collective and constitutional choice	Participation of civil society in water and land governance and SDG implementation Existence of functioning multi-stakeholder platforms inclusive of all affected stakeholders
Source: Authors			

3 Methodology

3.1 Selecting the study region – the Ethiopian Awash Basin

The current study of WLF nexus governance in Ethiopia is part of a larger, four-country comparative study that focuses on the implementation of the 2030 Agenda: integrating growth, environment, equality and governance. One of the objectives of the study is to understand the effectiveness of the existing institutional arrangements in minimising the trade-offs among SDGs relevant for the WLF nexus securities. For this, we first created a pool of non-OECD countries including Mexico that had submitted at least one Voluntary National Review (VNR) by 2018 (73 countries), before the commencement of the project. Second, we considered the presence of formal institutional arrangements for cross-sectoral coordination at different levels of water governance as an important pre-requisite in order to assess its effectiveness. As a proxy for this, we considered the indicator of “governance systems for water resources management” from the IWRM assessment reports of 2007 and 2011 by the United Nations Environment Programme-DHI (UNEP-DHI) Centre on Water and Environment. Thirty-one countries, which had at least started the implementation of governance mechanisms for water resources management, were selected. Further, we selected 18 countries, which showed at least one of the three water stress indicators, based on per capita availability of freshwater, proportion of withdrawals to available freshwater, or water resources quality, based on the AQUASTAT¹ data of the Food and Agriculture Organisation of the United Nations (FAO) in 2018.

In order to assess the effects of political-institutional context factors on the performance of water and land governance mechanisms, we further categorised the remaining countries based on their type of political regime (democratic versus autocratic) according to the Bertelsmann Transformation Index (BTI) and their degree of capacity (high versus low) according to the World Bank World Governance Indicators (WGI). All 18 countries were then sorted into a four-category matrix with the categories i) autocracy with high state capacity; ii) autocracy with low state capacity; iii) democracy with high state capacity; and iv) democracy with low state capacity. In our larger comparative design, the case of Ethiopia is found in the category ii), autocracy with low state capacity.

We further selected the Awash River Basin for implementing the study because of the development disparities between the upper, middle, and lower basins. The upper and middle parts are the most utilised and modified basins in the country and affect the economic opportunities and living conditions in the lower basin. Starting in the 1950s, the basin’s water and land resources are still the subject of recent development plans to further increase the irrigated area. Multiple and competing uses of the water in the Awash Basin include: several large- and small-scale irrigation schemes developed either by the government or farmers, hydropower plants, water supply to urban areas including Addis Ababa (50 per cent of its supply) and other major towns (Adama) and small towns (like Awash and Metahara), and manufacturing industries abstracting surface and groundwater (Mosello et al., 2015). Due to the limited water storage capacity and particularly the ineffective management of the existing water infrastructure, competition over water exists among different water users, besides negatively affecting wetlands, natural lakes, and the national parks along the riparian corridor of the river.

¹ AQUASTAT is the FAO global information system on water resources and agricultural water management.

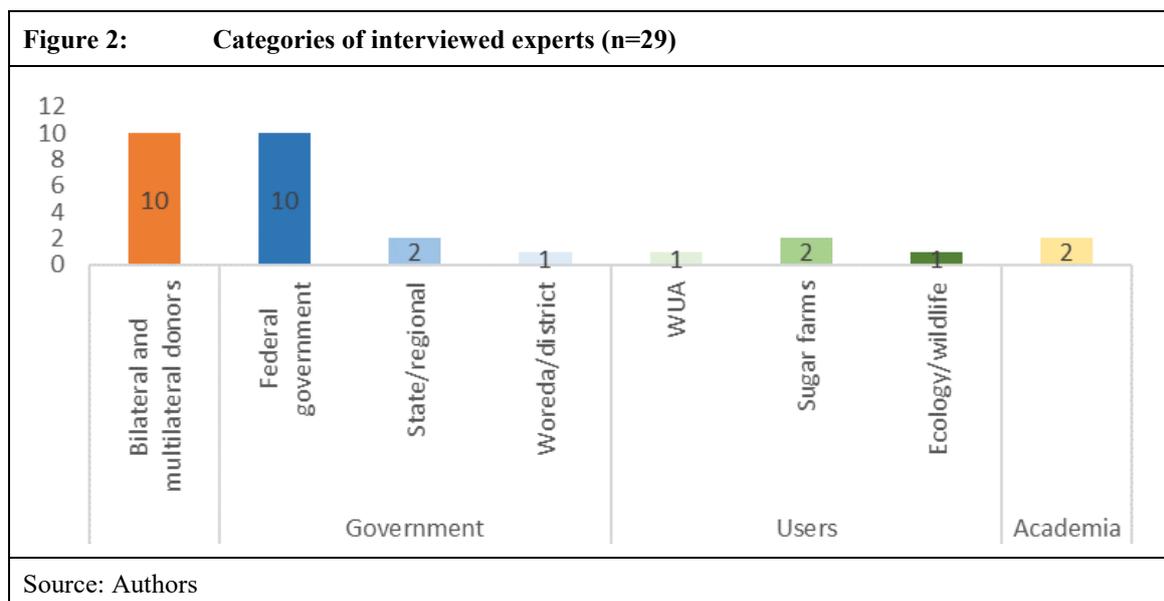
Competition over grazing resources and water between pastoralist groups, and between pastoralists and farmers in the lowlands is long-standing. Recent competition over land and grazing resources exists because new migrants from outside have moved into the basin; the government promotes the sedentarisation of mobile pastoralists, and commercial (state) sugar estates intend to acquire additional land from local, pastoral communities to overcome their production constraints (the mills are operating under their capacity due to a lack of produce from cultivated land). In respect to water resources, conditions vary; however, overall, they are scarce and costly to access; surface water is confined to the Awash River and its tributaries (World Bank Group & DFID [Department for International Development], 2019). The competition over limited natural resources and the social, political, and economic context make the Awash Basin an interesting case to study the water and land governance systems and especially how they impact on achieving the SDGs that depend on water and land. Furthermore, Ethiopia was one of the early adopters of the IWRM principles and has been reforming its water policies since 2001. It is thus timely to assess whether the long-standing experience from implementing a mechanism designed for cross-sectoral coordination and the reconciliation of competing interests in the use of a scarce natural resources has translated into adherence to the 2030 Agenda's principles, especially, indivisibility of sustainable development outcomes; inclusive and participatory decision-making; and leaving no one behind. Conversely, it is also interesting to assess whether the 2030 Agenda has de facto served as an agenda-setting event that provided a fresh impetus for cross-sectoral and cross-level coordination in water and land governance in Ethiopia (see Breuer & Oswald Spring, 2020).

3.2 Study methods

This study uses qualitative methods to analyse data collected during a three weeks' field research stay in Ethiopia in November 2018. During the field research, we used a semi-structured interview guideline to conduct a total of 29 expert interviews (see Figure 2). Interview partners included civil servants from federal ministries, commissions and authorities as well as regional sectoral bureaus; employees of donor agencies and intergovernmental organisations; staff of state sugar farms; members of a water user association and members of the academic community. These interviewees were chosen as experts and/or representatives of decision-making bodies who had insights into and/or specific knowledge about political strategies, decision-making processes, administrative structures and procedures in the policy fields relevant to this study. Interviewees were informed about the study's purpose prior to the commencement of interviews and were asked for their consent as regards the publication of the information provided by them in an anonymised form.² It is important to note that our original intention was to also conduct interviews with representatives of non-governmental organisations (NGOs) and civil society organisations (CSOs) in the field of natural resource management and protection. However, when we enquired about suitable interview partners we almost invariably received the answer: "There are no NGOs working on WEF-nexus issues" or "Ethiopia is not an NGO country". In general, it appears that the ability of NGOs and CSOs to exercise their function has been severely

2 To ensure the anonymity of interview partners, we took care to remove any identifying information. Interviews were anonymised and numbered consecutively. In the remainder of this paper, footnotes indicate the interview number that findings are based on. A summary overview of the interviews by respondent category is given in Annex 6.

hampered by Ethiopia's NGO regulation law of 2011, which limits administrative costs for all charities and societies to 30 per cent of their budgets.³



Parallel to the expert interviews and in order to gain a deeper understanding of the coordination challenges related to WEF-nexus issues, we conducted a Social Network Analysis (SNA) based on a small N (n=16) survey with closed ended questions. The purpose of this survey was to analyse the structure of communication flows between WEF-nexus actors in the researched area. WEF-nexus literature has posited that efficient communication is a prerequisite for policy coherence and efficient resource allocation (Daher, Hannibal, Portney, & Mohtar, 2019). White, Jones, Maciejewski, Aggarwal, & Mascaro (2017) for example identify lack of communication and collaboration as one of four main impediments to decision-making in tackling WEF-shocks. Similarly, Pahl-Wostl (2017) attributes coordination failure and policy incoherence across different sectors to the lack of communication. Social Network Analysis (SNA) is an empirical method particularly suited to investigate and illustrate the arguments brought forward by this strand of literature. In contrast to other methods that compare the characteristics of individual actors, SNA is a relational approach that focuses on the social relationships between a set of actors and aims to identify structural characteristics of actor networks (Breuer et al., 2018; Ward, Stovel, & Sacks, 2011). For the purpose of the SNA, we developed a survey questionnaire that asked respondents to indicate whether over the past twelve months they had communicated with other national WEF-actors either at the federal level or within their regional state and, if so, with what frequency. The resulting network consists of 35 actors, out of which 16 personally participated in the survey. A table with the full list of these actors is given in Annex 5. The results of the SNA are presented and discussed in Section 7.

In addition to the analysis of primary field data, we undertook an intensive review of primary and secondary literature. Content analysis of primary resources included documents pertaining to water and land resources policies, plans, strategies, legislation, as well as national strategies for social and economic development, SDG implementation, and progress reports on SDG implementation (VNRs).

³ At the time of field research for this study, this law was being revised by the government of Abiy Ahmed.

4 Land and water-use conflicts in the Awash River Basin

4.1 The context

Ethiopia is a low-income country (gross national income (GNI) per capita in 2019: USD 850 (World Bank, 2019a)), with a low level of human development (Human Development Index (HDI) in 2019: 0.485 (UNDP [United Nations Development Programme], 2018). With a total population of almost 118 million (UNFPA [United Nations Population Fund], 2021), Ethiopia is the second most populous nation in Africa after Nigeria, and home to more than 80 ethnic groups (Argaw, 2017). The country has the fastest growing economy in the region. Over the past decade, Ethiopia saw an average growth rate of 10.3 per cent per year, compared to a regional average of 5.4 per cent (World Bank, 2019b). Nevertheless, Ethiopia continues to be one of the poorest African nations. Although economic growth entailed positive trends in poverty reduction (World Bank, 2019b), in 2016 just over a quarter of the population (26 per cent) was living under the international poverty line of USD 1.90 a day (World Bank, 2019c). The country is heavily reliant on its external development partners for financing its social protection programmes. Donor contributions averaged about 67 per cent of the net social protection expenditure between the fiscal years 2012/13 to 2015/16 (Endale, Pick, & Woldehanna, 2019). The country presents significant regional developmental disparities owing to its agro-ecological conditions and infrastructure development. Economic outcomes are highest in the upper and middle basins and lowest in the dominantly pastoral regions Afar and Somali (see Figure 4). Given that the Ethiopian population is highly polarised and fractionalised along regional and ethno-linguistic lines, these inequalities have important ramifications for societal peace and the political stability of the country (Argaw, 2017).

Ethiopia faces important challenges with regard to democratisation, governance, and human rights. On the Freedom House index, the country is rated as “not free” (index score 7/7) (Freedom House, 2019) and classified as a “moderate autocracy” on the Bertelsmann Index of political transformation (2020). Moreover, Ethiopia suffers from high levels of bribery and is ranked 94 out of 180 countries on the Corruption Perceptions Index of Transparency International (2020). Freedom of expression is considered highly restricted, and the country is ranked 101 out of 180 countries on the World Press Freedom Index (Reporters Without Borders, 2021).

Over the course of the past fifty years, the country has experienced two major political transitions, a knowledge of which is essential if one is to understand the current state of democracy and the economy (Bertelsmann Stiftung, 2018). The first transitions took place in 1974, when the military Derg junta overthrew the Solomonic Dynasty and Emperor Haile Selassie in a coup d'état, establishing Ethiopia as a communist state with a junta as its “provisional” government. However, the totalitarian rule of the Derg regime, during which over 50,000 civilians were killed (Wiebel, 2017), lasted almost two decades and left the country with long-lived, detrimental legacies. Particularly relevant in the context of our study was the significant “brain drain”. During the Derg regime, hundreds of thousands of Ethiopians fled political persecution, forced resettlement, ethnic violence, and humanitarian disasters. Between 1980 and 1991, the country is estimated to have lost 75 per cent of its skilled workforce (Asres, 2016; Shinn, 2002).

The second political transition occurred in 1991, when the ethno-nationalist, left-wing coalition Ethiopian People's Revolutionary Democratic Front (EPRDF) – led by the Tigray

People’s Liberation Front (TPLF) – seized power by force and ousted the Derg regime (Bach, 2011). Despite the adoption of a parliamentary multi-party system and more liberal economic policies (Gudina, 2011), the TPLF-EPRDF essentially adhered to the ideology of “revolutionary democracy”, which combined the aim of a socialist revolution with elements of mainstream Marxist-Leninist thought and postulated democratic centralism under the leadership of a vanguard party (Aalen, 2019; Bach, 2011; Melakedingel, 2013).

The new constitution, adopted after a transitional period in 1994-1995, recognised human rights, the rule of law, and democratic governance as the central regulative principles of the state. Furthermore, it introduced a five-tiered federal system in which administrative units were based on ethnic/linguistic criteria (see Figures 3 and 4). Each of the country’s nine regions was given the autonomy to elect its own legislature and government and to raise and spend its own revenues.

Figure 3: Administrative divisions in Ethiopia

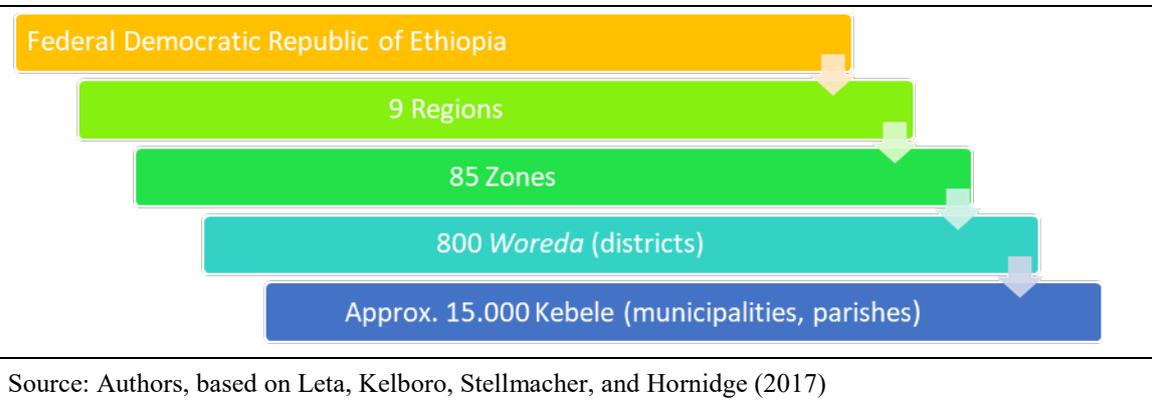
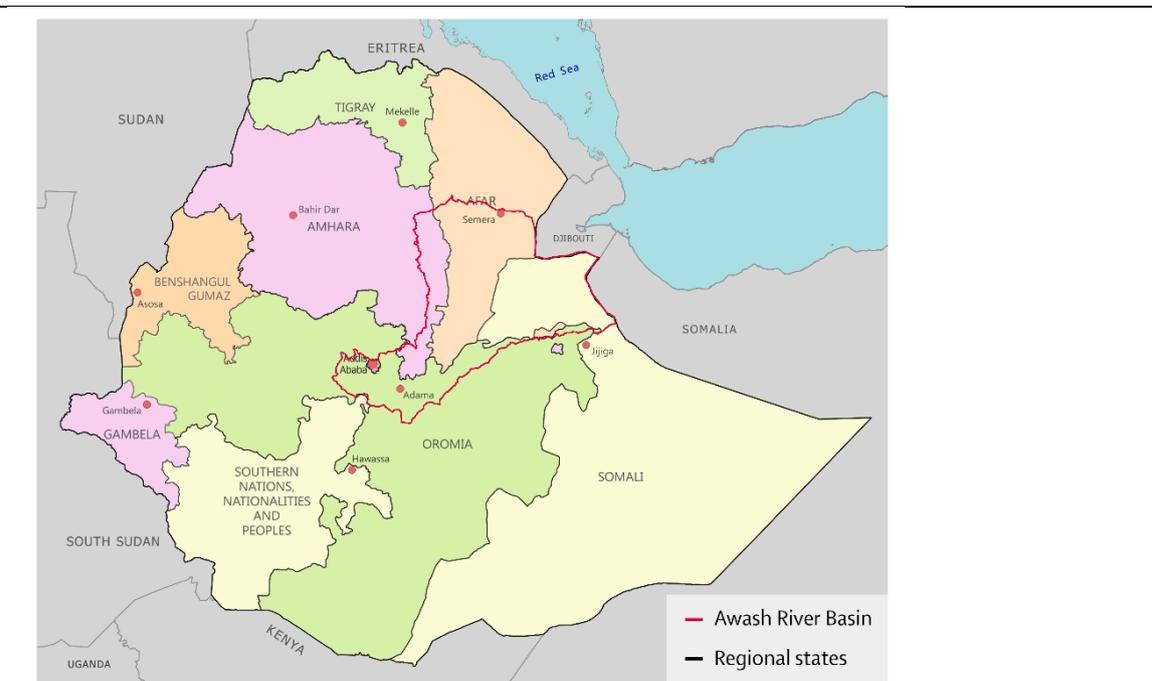


Figure 4: Regional administrations with territories in the Awash River Basin



The new constitution grants legislative powers to the representatives of all ethnic groups in the upper house of the parliament based on the principle of “ethnic federalism” (Bihonegn, 2015). However, the constitution also became a tool used by the ruling elite to normalise oppressive practices (Bertelsmann Stiftung, 2018). Elections, though regularly held, were neither free nor fair and competitive but rather served the purpose of securing the authoritarian power of the ruling party (Gudina, 2011; Vorrath, 2013). In the new 5-tier federalist structure, the TPLF occupied key political posts at all levels of the government, as well as key posts in the army, police, and security forces, thus, enabling the Tigray minority to capture the top echelon of the power pyramid (Gudina, 2011; International Crisis Group, 2009). While functional in some aspects, the Ethiopian model of ethnic federalism has thus been criticised for amplifying ethnic divisions, sometimes resulting in violent conflicts (UCDP [Uppsala Conflict Data Program], 2018).

Except for a single term from 2005 to 2010, the EPRDF retained power in successive elections, which observers assessed as not being free and fair (Freedom House, 2018). Through new legislation on anti-terrorism, curtailing the freedom of mass media, registrations of charitable organisations, and political parties, the government was able to clamp down on opposition to the regime, shrinking the public political space to practical non-existence. These measures culminated in the declaration of a state of emergency in 2016, which gave the state a free hand in suppressing opposing political voices by force (Bertelsmann Stiftung, 2018). In March 2018, the EPRDF coalition chose the leader of the Oromo Democratic Party, Abiye Ahmed, as its new chairman and prime minister. As the country’s largest ethnic community, the Oromos had long protested against the Tigray-dominated government, demanding land reform, full political participation and an end to human rights abuses in the country.

Abiye Ahmed’s reformist agenda lifted the state of emergency. Several measures for transitioning towards free democratic politics and efficient public institutions were promised and a few steps, including the release of political prisoners and a reduction of the number of ministries, were implemented. However, amidst an unclear reform agenda and mixed progress (Woldemariam, 2018), at the moment of field data collection for this study in November 2018 it was unclear if Ethiopia would undergo a third political transition towards democratisation.⁴

4 As of late 2020, Prime Minister Abiye was facing increasing opposition from vociferous ethnicity-based parties seeking more sovereignty for their regions. This intensified social tensions in multiple states and several communities resorted to violence to secure greater representation in parliament. Between November 2020 and April 2021, least 200 civilians were killed in ethnically motivated attacks across Ethiopia. However, given that this development took place after field data collection for this study, it is not considered in our analysis.

4.2 Competition and conflicts over land and water use in the Awash River Basin

4.2.1 Key features of the Awash River Basin – ecological context and state of resources development

The Awash River system is one of the twelve river systems of Ethiopia, and the principal stream of an endorheic drainage basin.⁵ The river's total length is about 1,200 km. Its tributaries are the Little and Great Akaki River in the Upper Valley which flow into the Awash River downstream of the Aba Samuel reservoir; the Keleta River, the Kesselem River, the Arba Dima River in the Middle Valley, and the Mille River in the Lower Valley. All tributaries of the Awash River in the lowlands except the Arba Dima, Kesselem, Kabena, Borchenna and Mille rivers usually dry up after the rainy seasons (Kloos, 1982). Hydrological seasonality (intra-annual) and variability (inter-annual) is high in the basin, resulting in endemic and unpredictable droughts, and floods (World Bank, 2006). The mean annual temperatures vary from <20°C in the northern highlands to more than 29°C in the northeastern lowlands. The mean annual rainfall in the southern Ankober region is as high as 1,600 mm and as low as 165 mm in the Asavita area. There are two distinct rainy periods in the northern plains: the western part has mono-modal rainfall with the peak occurring from July to August, while the eastern part receives short bi-modal rainfall between mid-February and mid-April (*Belg*), and a longer season between June and September (*Kiremt*). During the latter season, almost 70 per cent of the total annual rainfall occurs, which results in marked fluctuations in the river's discharge (FDRE [Federal Democratic Republic of Ethiopia], 2017b; Kloos, 1982). About 90 per cent of the precipitation is lost through evapotranspiration (FAO [Food and Agriculture Organization] & IHE Delft, 2020).

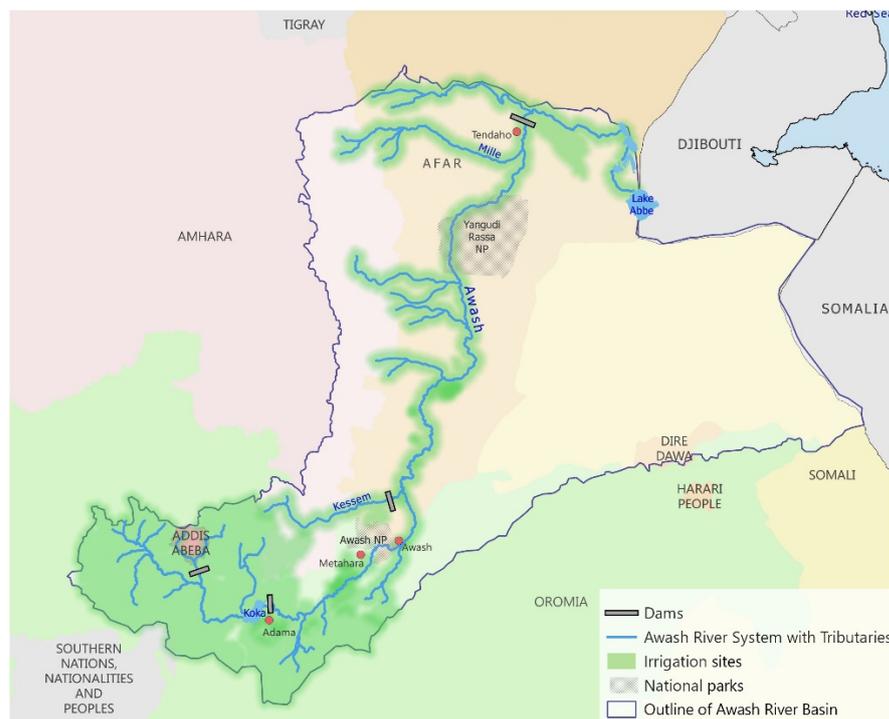
The Upper and Middle basins are the economic hub of the country and home to the majority of Ethiopia's industry, commercial agriculture, and agro-processing manufacturers. The Ethiopian government had already prioritised its development during the period of the Third Five-Year Plan (1968-1973) (Kloos, 1982) which contributed to the country's economic development, generating employment for thousands of people. According to Mendes and Paglietti, the large state farms Metahara and Wonji alone created 11,000 and 4,000 to 7,500 jobs respectively, and provided access to free housing, water, electricity, schools and clinics among other benefits. A number of cooperatives operate in conjunction with the Wonji factory to cultivate and sell sugarcane to the enterprise as out-growers (Mendes & Paglietti, 2015, p. 32).

Two hydropower plants at the Aba Samuel and Koka dams (107.5 MW) produce electricity for the capital city, smaller towns, and the manufacturing industries. Irrigation had already started in the 1950s where water of good quality and deep fertile alluvial soils were available (Haile, 2015), and where roads and railways provided access both to national and international markets. Irrigation schemes of diverse size cover about 200,000 ha of farmland (Figure 5) (FAO & IHE Delft, 2020). The main crops are sugar cane and cotton. Fruit production has been increasing since the end of the 1990s, with the bulk of fruit and vegetables sold in local markets. The production of high-value vegetables for export started in the 1980s, and export has been increasing ever since. Similarly, floriculture is one of the booming sectors (45 per cent of the flowers exported are grown in the basin) (Sisay, 2009)). Floriculture

5 An endorheic drainage basin is a closed hydrological system in contrast to an exoreic basin, and has no outflow to an ocean but to the inland Lake Abbe.

employs 70,000 workers of whom 64.4 per cent are female. However, virtually all food crops (97 per cent) are grown under rain-fed conditions, and only about 3 per cent are grown under irrigated conditions, whereas industrial crops such as sugarcane, cotton and fruits are mostly irrigated (Mendes & Paglietti, 2015, p. 3). Besides irrigated agriculture, large tracts of land are cultivated under rain-fed conditions by smallholders, along with vast areas of rangelands, used by pastoralists. The riparian corridor is home to the Awash National Park (Middle Valley), the Yangdu-Rall National Park (Lower Valley), Lake Beseka and Lake Gedebassa.

Figure 5: Irrigated areas in the Awash River Basin with tributaries



Source: Authors

The upper and middle parts of the river basin are also the most populated and urbanised area of Ethiopia with an overall population of about 18.6 million (FDRE, 2017b). All urban centres (Addis Abeba with 3.5 million inhabitants; Adama (Nazareth) with 0.4 million; and Dire Dawa with 0.3 million) and smaller towns (Metahara, Awash, Amibara, and Tendaho) receive their drinking water either from the river system or from connected bodies of groundwater. Based on the estimated population and available water resources, per capita water availability is a mere 263 m³/year, which is far below the 500 m³/year threshold for severe water stress conditions (FAO & IHE Delft, 2020). In comparison, the lower Awash Basin is less populated but also less developed due to its harsh agro-ecological, climatic, and hydrological conditions, and limited state interventions. Traditional livestock production and rain-fed agriculture and the selling of charcoal are the principal sources of livelihoods. The Tendaho Dam on the Mille River, a tributary to the Awash, is the only large-scale water infrastructure project designed to irrigate 60,000 hectares of land.

The basin's land and water resources have been subject to recent development plans (GTP II) that aim to increase the area under irrigation.⁶ However, systemic and market barriers hinder the expansion of irrigated agriculture of which access to land, credit and electricity are among the greatest (Mendes & Paglietti, 2015, pp. 27-29). Poor water management increases competition between different users, and negatively affects agriculture, wetlands, natural lakes, and national parks. Salinisation of soils has become a major threat for agricultural production in the semi-arid and dry sub-humid zones: land developed for irrigation had to be abandoned, and the productivity of the land cultivated has declined due to secondary salinisation.

4.2.2 Water- and land-use conflicts in the Awash Basin – action situations (AS0) at operational-choice level

This subsection describes the key conflicts over land and water use in the Awash Basin which corresponds to action situation zero (AS0) in our framework. Key actors in this action arena are: water and land users and managers (small irrigators, large irrigators, pastoralists, Awash National Park, industries), regional governments, and the river basin authority. Actors in different action situations interact with the natural resources by cultivation, conservation, grazing or deforestation of land, abstraction of water or discharge of effluents into water. The outcomes of one action situation have an impact on the choices of another action situation, which is then said to be adjacent to it. Water and land-use conflicts occur when the outcomes of one action situation negatively affect the choices of another. The actions in different action situations are determined both by formal rules which are themselves outcomes of action situations in higher arenas, informal rules, norms, as well as the biophysical, socio-political context. Figure 6 provides a depiction of seven action situations and their interlinkages through the outcomes. The outcomes of all the action situations in the operational arena then contribute to the achievement of SDGs 2, 6, 8 and 15 depending on the coordination among different action situations in reducing the negative impact of their outcomes on others. Following this, we explain the key conflicts, which are manifested in the outcomes of different sub-action situations at the operational-choice level.

AS0a: Downstream impacts of land use in upstream watersheds. The loss of vegetation cover through deforestation and overgrazing in the highlands, repeated tilling of the soil, and lack of adequate soil and water conservation measures led to serious soil erosion. Sediments accumulated in the Aba Samuel's reservoir and reduced its active storage capacity of 1,667 million cubic metres (mcm) to 1,186 mcm, a loss of 481 mcm (30 per cent) (EEPC [Ethiopian Electric Power Corporation], 2002). A high concentration of nutrients in the reservoir caused the spreading of water hyacinth (*Eichhornia crassipes*) which covers almost half of Aba Samuel's surface area. Both negatively affect the dam's operative functions such as flood control, water storage and water supply. Loss of storage capacity was also observed at the Koka dam reservoir. Its siltation has already led to changes in the dam's operation priorities: hydropower is only generated if irrigation water is released for downstream demands (Interview 30). High siltation rates in the downstream Kesseme Dam reservoir has reduced the areas that were planned to be irrigated (Government of Ethiopia, 1986). Since the Koka Dam is the only control structure in the upper reaches of

6 Future exploitation of the country's hydropower potential will take place in the Abbay and Omo river basins.

the river, its reduced storage capacity does not allow for effective control of floods downstream (FDRE, 2002b).

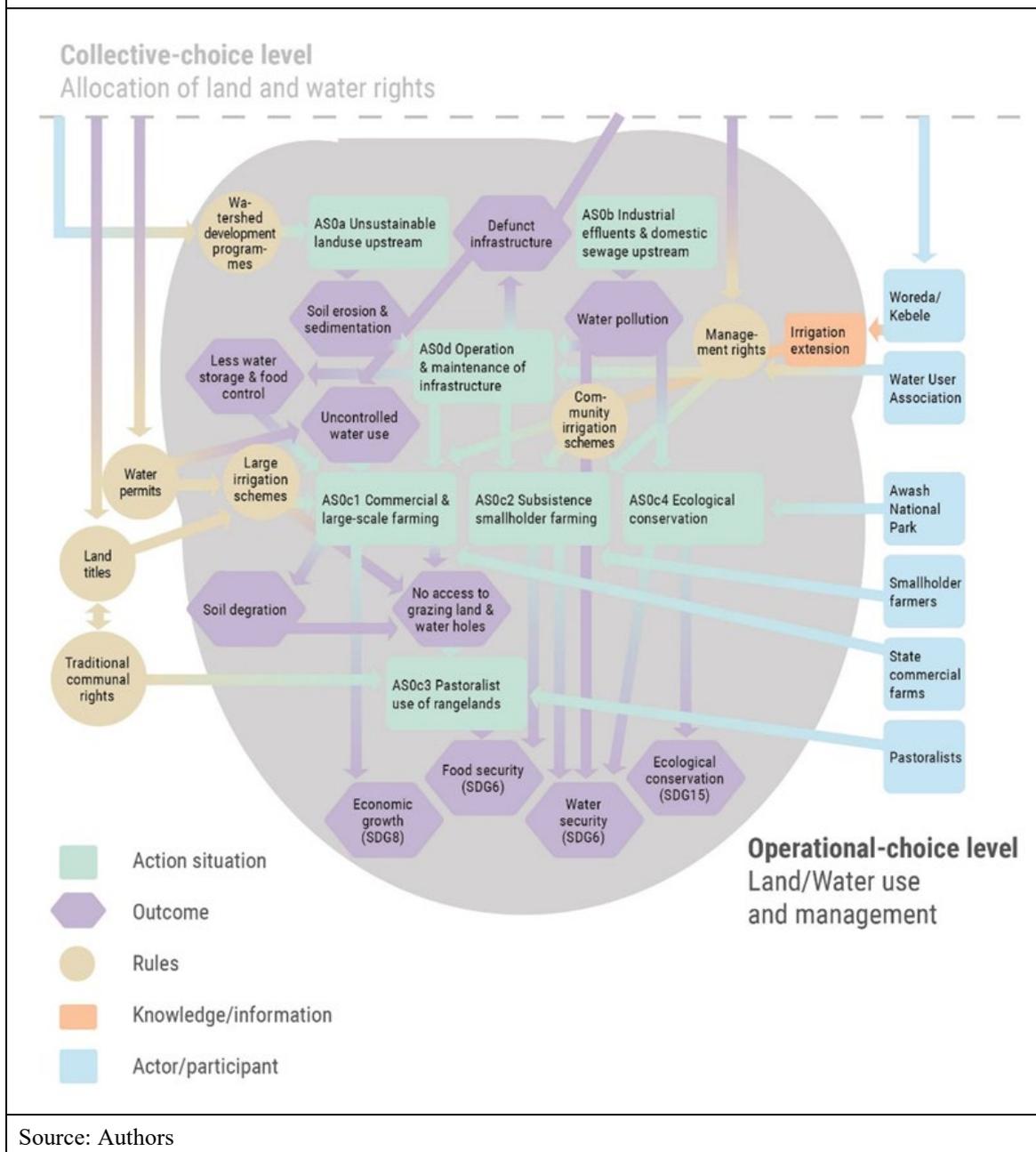
If the negative effects on the hydraulic infrastructure and its functions are to be mitigated, the physical upstream-downstream interdependency requires coordination of the ministries concerned. Coordination between the Ministry of Agriculture responsible for watershed management and the Ministry of Water, Irrigation and Energy mandated with irrigation and hydropower development is necessary – but costly because vulnerable watersheds are widespread. Major efforts are needed to control floods in the upper catchments of the river's tributaries as well as in the lowlands, including investments in enhanced flood early warning systems, mitigation measures, and preparedness mechanisms including on-site water structures.

AS0b: Upstream water pollution impairs downstream uses. Tributaries to and the main stem of the Awash River receive solid waste and non-treated wastewater from industries, agro-processing manufacturers, cities, and towns. Urban wastewater, hospital waste and wastewater from steel, wood and paper producers, liquid and solid waste generated at construction and mining sites – all end up in the river system (Ethiopian Science and Technology Commission (ESTC), United Nations Environment Programme (UNEP), & Ethiopian Cleaner Production Center (ECPC), 2005) which finally transports heavy metal, nutrients, coliforms, and pathogens into the Aba Samuel reservoir (Kassegne, Birhanu, & Okonkwo, 2018; Yohannes & Elias, 2017). Wastewater from the sugarcane processing factories particularly affects the Awash National Park (Interviews 14, 20): molasses, a by-product of sugarcane processing, contributes to water degradation because it is rich of organic substances, and consumes oxygen⁷ affecting fish populations. Overall, treatment facilities are lacking throughout the basin (ESTC et al., 2005; Worku & Giweta, 2018) as are sewer systems (FDRE, 2016a). The capacity of existing plants is inadequate and their design (an oxidation ditch with extended aeration) does not allow for the treatment of the toxic compound concentrations stemming from industries (Asfaw, van Essen, & Tsige, 2012, p. 28). Pollutants in the upper tributaries and the Aba Samuel reservoir accumulate in the food web, namely in fish catch, and in vegetables such as potatoes, red beets, onions which are irrigated on 390 ha with polluted river water (FDRE, 2017b, p. vi) and affects public health (diarrhoea, typhoid and typhus). In addition, salt concentrations increase from the upper to the lower stretches of the river due to return flows from agriculture (Qureshi, Ertebo, & Mehansiwala, 2018, p. 102), and affect downstream irrigation schemes. However, sources, substances, concentrations, and the degree of pollution are not measured on-site.⁸

7 Molasses has the highest biochemical oxygen demand (BOD) of approximately 900,000 mg/l; effluents from sugarcane processing may contain a BOD of 2,000 to 3,000 mg/l.

8 The Awash Basin Authority measures electrical conductivity (EC) values which indicate salt concentrations and its suitability for irrigation but no other substances.

Figure 6: Water- and land-use action situations at the operational-choice level



Inflows of untreated wastewater affect domestic water supply, irrigation of crops, wetlands and national parks. Water quality management/water pollution control, including the construction of sewer systems and treatment plants, requires substantial public and private investments to accommodate public health concerns (SDG 6). Research on pollution sources, substances, and concentrations is needed together with the installation of measurements devices and the establishment of an effective monitoring system. Among others, coordination is required between the National Park administration and the river basin authority.

AS0c: Conflicts associated with land-use changes. Conflicts over land and grazing resources in the basin are longstanding but intensified with the foundation of large state farms (Wonji Shoa Sugar Estate, Nura Era, Metahara) in the 1960s and the establishment of the Awash National Park in 1969 located within 5 to 10 kilometres from the main river

stem (Ayalew, 2013; Kloos, 1982, Interviews 15, 17, 20). Traditional pastoralists have lost dry-season grazing lands, first inside the Awash National Park (which became a hunting reserve for the Emperor Haile Selassie), then outside the Park where cotton and sugar cane plantations expanded at their expense (Meuer & Moreaux, 2017, p. 42). Recent competition over land is increasing because programmes intend to settle mobile pastoralists around irrigation schemes (small-scale and state farms), and because commercial farms intend to acquire additional land from local communities. Pastoralists rely on less productive, marginal land which is also threatened by the expansion of *Prosopis juliflora*, a noxious weed (World Bank Group & DFID, 2019). Although the regional rural land use and administration proclamations of Afar National Regional State (2011) and Oromia National Regional State (2007) enshrine customary rights of pastoralists and communities to grazing land (communal ownership, communal holdings), policies promote commercial agriculture and the redistribution of land to individual households (Reda, 2014).

Changing land use from rain-fed and rangelands to irrigated agriculture as well as changes in land tenure intervene in the livelihoods of pastoral communities and contribute to the erosion of this way of life and production mode. Resettlement and compensation regulations are insufficient, jeopardising social targets (food security, poverty eradication). Coordination efforts by the respective ministries to balance social with development targets are in an early stage of development. Socially negative developments are rooted in the constitution itself and would have to be changed by the parliament.

AS0d: Conflicts associated with basin water management. Effective operation of hydraulic headworks is affected by technical issues such as non-functioning diversion weirs, a lack of measurement devices, and poor maintenance. Both large-scale commercial as well as community-owned, community-managed irrigation schemes are the ones which bear the costs. The key concerns of user-managed schemes (Ediget Filagot Water User Association scheme (Interview 19), Golgota Irrigation scheme, Fentale and Tibila Irrigation-Based Integrated Projects developed by the Oromia Regional Government) are that canals and gates are not functioning, canal maintenance is insufficient, and the water supply to farms is unreliable. Conflicts over water exist between Wonji Shoa Sugar Estate and the community Fentale Tibila irrigation scheme located upstream from the estate, and between the Wonji Sugar Factory and the state-owned Metahara Sugar Factory (Interview 17) which is located downstream. Water is also in short supply in the pastoralist areas because commercial farms hinder access to land, waterholes and wells (PFE [Pastoralist Forum Ethiopia], IIRR [International Institute of Rural Reconstruction], & DF [The Development Fund], 2010).

Soil salinisation increased significantly from 1972 to 2014 due to poor irrigation practices and a lack of drainage infrastructure (Asmamaw, Haile, & Abera, 2018; Qureshi et al., 2018). Metahara estate lost 300 hectares; an additional 400 hectares had to be abandoned because the highly saline Lake Beseka increased in volume and inundated agricultural land, grazing areas and settlements (Interview 17). Although the exact causes are unclear, it is assumed that irrigation water applied in excess of the crops' water requirement feeds the lake (Awulachew et al., 2007, p. 24). About 80 per cent of Dubti/Tendaho state farm, which is part of the Tendaho Dam and Irrigation Project in the Lower Valley, is affected by salinity (Asmamaw et al., 2018; Qureshi et al., 2018).

The key to solving water allocations is a functioning water allocation regime across the basin together with mandated effective management institutions at the operative level. The

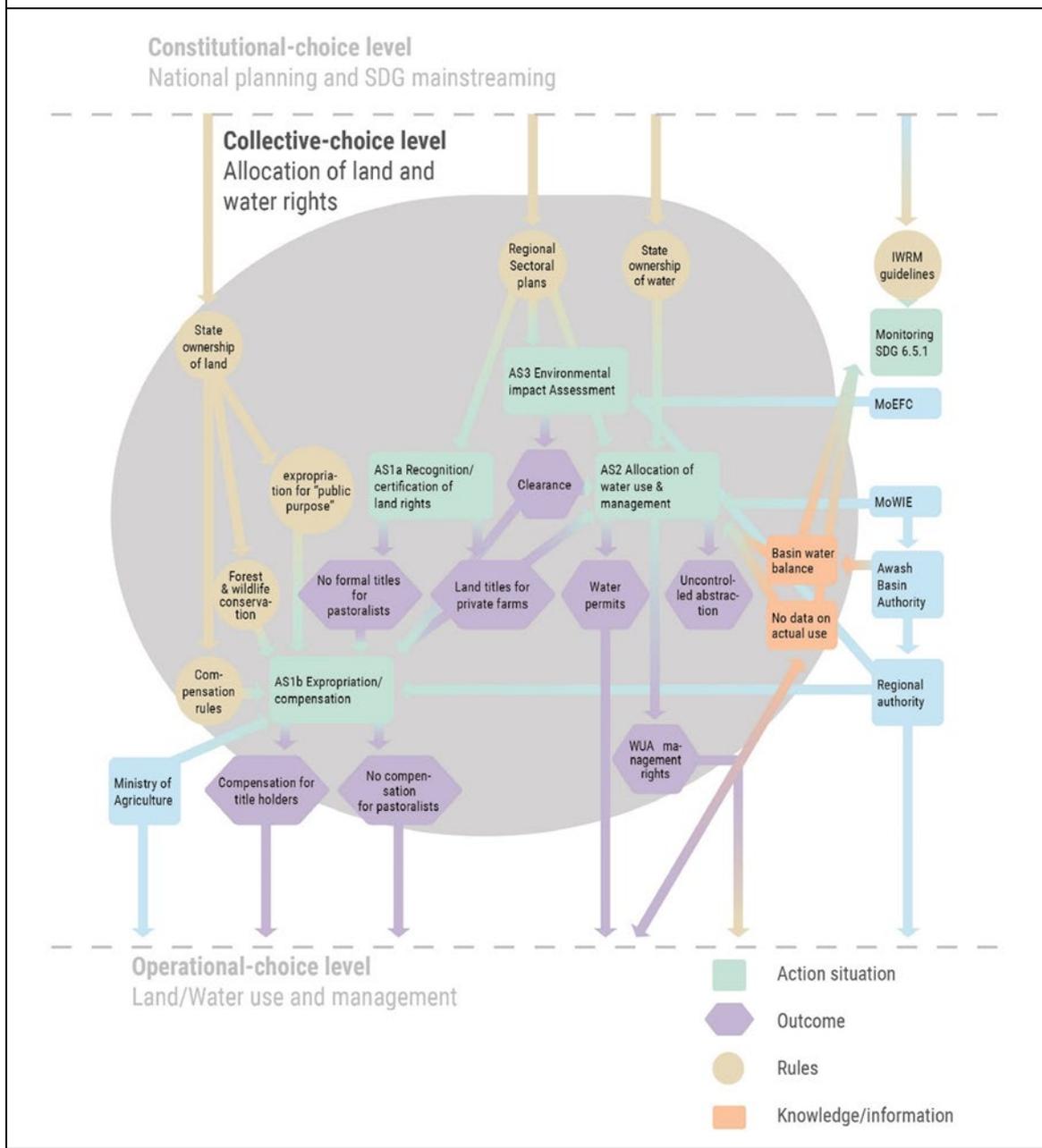
existing hydraulic infrastructure lacks repair and regular maintenance; water distribution is unreliable and seems to favour large farms even though their excessive irrigation practices lead to soil and water degradation. Mandates between the ministries concerned and local irrigation management units are not yet clearly defined. While institutional reforms are on the agenda, they are still at an early stage of development. A way to reconcile the conflict could be to produce forage for pastoralists in compensation for lost grazing grounds.

5 Land and water allocations – action situations at collective-choice level

The formal rules-in-use influencing the actions in different situations at the operational-choice level result from the action situations in the collective-choice action arena. The only actors from the operational level who participate to a limited extent in the action situations at the collective-choice level are the governmental actors from the regional and *woreda* levels.

In this section, we will describe the key action situations in the collective-choice arena, the rules-in-use that influence the actions in various situations, and the outcomes that establish the conditions for action situations at the operational level. We identify three key action situations, which represent three key functions of polycentric governance pertaining to provision and enforcement of rules-in-use for operational action (Figure 7). The first situation pertains to the process of allocation of rights to land use (AS1), which involves two processes, namely, recognition and granting of titles to land (AS1a) and expropriation, resettlement and compensation (AS1b). The second action situation pertains to allocation of water permits and rights to manage irrigation infrastructure (AS2). The management of infrastructure itself is an action situation in the operational-choice arena. Further, the process of Environmental Impact Assessment (EIA) and providing environmental clearance certificates as a key coordination instrument forms the third action situation (AS3) in this arena.

Figure 7: Land and water allocation action situations at collective-choice level



Source: Authors

5.2 Focal action situation (AS1): Land allocation and land-use rights

Actors	Federal Government; Regional governments; Agriculture Investment Support Directorate of the Ministry of Agriculture (large land deals); Federal & Investment Commission; <i>kebele</i> officers, <i>woreda</i> officers; clan leaders of pastoralist communities
Outcomes	Land expropriation, compensation and resettlement, land registration and certification; monitoring of conditions attached to project licenses

Source: Authors

In the Awash River Basin, conflicts over land date back at least to the foundation of large state farms in the 1960s and the establishment of the Awash National Park in 1969 (Gebre, 2001) Interviews 5, 17, 20). Kloos (1982) estimated that early irrigation schemes had displaced about 20,000 pastoralists, and communities would have lost two-thirds of their dry-season grazing land (Meuer & Moreaux, 2017; Müller-Mahn, Rettberg, & Getachew, 2010; Rettberg, 2010). Conversion of land use, and the preceding expropriation, remained a source of conflict in the late 1980s during the implementation of the Tendaho Dam and Irrigation Project (Kidane, Mekonnen, & Teketay, 2015; Kloos, 1982, Interview 15, 17).⁹ This affected pastoralists in particular who “were excluded from the sugar plantations and had no access to either flood or irrigation water and seasonal grazing areas, and transit corridors were closed off to herds and herders” (Kidane et al., 2015, p. 129). However, the Tendaho Irrigation Project changed the livelihood assets of agro-pastoralist communities (natural, social, financial, physical and human capital) and diversified their livelihood systems, such as trade and the provision of services (Kidane, Mekonnen, & Teketay 2014, p. 17).

Conflicts were revived because GTP II promotes investments in large-scale and smallholder irrigation schemes in the lowlands where pastoralism is predominant. State-owned sugar estates aim to expand their plantations onto the grazing areas of pastoral communities but face difficulties: there is “not enough land to expand the farm area because the land is occupied by the local community” (Interview 17). Local communities and pastoralists might be reluctant to voluntarily lease further areas: while farmers may fear the shrinking size of the plots they cultivate, pastoralists rely on large tracts of grazing areas, and on livestock diversity to exploit the diverse seasonally available pastures and water resources.

The following subsections analyse the action situations that explain the root causes of land disputes and attempts to resolve them.

5.2.1 Recognition and granting of land titles (AS1a) in the regional states of Oromia and Afar

The current land tenure system was established by the FDRE Constitution Proclamation No. 1/1995, the FDRE Rural Land Administration and Land Use Proclamation No. 456/2005¹⁰ and the Expropriation of Landholdings for Public Purposes and Payment of Compensations Proclamation No. 455/2005 (see Annex 1). The constitution of Ethiopia (FDRE, 1995) vests “the right to ownership of rural land and urban land, as well as all natural resources [...] exclusively in the state and the peoples of Ethiopia. Land is the common property of the Nations, Nationalities and Peoples of Ethiopia” (Article 40). It rules that “Ethiopian pastoralists have the right to free land for grazing as well as the right not to be displaced” (Article 40(5)). The FDRE Constitution covers individual as well as collective rights including those of traditional (pastoralist) communities and recognises their communal customary land holding systems (Abdulahi, 2007, p. 103). In contrast to the rights anchored in the FDRE Constitution, the FDRE Rural Land Administration and Land Use

9 Conflicts originate from state-initiated projects, but conflicts also exist between clans or with members of another ethnic group (Ambaye, 2015; Kloos, 1982; Lavers, 2018). Indigenous inhabitants may have priority land rights in the “home” region, and access to land may not be universal. Ethnicity should not play a role, but it did in land conflicts between tribes in that region (Lavers, 2018).

10 It replaced the Federal Rural Land Administration Proclamation No. 89/1997.

Proclamation No. 456 of 2005 stipulates that land is a public property and can only be owned by the state.

However, a majority of the rural areas in the lowlands continue to be controlled by traditional rules and local authorities (clan leaders), and not by the state (Ambaye, 2015; UN-Habitat, 2008; Kloos, 1982; World Bank, 2012), except the large tracts of land that were appropriated to establish state farms (Abdulahi, 2007). Land in pastoral areas is accessed on the basis of clan, sub-clan and lineage group membership, social status, and gender¹¹ (World Bank, 2012, p. 22; Interview 29).

The 2005 FDRE Rural Land Administration and Land Use Proclamation introduced the Rural Land Holding Certificate to provide security to private landholders “while it said almost nothing about the security of communal landholding systems” (Abdulahi, 2007, p. 118). The 2005 FDRE Proclamation encourages “private investors in pastoral areas having tribe-based communal land holding systems” (Abdulahi, 2007, p. 119). It thus created the potential for the state to easily appropriate communal land in order to encourage investments and facilitate state-driven projects (World Bank, 2016, p. 12).

However, the FDRE 2005 Proclamation left details of the rules to regional governments that constitutionally held the legitimate authority to administer land and enact legislation and implement the respective laws (Nega, Adenew & Gebre Sellasie, 2003; World Bank, 2012, p. 23). Relevant for the middle and lower Awash Basin, the Oromia Rural Land Use and Administration Proclamation (2002, 2003, No. 130/2007) and the Rural Land Use and Administration Proclamation of Afar (2008, 2009, No. 4/2011) explicitly recognise the communal holding systems of pastoralists and communal rights to grazing land. Groups of people may hold a land title which is inseparable. Communities are granted usufruct rights, the right to inherit, transfer and lease land but not to sell it.¹² Based on the Oromia land law, Borana pastoralists, the largest Oromo tribe, received the first ever communal land holding title in 2018 within the context of a USAID-financed project (see Annex 2) (Haddis, 2018; Napier & Desta, 2011; Woldegiorgis, 2018).¹³

5.2.2 Expropriation of land, compensations, and resettlement (AS1b)

The FDRE Constitution rules that “the Government may expropriate private property for public purposes subject to payment in advance of compensation commensurate to the value of the property” (Article 40(8)). The Expropriation of Landholdings for Public Purposes and Payment of Compensations Proclamation No. 455 (2005) allows expropriation of private and communal land for public purposes, which is a term that is not legally specified (Tamrat, 2010; World Bank, 2016, p. 12). A purpose should be beneficial to the public, but in practice

11 The land tenure system in Southern Ethiopia is based on patrilineal inheritance and virilocal residence (UN-Habitat, 2008, p. 3). However, in this study we do not delve into the issue of assigning land-use rights to women (for a thorough analysis, see UN-Habitat, 2008).

12 The Afar Proclamation rules that allocation of plots of land by “any pastoralist” is not allowed (part II (7)) in order to control negotiations and contractual agreements concluded between investors and clan heads.

13 Land Administration to Nurture Development (LAND) Project; <https://www.land-links.org/2018/03/formally-recognizing-pastoral-community-land-rights-in-ethiopia/>; <https://www.land-links.org/2018/09/pastoral-communities-receive-2-7-million-hectares-of-land-in-ethiopia/>; <https://fic.tufts.edu/assets/Tufts-Range-Enclosure-Review-PLI.pdf>, retrieved on 29 October 2019.

land acquisitions for investors who might use land more productively, are also declared as being of public purpose (LANDac, 2018; Tura, 2018). Hence, eminent domain (that is, the right of a government to take property for public use) encompasses commercial interests and, if the authorities desire, “they may be able to deem any activity as serving the public purpose, thus facilitating extensive expropriation” (Aneme, 2015; Anteneh, 2007, p. 20) .

Due to Ethiopia’s federated state structure, specifications on what constitutes a public purpose are defined by regional proclamations. The Oromia Proclamation, for instance, rules that a landholder’s rights are superseded by more important public uses and that land, for instance, can be expropriated if needed for irrigation infrastructure. The Afar Proclamation rules that allocation of plots of land from “any pastoralist” is not allowed (part II (7)), but the regional state units may cause transfer a pastoralist’s holding to private investors if it is in the public interest, that is, if it can transform the livelihoods of the pastoralist communities in the area (Art 7(2)).

Regarding compensations, reports indicate that compensation

practices are full of inconsistencies, unfairness. [...] The valuation methods and compensation procedures vary intra- and inter-regionally, for that matter even within a given *woreda*. [...] Subjectivity and inconsistencies in valuation and compensation are apparent even for land appropriated for the same purpose. (Anteneh, 2007 in World Bank, 2012, pp. 32-33)

If communal and group land rights are not registered during official registration programmes, as is the case in the lowlands and pastoral areas (Rahmato, 2011), these user groups are disadvantaged by the compensation framework and practices.

It is not land that is subject to compensation payments, but immovable property on land and the improvements one brings about on the land by one’s labour or capital. The resources which grow naturally on the land are also not subject to compensation payments, for example, the grazing areas of pastoralists (Ayane, 2014). The only land users eligible to compensation payments are those who hold lawful possession of land registered in land holding books. Users of communal, non-certified land and grazing areas are not eligible to receive compensation. Only certified valuers are eligible to carry out valuations of property for compensation. However, there is no comprehensive directive to guide them. While complaints and appeals can be raised at local units or at regular courts (which are perceived to be corrupt, World Bank, 2016), complaints can only be made on the amount of compensation payments. Finally, the Proclamation No. 455/2005 does not specify which authority decides on compensation levels, and on the method by which the compensation payment is calculated.

As of November 2018, a comprehensive resettlement policy framework was still in the making. The key document is the Revised Draft Resettlement Policy Framework of August 2016 issued by the Ministry of Water, Irrigation and Electricity that was developed on the occasion of the Urban Water Supply and Sanitation Project-II (FDRE, 2016a). The Draft Version of the Resettlement Policy Framework indicates differences between international standards, for instance, the World Bank’s Operational Guideline 4.12 on Involuntary Resettlement, and the Ethiopian legislation. However, the recent status of the Resettlement Policy Framework was not known at the time of the writing of this study.

5.2.3 Land registration and certification as instruments to provide security

Regarding communal pastoral landholding systems, registration and certification is a fairly new issue for Ethiopia.¹⁴ In order to improve security of land rights, GTP II aims to survey, map and register into the cadastral system a total of 28.6 million parcels and holdings of 7.2 million rural households, covering land in 359 *woredas* (World Bank, 2016, p. 52) – but not pastoral rangelands.

The officially prescribed land registration and certification procedures comprise two steps and involve administrative units at different levels: the first step is administered by *kebele* administration, and the second step is administered and approved by *woreda* offices. Only then are user rights formally registered in the registry book and only then are certificates handed over to farmers who receive a document, the Book of Holding Certificates, as evidence of the rights one has in which parcels of land (Bezu & Holden, 2014; Interview 11).

Evidence from the USAID-financed LAND Project and the World Bank- and DFID-supported Lowland Livelihood Resilience Project indicate that land registration and certification of common titles for local (pastoral) communities is a complex issue that defies simplistic solutions (Interview 29):

- Pastoral rangelands can cover hundreds of thousands of hectares. Regional officials might be reluctant to certify large areas in the name of a single community (Interview 23).
- The delineation of migration routes crossing state farms and, if applicable, farmer irrigation schemes, are negotiated between clan leaders and farm managers or heads of farm households, and not with public officials.
- Boundaries of rangelands may straddle many *woredas* (districts) and *kebeles* (municipalities). More than one *woreda* or *kebele* office might be involved in the certification process. This increases the transaction costs of coordination among different units of governance, further complicating and hindering the process of recognising the boundaries and certifying the communal rights to rangelands.
- Clan and sub-clan structures themselves are a matter of concern because of their hierarchical and male-dominated (non-inclusive) structure that may marginalise women. If a legal entity holds a group title to such a landholding on behalf of a community, who decides on its members, who controls this entity, and to whom is it accountable?

An evaluation of the reports mentioned above will provide insights into how these difficulties could be overcome. This also concerns the question of women's rights,

14 Land certification has been implemented in Ethiopia since 1998. In 2016, out of 11.5 million rural households, 9.4 million received first level holding certificates (World Bank, 2016, p. 35). "Although this 'first level' land certification had a number of important impacts on tenure security and land-use practices on farms, a joint government – USAID assessment in 2004 indicated a need to improve tenure security by introducing cadastral maps and modern land registration. [...] the government expanded second level certification in partnership with other donors (the governments of Finland, Sweden, and the United Kingdom, and the World Bank) and invested an additional \$150 million to expand second level land certification for millions of small-scale farmers", but did not include the land of pastoral communities (Haddis, 2016).

especially since this is a conflict between statutory and customary rights (customary rules limit inheritance rights of women to land).

5.2.4 Coordination in land administration: federal versus regional authority

The 1995 FDRE Constitution vested regional governments with the power to administer land. Regional and local authorities have the responsibility to perform the broad administrative functions such as acquisition, transfer, registration, certification and management but do not have the human capacities needed to fulfil them. *Kebele* officers register community members holding rights and note names and areas as the basis for taxation. *Woreda* officers are intended to facilitate land transfer and help to implement irrigation projects after investment commissions have approved a project and signed the contract. The responsibility of monitoring and enforcing conditions attached to a project license also rests with *woreda* administrations. They are to enforce land expropriations that are decided by higher regional or federal government organs (G. T. Alemu, 2011, p. 18), and it is they that have to deal with the difficult task of handling grievances voiced by local people.

In 2008, land administration was re-centralised in order to curb the issuing of new land concessions and to institute federal control over these land deals. The federal government designated the Ministry of Agriculture as the lead agency for large-scale land deals and this was formally endorsed by the Council of Ministers in 2010. A unit was established within the Ministry of Agriculture, namely the Agriculture Investment Support Directorate (it was reorganised in 2013 as the Agriculture Investment Land Administration Agency) that was “responsible for attracting investors and providing investment support, but also [...] for the overall administration of all agricultural parcels exceeding 5,000 ha, including clarifying boundaries, holding records, and valuation” (World Bank, 2012, p. 30).

Regional governments were mandated to lease land tracts below 5,000 ha after Regional Investment Commissions had issued “licenses, and after either the federal Environmental Protection Agency or regional environmental protection offices had assessed the environmental soundness of a project” (G. Alemu, 2011, p. 6). However, “in 2012, Gambella and Benishangul Gumuz regional states [the hot spots of land transfers] were banned from transferring even less than 5,000 ha, and the mandate to transfer any land to investors [...] was completely given to the federal government” (Shete & Rutten, 2015 in LANDac, 2018, p. 6). Tamrat (2010, p. 249) questions the legitimacy of the re-centralisation of powers, and Tura (2018) argues that centralisation would affect the ability of regional states to protect land rights of local and indigenous people: “It is unclear as to why the Federal Government would own land and other natural resources in Oromia while there is a local Government which is responsible for taking care of the State matters.”

Moreover, approving the environmental soundness of land projects was delegated from the Federal Environmental Protection Agency to the Ministry of Agriculture in 2009 (see subsection 5.3) which led to “the implementation of investment projects before submission and approval of EIA” (Schoneveld & Shete, 2014, pp. 17-35). Concerned agencies such as the Ethiopian Wildlife Conservation Agency were often not consulted (G. T. Alemu, 2011; World Bank, 2016, p. 10; Interview 11).

To summarise: the land tenure systems in the lowlands of the Awash Basin are far from being straightforward. This concerns the legal framework as well as the de-facto allocation

of competences, in particular between the federal government and the regional governments. The local bodies (especially the *woredas*) which execute the expropriation and allocation of land, are confronted with the social distortions. There is a lack of socially fair legal provisions, administrative procedures, skills and manpower.

5.3 Focal action situation (AS2): Water allocation and irrigation management

Table 3: Actors and outcomes in action situation 2	
Actors	Ministry of Water, Irrigation, Energy; Ministry of Agriculture; Regional governments; Awash Basin Authority; Regional infrastructure bodies (for example, the Oromia Irrigation Development Authority, OIDA); Water User Associations; water managers of farms
Outcomes	Planning, licensing and implementation of irrigation, hydropower projects; approval of water permits as the key element of a water allocation regime; monitoring of conditions attached to water permits; operation, maintenance and repair of headworks (dams, reservoir, pumps) and main irrigation system up to service areas of WUAs and private farms, and within WUAs' service areas
Source: Authors	

Conflicts over water arose in the Awash River Basin during drought periods, but also under normal hydrological circumstances not as a consequence of physical scarcity but as a result of under-investments in hydraulic infrastructure and the poor operation and maintenance of the existing and inefficient on-farm water use. Competition under current water management practices is high and results in conflicts between upstream-downstream irrigation schemes, and between farms that irrigate and pastoral communities that lose access to waterholes.

Moreover, there is evidence that pastoralist communities and small farmers are losing out to large commercial farms or are being left behind because they have access to irrigation water on paper only. Large farms divert water to the detriment of small farms. Water scarcity does not only result from variable and irregular rainfall but from uncontrolled withdrawals. One reason for this is that water released, for instance, to the Kesseme State Farm cannot be measured because the diversion gate of the Kesseme Dam has been defective for at least the last two years – and nobody is willing to take on the responsibility and costs (Interview 15).

Crucial elements to deal with these challenges are i) a functioning water allocation regime that takes account of the water needs of smallholders and pastoral communities; and ii) professional, effective water management organisations – both of which are in the process of being developed.

5.3.1 The water allocation regime

Ethiopia adopted IWRM as a framework for water resources management in the early 2000s. This is evident in the various proclamations and regulations enacted to provide a legal framework for developing appropriate strategies (see Annex 3). The IWRM implementation process in Ethiopia mainly focuses on water allocation among competing users (Nigatu Mersha, 2015, p. 233). To this end, the country is still in the process of building a water allocation regime that is regarded as the key mechanism to manage the risk

of water shortages and adjudicate between competing users, especially in river basins which already have a high degree of utilisation such as the Awash River Basin. Endeavours to develop such a regime were already emphasised in the FDRE Constitution (1995) which ruled that water resources were not subject to private but to public ownership, vested in the State. Furthermore, the Ethiopian water resources management Proclamation No. 197/2000 forms the legal framework for a permit-based water allocation and utilisation, while vesting the power and responsibility of planning, management, allocation and protection in the Ministry of Water, Irrigation and Energy (MoWIE). The MoWIE can further delegate the power and responsibilities to lower levels of government, river basin councils and their executive arm, river basin authorities established following the River Basin Councils and Authorities Proclamation No. 534/2007. Water User Associations (WUAs) – as the lowest level of management – were formed only later following the Proclamation No. 841/2014.

Water permit applicants are required to submit investment certificates, environmental clearance documents (following Proclamation No. 299/2002), feasibility studies, documents clarifying land-use rights, no-objection letters from potentially affected communities or *woreda* administrations, specifications related to the source from which water will be abstracted, for what purpose, the irrigation technology used and on crops' monthly and annual water requirements (Interview 13). International experience suggests that water permits should be issued and approved on the basis of hydrological water balance studies, water resources management and water resources allocation plans including allocations for the rivers' ecosystem, which are in the process of being elaborated for all river basins.¹⁵ This knowledge of the water resource system is the most urgent requirement in the Awash River Basin since it forms the basis on which to decide how much water is available for expanding farmer-managed small-scale irrigation schemes (Interview 21). However, data on water availability, water permits already approved and water actually utilised by permit holders are not available in a systematic and reliable manner.

In actual fact, existing water permits are more of an administrative issue than an effective instrument to balance demands, since not all users in the basin hold a permit, and water abstractions are in most cases not measurable. Gauging stations are outdated, and measurement devices at head gates, diversion weirs and canals are non-existent: "We do not know the exact quantity we deliver, and water controllers and gate operators at big diversion points make rough guesses" (Interview 13). The water permit of the WUA in the *kebele* Dire Sede does not specify the amount of water it is entitled or limited to receive (Interview 19). It only gets water that is in excess of the actual demand of the Nura Era estate (Interview 19). Metahara State Farm holds a water permit for 12,000 cubic metre/sec approved by the Awash Basin Authority (ABA), but water released from the diversion weir cannot be measured for technical reasons (Interviews 17, 16). Environmental clearance documents are either not handed in or permits for large irrigation projects are assigned at the "highest level", that is, approval is beyond the mandate of the Awash Basin Authority (Interviews 7, 13).

Administrative guidelines are being developed that specify eligibility criteria for water resources, requirements for applications, issuance, duration, suspension and revocation of

15 In the lowlands, the entire base flows are diverted for irrigation schemes (Mendes & Paglietti, 2015, p. 12). Where minimum instream flow requirements are considered by the MoWIE, water availability for irrigation and other uses is restricted. As of now, 10 per cent of the total flow delivered from the reservoirs are released which might not be sufficient to sustain the various services provided by a river's ecosystem (Forslund et al., 2009).

water permits. Legally, access to water for rural populations, smallholders and pastoralists is exempted from water permit applications (Interview 13). Van Koppen and Schreiner argue that, in the case of conflicts, these users have a weak legal standing and a weak position compared to permitted users (van Koppen & Schreiner, 2018).

The implementation of an effective allocation regime is also impeded by disputes regarding the sharing of competencies between the federal ministry, the regional states and river basin authorities on who has the authority to issue water permits. The FDRE Constitution (1995) rules that trans-boundary and inter-regional water bodies are under the control of the Ministry of Water, Irrigation and Energy. Only rivers that do not hydrologically link regions are under the jurisdiction of Regional States.¹⁶

The Ministry can delegate its powers to regional states as well as to river basin organisations (such as the ABA). However, in practice there is “no clear demarcation between our authority (basin authority) and the regional governments on issuing permits” (Interview 13). According to Hailu et al. (2017, p. 11), “regional states believe that the powers and duties of the basin authority are unconstitutional because they conflict with the powers and duties given to the regional states as stated in the Article 52 of the Constitution”. Imeru Tamrat, a water law expert, advocates for a stronger role of the regional states and River Basin Authorities, and that some mandates given to the Ministry of Water Resources should be delegated to the respective regional state or alternatively to a body in which the regional states have a voice in decision-making (Tamrat, 2009).

Whether, and to what extent, the restructuring of the state apparatus for water allocation and management that was underway during the field work of the current study has addressed the issue of the unclear division of mandates among regional governments, MoWIE and ABA has yet to be assessed. All river basin authorities are now subordinate to or part of the MoWIE. It also remains to be assessed, in which way this reform has improved the financial basis of basin authorities, so that they are able to carry out their administrative and regulatory roles (Hailu et al., 2017).

Prior to restructuring, there was a two-tier organisational set-up, namely the Basin High Councils, the highest political, strategic decision-making body, and the basin authorities being the administrative, technical arm of the High Basin Councils. In the Awash High Basin Council, for instance, five regional states, two city administrations as well as representatives of federal ministries (Agriculture; Water, Irrigation and Energy; Environment, Forestry and Climate Commission; and Finance) were represented and headed by the Deputy to the Prime Minister. The Basin High Council was mandated to decide on master plans, water resources management and water allocation plans to balance sectoral demands, while the ABA prepared basin plans, issued permits, and monitored compliance. The high-level composition of the Awash High Basin Council and unclear competencies and roles of different members in the process of approving water permits hinder its efficient and effective functioning.

16 Whether this applies to tributaries lying completely within one region (for instance, the Kessem River) but discharging into an inter-regional river, like the Awash River, is controversial.

5.3.2 Provision of rules for management of irrigation schemes

Management from the headworks down to the service areas of Water User Associations is a complex issue since the irrigation schemes (or farm units) are technically linked and served by one common source (common pool). It depends on the management of the hydraulic infrastructure whether water distribution complies with individual permits. In this respect, clear assignment of responsibilities and coordination at all levels is required (see Table 4, which indicates the variety of management units to deal with management tasks).

Technical system	Management unit	Tasks
Headworks (dam, reservoir, pumps), main conveyance canals	Awash Basin Authority, regional infrastructure body (for example, OIDA), contracted operator or WUA	Water distribution, maintenance, repair, collection of user charges
Secondary canals with diversion structures	WUA, if located in its service area and transferred to it	Water distribution, maintenance, repair
Canal system in service area of WUA up to farm gates	Management committee of WUA, to be supported by local administrations	Water distribution, maintenance, repair, collection of user charges
Source: Authors		

There is some evidence that mandates to operate headworks and main conveyance canals are not clearly assigned and that local institutions, both state and farmer organisations, are overstretched. For instance, a canal built by Oromia Irrigation Development Authority (OIDA) was never operational and never delivered water to the WUA Ediget Filagot (Interview 19). The diversion gate of the Kessem Dam has been defective for the last two years. A WUA in the Boset-Fentale irrigation scheme cannot afford to remove sediments from the unlined canals with the consequence that they do not get water. It has yet to be clarified who is responsible for repairs and who bears the associated costs (Interview 15).

With the new Proclamation on Irrigation Water Users' Associations No. 841 of 2014, which replaced the Cooperative Societies Proclamation, management of modern and upgraded traditional irrigation schemes is devolved to WUAs.¹⁷ Membership is no longer voluntary for farmers who belong to one irrigation scheme. WUAs are membership-based, non-profit organisations governed by their General Assembly where any member has at least one vote. However, WUAs are not fully self-governed entities but are under the control of the MoWIE (Hailelassie et al., 2016) which holds considerable decision-making power.

A WUA's mandate embraces water distribution, and operation and maintenance of the infrastructure, and the collection of service charges. Depending on the transfer contract, its obligations can also embrace the management of headworks, but its core obligation is the operation and maintenance of the irrigation infrastructure within its command area up to farm gates. Its management committee, the members of whom are elected by and out of WUA members and appointed by the Bureau of Cooperation and Promotion and the Bureau of Agriculture, bears full responsibility for operation and maintenance of the scheme but

¹⁷ The Proclamation does not specify whether traditional institutions are recognised.

has limited authority and financial means to do so.¹⁸ The new Proclamation no longer insists on the principle of recovering costs only from member contributions but has yet to specify where financial support has to come from.

According to the Proclamation, establishing WUAs and their operations are to be supported by local administrative units, namely *woredas* and *kebeles*. However, neither the *woreda* water officers' responsibility nor the *kebele*'s development agents' mandates at present embrace irrigation advisory services. Staff are not trained in irrigation system management and irrigated agriculture. The *woredas*' water officers are concerned with the provision of fertiliser and marketing the produce, while the development agents at *kebele*-level provide extension services related to animals and crops but not on irrigation practices.

The reports reviewed and the interviewees stress that the capacity of farmers needs to be assessed prior to establishing WUAs (MoA (Ministry of Agriculture) Natural Resources Management Directorate, 2011) so that schemes do not fail after commissioning (canals and pumps of surface irrigation systems became defunct shortly after construction because they were not properly managed). Because farmers are not experienced in managing irrigation schemes and in on-farm water use (MoA Natural Resources Management Directorate, 2011, pp. 22ff.), on-farm water-use efficiency is poor and this holds true for both small and large farms. The productivity of land of the Metahara State Farm for example decreased due to poor water management because fields were not adequately prepared for basin and furrow irrigation (land levelling); crop types and crops' water requirements, soil characteristics, irrigation methods and irrigation timing are not seriously considered. Irrigation schemes lack on- and off-farm drainage systems resulting in the salinisation of soils and waterlogged areas, and farmers experience total crop failure and low yields while others abandon their plots (MoA Natural Resources Management Directorate, 2011).

Both the Ministry of Agriculture and the Ministry of Water, Irrigation and Energy as well as *woreda* officers are well aware of the need to establish advisory services to support both WUAs and farmers practicing irrigation (Interviews 6, 18, 22). This appears to be most critical for irrigation schemes that are to be managed by former pastoralists. The Oromia Regional Government, for instance, recently developed large schemes in the *woreda* Fentale and distributed land to former pastoralists in an effort to encourage them to move out of the highly vulnerable pastoralist production system. The government transferred the Oromia Irrigation Development Authority (OIDA) to the Oromia Bureau of Agriculture whose development agents are now also responsible for irrigation activities (“[...]they can use the same human resources [...] for their irrigation activity” (Interview 22)). However, these agents are trained for rain-fed agriculture and not for managing irrigation schemes and on-farm water use (Interview 4; MoA Natural Resources Management Directorate, 2011; Interview 21). One issue complicating the picture is that the agricultural development officers are responsible for schemes of up to 200 ha. Since there are “small” schemes that are larger than 200 ha (some cover 600 or 1,000 ha), there is no extension service for them at all because these schemes are declared small-scale. On the other hand, the Ministry of

18 A study was commissioned by the Awash Basin Authority to detail the tariff system, administrative and financing issues. International experience suggests that governments have to co-finance recurrent costs since cost recovery only from user charges has not been achieved anywhere (Cornish, Perry, & van Steenbergen, 2004).

Water, Irrigation and Energy only assumes responsibility for schemes larger than 200 ha (Interview 4; MoA Natural Resources Management Directorate, 2011).

In short, while Ethiopia is on the way to developing both a water allocation regime and local management organisations, the challenges are enormous. These relate to the sharing of responsibilities (mandates) between the federal and regional governments, and the empowerment of *woredas* and *kebeles* in both technical and financial terms. Considerable efforts are needed to improve knowledge about the water resources to be managed and to develop allocation and management plans. Farmer organisations need support to manage complex irrigation systems and irrigated agriculture, all the more so as some farmers are complete newcomers (either former pastoralists or rain-fed cultivators).

5.4 Action situation 3: Environmental impact assessment – key instrument for balancing social, economic and ecological goals

Table 5: Actors and outcomes in action situation 3	
Actors	Environment, Forest and Climate Change Commission (EIA Department); project proponent; licensing agency; investment agency; sector ministries; community in project area; development banks; donors
Outcomes	Environmental clearance certificates; approving and monitoring Environmental Management Plans and Resettlement Action Plans
Source: Authors	

Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs) are planning instruments that have the potential for and aim at integrating environmental and social concerns into the planning and implementation of projects. For this reason, they also have the potential to avoid or minimise the trade-offs among SDGs and targets focusing on social, economic and ecological dimensions of sustainability. However, as we see in the operational action arena, there are significant trade-offs among SDGs 8 (economic), 1 and 2 (food and poverty) and 15 (sustainable land ecosystems). In this subsection, we assess how effective the EIA instrument is to bring coherence among the various different goals.

In Ethiopia, the EIA became a statutory instrument in 2002 (EIA Proclamation No. 299) (FDRE, 2002a). Since then, the licensing of projects (dams, reservoirs, irrigation projects) and decisions on water permits rely on the issuance of Environmental Clearance Certificates by the Federal Commission for the Environment, Forest and Climate Change (formerly, the Environment Protection Authority (EPA)). Only then has a project developer, be he/she public or private, domestic or foreign, the right to develop and use water resources. The same applies to allocation of land titles and authorising land-use changes. The respective authorities are required to check the verified environmental and social soundness of a project prior to approval. Managing the EIA process is shared between the federal level (namely the Federal Commission with its EIA Directorate), Regional Bureaus and the environmental units of sector agencies, while final decisions about projects rest with the respective authorising agencies, in most cases at the federal level.

Referring to international practices, the World Bank rates the Ethiopian EIA system as not being effective (Danyo et al., 2017). Major investment projects (such as highways or railways) commenced without EIAs. Sugarcane cultivation areas have been expanded onto the Awash National Park's area or on pastoralists' rangelands despite their negative effects on ecology and the security of pastoral livelihoods (Interviews 11, 20). Environmental Impact Studies (EISs) were not published and, even when they were, had no influence on decisions taken. Frequently, actors from the federal government intervened in favour of projects, arguing they would promise great economic benefits (Interviews 8, 7, 11, 13, 27; Damtie & Bayou, 2008). The outcome of not applying EIA, or of EIAs of poor quality, has had negative effects in both ecological and social terms.

Where the assessment of social impacts is concerned, the Ethiopian EIA system is particularly weak. Mandatory procedures regarding public meetings, consultations with affected communities, information dissemination and disclosure are not effective (Interview 7).¹⁹ What is more, it is not yet clear which authority is the lead authority in assessing social impacts and developing and monitoring the implementation of resettlement action plans. So far, the Constitution stipulates that no compensation is payable for the expropriation of land, but this only applies to assets on the land. However, guidelines to enforce compensation for assets on land have yet to be developed (Interview 7).

Regarding other aspects of the legal framework (see Annex 4), the character of the EIA Proclamation requires secondary, regulatory legislation such as a binding EIA directive, sectoral guidelines, and threshold values. To make the draft EIA Directive implementable, operational rules – yet not existent – are necessary to guide administrations. Meanwhile, some are at various stages of development.

Along with legal deficiencies, the EIA system is also “distorted” (Danyo et al., 2017, p. 10) because the powers of EPA (now the Federal Commission) have been delegated to sector agencies (Janka, 2012, footnote 488), while international practice suggests that Environmental Clearance Certificates should be decided by an appointed independent commission in which relevant stakeholders are represented. At the time of our field research (November 2018), the Commissioner had written a letter to the Prime Minister to revoke this decision since some obstacles (such as the number of qualified staff) no longer existed (Interview 8).

Overall, the Federal Commission has a weak status in the government hierarchy. It is a regulatory organ accountable to the Prime Minister's Office, but “most government offices are hierarchically at a higher level than the EPA (now, the Federal Commission), which prevents EPA from regulating the activities of those government offices” (Damtie & Bayou, 2008, p. 41). Whether the role of the Federal Commission has been upgraded with the reshuffling of the ministerial landscape in late 2018 remains to be seen (Interviews 8, 11).

Moreover, whether EIA regulations are binding on other ministries and licensing authorities as ruled in the EIA Proclamation No. 299 is also not entirely clear. While some licensing authorities have incorporated EIA requirements, others have not, among them the Investment Agency and this has implications for land deals. The House of People's

19 However, if projects are funded by the World Bank or the African Development Bank, for example, Ethiopia follows the Banks' respective safeguards ((FDRE, 2013), Environmental and Social Management Framework (FDRE, 2012), Megech (Seraba) Pump Irrigation and Drainage Project).

Representatives could have made Environmental Clearance Certification a requirement for the Investment Proclamation (No. 375/2003) and the Trade and Business Licensing Proclamation (No. 686/ 2010), but failed to do so (Janka, 2012, p. 116).

The EIA system needs to be strengthened particularly at the operational level in order to match the wide range of responsibilities of the Federal Commission and the Regional Environmental Bureaus with adequate human, technical and financial resources (Interviews 7, 8). Within the Federal Commission and the regional bureaus, qualified consultants and trained practitioners, and access to internet services, laboratories and so on are missing (Damtie & Bayou, 2008; Tekelemichael, 2002). Capacity constraints are even worse at the local level (zones, *woredas*, *kebeles*) with wide negative implications for the quality of EIS reports, and the EIA process in general (Interview 7).

6 National planning process and mainstreaming of the 2030 Agenda – constitutional-choice level

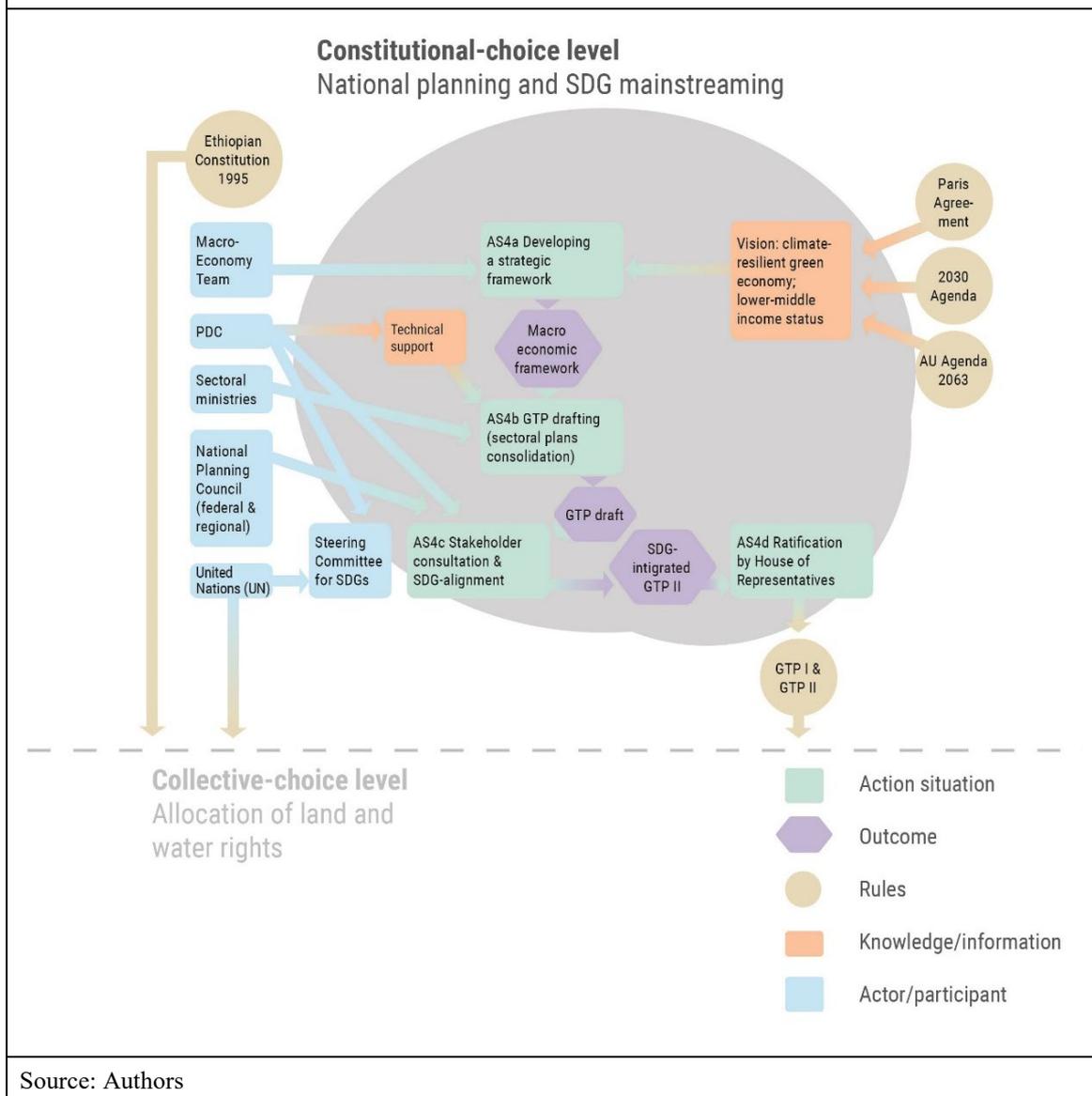
Table 6: Actors and outcomes in action situation 4	
Actors	Planning and Development Commission (PDC); Ministry of Finance and Economic Development (MoFED); National Bank of Ethiopia (NBE); Ministry of Revenue (MoR); Council of Ministers (plus all line ministries for draft of sectoral plans); city administrations; civil society stakeholders; UNDP; regional state governments; Central Statistical Agency
Outcomes	Provision of long-term strategic plans (GTP I and II); Constitutional Amendments; Mainstreaming of SDGs into the national planning frameworks
Source: Authors	

6.1 Action situation 4: The national planning process

The Ethiopian government's economic programme is defined in national five-year plans referred to as Growth and Transformation Plans (GTPs). GTP I (2010-2015) focused on increasing agricultural productivity and accelerating growth through substantial public investment in infrastructure. GTP II (2015-2020) built on and advanced reform efforts launched under the GTP I. The preparation and ratification of the GTP occurs in a sequence of action situations involving various actors influenced by several institutions that are briefly described below. Further, the process of mainstreaming the SDGs into the national development plan (discussed in subsection 6.2) is also part of the constitutional-choice action arena (see Figure 8).

The key institution in the national planning process is the Planning and Development Commission (PDC), which was created in 2013 under the title of National Planning Commission (NPC) and has ministerial status.

Figure 8: National planning process and mainstreaming SDGs at the constitutional-choice level



At the first stage (AS4a), a Macro-Economy Team consisting of representatives from the PDC, the Ministry of Finance and Economic Development (MoFED), the National Bank of Ethiopia (NBE), and the Ministry of Revenue (MoR) develops a macro-economic framework. Essentially, the macro-economic framework is based on Ethiopia’s long-term strategic vision to become a lower-middle-income country with a climate-resilient green economy by 2025, which was first formulated in 2011 (Ayalew, 2013). In addition, the macro-economic framework for GTP II also considered global and regional agreements and agendas such as the African Union’s Agenda 2063, the Paris Agreement, and the 2030 Agenda (Interview 28).

At the second stage (AS4b), the macro-framework is transmitted to line ministries, together with guidelines and directions for the formulation of their respective sectoral plans and targets. Throughout the process of preparing sectoral plans, line ministries receive technical support and orientation from the PDC. The PDC then consolidates the individual, sectoral plans into a coordinated set of plans that constitutes the first draft version of the GTP.

At the third stage (AS4c), the draft version of the GTP is submitted for review to the Council of Ministers as well as by the National Planning Council in which the country's regions are represented by their respective heads of government. In addition, a nationwide multi-stakeholder consultation process is conducted. The PDC then integrates feedback from the review into the draft. In the case of GTP II, the PDC was tasked with integrating the SDGs into the existing national development framework (FDRE, 2017a). The presentation of the draft to city administrations and other stakeholders during the consultation process therefore officially served the purpose of enabling them to fully understand and own the SDG-aligned GTP II (FDRE, 2017a). However – and as has been the case with previous national development plans (Haile, 2015) – the fact that the stakeholder consultation for GTP II occurred at a rather late phase in the planning process suggests that this exercise primarily aimed at raising awareness and building endorsement among stakeholders rather than collecting their input.

At the fourth and final stage (AS4d), the revised GTP is presented to the House of People's Representatives for ratification, upon which it becomes a legally binding document for the next five years.

The Ethiopian Constitution of 1995 (Article 52, 2c) mandates regional states to formulate and execute their own policies, strategies and plans. Regional planning cycles are consistent with the national planning cycle. Regional state governments have their own planning units which compile the sectoral plans formulated by the regional sector bureaus into regional five-year planning documents (Interviews 5 and 28). While regional development plans attempt to reflect regional priorities and needs, they can be considered as sub-sets of the national GTP II given their strong alignment with the strategic directions provided by the national planning framework (Interview 26). Interview partners from donor organisations have stressed the high degree of bindingness of GTP II across all levels of government as a characteristic that sets Ethiopia apart from many other developing economies. As one interviewee put it:

I'm always impressed, when I talk to some regional administration in a remote area, and they tell me: 'I haven't experienced anything like it before, that a [national planning] document is not just written to fill the drawers or attract donor funds, but that it is really a very actively pursued document – in the sense of really trying to fill it with life. It is also good that the level of achievement of regional or local administrations are [sic.] measured against the achievement of GTP II. (Interview 5)

Some interview partners attributed the high commitment to the national development plan to Ethiopia's tradition of a socialist planned economy. Officials at sub-national level consistently described GTP II as their main point of reference in interviews. By comparison, awareness and ownership of the 2030 Agenda was much lower at the sub-national level. The general perception among interviewees appeared to be that the SDGs had been fully mainstreamed into GTP II and that, consequently, pursuing GTP II was equivalent to pursuing the 2030 Agenda.

In order to examine this perception critically, the following subsection will provide an overview and discussion of the measures undertaken by Ethiopia to integrate the 2030 Agenda into its national planning framework.

6.1 Mainstreaming the SDGs into the national planning process

The rationale behind examining the process of integrating SDGs into the national planning is the hypothesis that the process has the potential to achieve coherence across sectoral policies and thereby avoid trade-offs among goals. Further, adopting the principles of the 2030 Agenda could be helpful in effective inclusion of stakeholders from lower levels of governance in the decision-making processes. Our assessment of the SDG integration process is presented in this subsection.

We follow Allen, Metternicht and Wiedmann (2018), who distinguish between two essential categories of recommended measures to support integrated and coherent SDG implementation. The first category comprises *initial process steps* for the establishment of institutional structures and procedures to enable countries to take stock of their current standing, to formulate priorities, and to inform their policy planning cycle. The second category of *evidence- and science-based approaches* covers methodologies to facilitate data-based monitoring and evaluation of SDG progress; mapping and assessing of SDG interlinkages; and developing strategies to realise synergies and mitigate trade-offs between the SDGs and their targets. In the following, we will use these categories to structure our discussion of SDG governance, planning and monitoring in Ethiopia.

6.1.1 Initial process steps for national SDG implementation in Ethiopia

The first step towards SDG implementation is to either create an institutional body to govern and coordinate the SDG process or to confer this task on an already existing institution²⁰. Initially, Ethiopia did not set up a new institution but instead tasked the Planning and Development Commission (PDC) with integrating the SDGs into the national development framework (FDRE, 2017a). The Ethiopian Federal Government is responsible for designing and implementing vertically coherent and horizontally consistent National Development Plans based on national development needs and priorities. However, in this context, it is important to note that sector ministries or other government agencies do not have a formal representative inside the PDC. Furthermore, neither sub-national entities (regions and local governments) nor non-state stakeholders are formally represented in the PDC. The institutional structure of the PDC is thus not ideally suited to promoting cross-sectoral horizontal and vertical coherence in the implementation of the SDGs. In view of this, the Ethiopian government and United Nations Development Programme (UNDP) agreed on the establishment of a steering committee for the implementation of the SDGs, which was instituted in 2019. The new committee is co-chaired by the director of the PDC and the UN Resident Coordinator and counts on representation from several sector ministers (including the Ministry of Agriculture, and the Ministry of Water Irrigation and Energy), UN agencies, the private sector and various CSOs. Yet, the regional states continue without representation in the new SDG governance mechanism.

20 In the Global Indicator Framework, the official indicator to measure progress in this regard, is 17.14.1 “number of Countries that have mechanism in place to enhance policy coherence for sustainable development”.

Mainstreaming SDGs into the national planning framework

The adoption of the 2030 Agenda in 2015 slightly preceded Ethiopia's GTP II, which was adopted in May 2016. Capitalising on this timely coincidence, the government made a strong point in framing its "commitment to the Sustainable Development Goals (SDGs) [as a] basis for the formulation the Second Growth and Transformation Plan" (FDRE, 2016c, p. ix). However, throughout the 225 pages of GTP II, the SDGs are only mentioned explicitly three times. The scarcity of references to the 2030 Agenda leaves one with the impression that the degree of mainstreaming the SDGs into GTP II is rather weak. This impression is reinforced when looking at the manner in which the SDGs were aligned with GTP II and the priorities for GTP II were set:

Ethiopia presented its first Voluntary National Review (VNR) in 2017. This document contains a table that lists the ten national development priorities defined by the GTP II and provides a visual overview of the individual SDGs that are considered to be related to each of these priorities. However, this mapping exercise remains at goal level and no explanation about the underlying methodology is given.

Unlike a number of other countries²¹ who used the Rapid Integrated Assessment (RIA) of the United Nations Development Programme (UNDP, 2017) toolkit to measure the alignment between SDG targets and the targets of their national planning frameworks, the VNR of Ethiopia remains opaque about how the alignment was determined. Remarkably, a high effectiveness is attributed to national priorities related to economic growth and productivity gains in agriculture and industry. For example, Priority no. 1 (agricultural sector development as a major source of economic growth) alone is deemed to contribute to the achievement of eleven SDGs (including, for example, SDG 10 "reduced inequalities", SDG 14 "life below water", and SDG 15 "life on land"). However, the pathways by which industrialisation of agricultural development would lead to achievement of these SDGs are not elucidated. Overall, the VNR fails to develop a strong and convincing narrative to explain the relationship between Ethiopia's development priorities and the global SDGs.

Another detail, which is noteworthy in the context of this particular study, is the fact that only one national priority (no. 10: Eliminate rent-seeking behaviours and ensure the predominance of a developmental frame of mind) is seen as contributing to SDG 16 on peace, justice and strong institutions. At the same time, there appears to be a relatively high degree of continuity in pre- and post-2015 national planning: Six out of the nine strategic pillars of GTP II were already covered either fully or at least partially by the preceding GTP I.

The above observations suggest that in Ethiopia, mainstreaming the SDGs into the national planning framework has, to some extent, been an exercise of adapting previously existing national priorities to the rhetoric of the 2030 Agenda, rather than a real shift in paradigm between GTP I and GTP II.

21 For instance, Republic of Albania, 2018; Republic of Benin, 2018; Royal Government of Bhutan, 2018, Republic of Namibia, 2018 and Republic of Paraguay, 2018.

Monitoring and reviewing SDG implementation

SDG monitoring and review is carried out within the established monitoring procedures of the GTP (FDRE, 2017a, p. 38). The current national monitoring and evaluation (M&E) system was installed in 1996 for the purpose of conducting the Welfare Monitoring Survey.²² Based on their annual sectoral plans, which are aligned with the GTP, sector ministries produce Annual Performance Reports (APRs) that are submitted to the PDC which uses them as input for the preparation of the APR of the overall GTP. Seventy per cent of the data used for GTP performance monitoring come from sectoral APRs. The remaining data are sourced from sample survey reports, census reports, and inventories provided by the Central Statistical Agency (FDRE, 2017a), which is directly accountable to the PDC. Both GTP II and Ethiopia's VNR of 2017 mention the need and related efforts to strengthen the institutional structure, organisational arrangement and human resource capacities of the national M&E system. One structural, organisational flaw, for example, flagged by one of our interview partners, is that M&E units of sectoral and regional institutions are frequently located within the departments for technical support and supply whose staff is inadequately trained in M&E techniques.

6.1.2 Evidence- and science-based approaches to SDG implementation

So far, Ethiopia has only applied (or commenced applying) a few evidence- and science-based approaches to SDG implementation. As part of its 2017 VNR, Ethiopia undertook a thematic review of the six selected SDGs under thematic review at the 2017 UN High-Level Political Forum for Sustainable Development (HLPF).²³ This review was presented in the form of a text-based narrative highlighting a few selected indicators. Furthermore, Ethiopia can be said to have established at least a partial baseline for an indicator-based assessment of SDG achievement. While the main text of GTP II does not explicitly refer to SDG targets, the document is accompanied by a “policy matrix” (FDRE, 2016b) which informs about baseline indicator values in 2014/2015 and annual projected indicator values until 2019/2020. An additional column in the matrix informs about the SDG targets to which each of the objectives is supposed to contribute.

In total, the GTP II policy matrix contains 161 indicators. To assess the alignment of these indicators with the 2030 Agenda, we systematically compared them with the 232 indicators proposed in the Global Indicator Framework for the Sustainable Development Goals adopted by the UN General Assembly (United Nations, 2018a). To determine the degree of alignment, we used criteria similar to those proposed in the United Nations Development Programme (UNDP) (2017) RIA toolkit. For each GTP II indicator, we checked whether it has an equivalent or close match in the Global Indicator Framework and then assigned it to one of the following three categories:

22 The Welfare Monitoring Survey of 1996 was the first of its kind conducted in Ethiopia. It focused on wide range of socioeconomic indicators, which constitute vital inputs in the process of monitoring and evaluation of poverty reduction strategies (“Ethiopia - Welfare Monitoring Survey 1995-1996 (online)”, IHSN [International Household Survey Network], 2011).

23 SDG 1 (poverty), SDG 2 (hunger), SDG 3 (health), SDG 5 (gender equality), SDG 9 (infrastructure, industrialisation and innovation), and SDG 14 (life under water).

Well aligned: There is a target indicator in GTP II that has either i) a perfect match among the Global Framework indicators; or ii) a close match, that is, an indicator that is similar in scope and ambition.

Partially aligned: There is a target indicator in GTP II that corresponds to an indicator in the Global Indicator Framework but remains behind it in scope and/or ambition.

Not aligned: The GTP II indicator has no equivalent or close or distant match in the Global Indicator Framework.

Applying these criteria, we found that 29 of the GTP II indicators are well aligned, 86 are partially aligned and 46 are not aligned. Detailed information alignment of GTP II indicators and SDG indicators is provided in Annex 7. Furthermore, at the time of field data collection for this study, an analysis to identify data gaps for tracking and monitoring SDG progress and to assess SDG costs and financing needs were being conducted by a British private consultancy firm with financial support from UNDP (Adem, 2018).

Summing up this section, we have shown that Ethiopia has thus far completed several *initial process steps* in national SDG implementation. These steps include the designation of an institution in charge of coordinating SDG implementation; the conduction of multi-stakeholder consultations; the mapping of the SDGs against the objectives of the national development plan (at goal level); the national prioritisation of the SDGs; and the mainstreaming of the SDGs in the existing national development framework. An additional step, the setting-up of monitoring and review arrangements, has been commenced. It can thus be said that some of the most important *outputs* to coordinate and oversee efforts towards SDG attainment have been produced (Young, 2017). However, from the above, it is also apparent that the Ethiopian SDG governance architecture is still in flux and there is considerable room for improvement in the quality of activities related to SDG implementation.

Regarding *evidence and science-based approaches*, only one such approach (thematic review of selected SDGs) has been applied and three further approaches have been initiated, namely data gap analysis; indicator-based assessment; and SDG costs and needs assessment. These are mainly approaches that aim at the data-based monitoring and evaluation of the SDGs and can be applied comparatively easily, provided that the empirical data necessary for this are already available. However, Ethiopia has not yet applied more sophisticated approaches aimed at mapping and assessing SDG interlinkages or developing strategies to address SDG interdependencies. This is problematic as the continuation of a “siloeed” approach towards development could jeopardise the full realisation of the transformative potential of the SDGs. In other words, the groundwork to allow for the *outcome* of behavioural adjustments, which are needed to pursue a more integrated development approach, has not yet been laid.

It is only fair to say, though, that Ethiopia is not an exception in this regard. As Allen et al. (2018) show, so far, gaps relating to the assessment of interlinkages and the application of systems thinking and analysis are consistent across most countries, regardless of their level of development. As these authors point out, this can likely be attributed to a lack of technical capacity since the adoption of such approaches will require countries to acquire new skillsets through training and education (Allen et al., 2018, p. 19).

7 Communication and coordination among actors across action situations

In order to illustrate the coordination challenges described in the previous chapters and to examine them in detail, we present – in the following – the results of our Social Network Analysis (SNA). SNA is a relational approach that focuses on the identification of structural characteristics of actor networks (Breuer et al., 2018; Ward et al., 2011). SNA investigates and visualises “links” between “nodes” – with “nodes” representing actors, and “links” representing the relation between these actors. The quality of any network is a function of the attributes of the actors involved, while the strength of their linkages and different structures may have differing implications for the distribution of power and the effectiveness of communication flows within the network (Wasserman and Faust, 2006; (Hafner-Burton, Kahler, & Montgomery, 2009; Hulse et al., 2018). One goal in analysing network structures is the identification of actors who have influence based on their position in the network (Schiffer & Hauck, 2010). Another goal can be to detect actors that are well positioned to act as mediators or brokers within their network (Hulse et al., 2018). This is usually done by calculating different indicators such as network density, centrality, or connectivity, each of which pertain to particular dimensions of the network (Schiffer & Hauck, 2010).

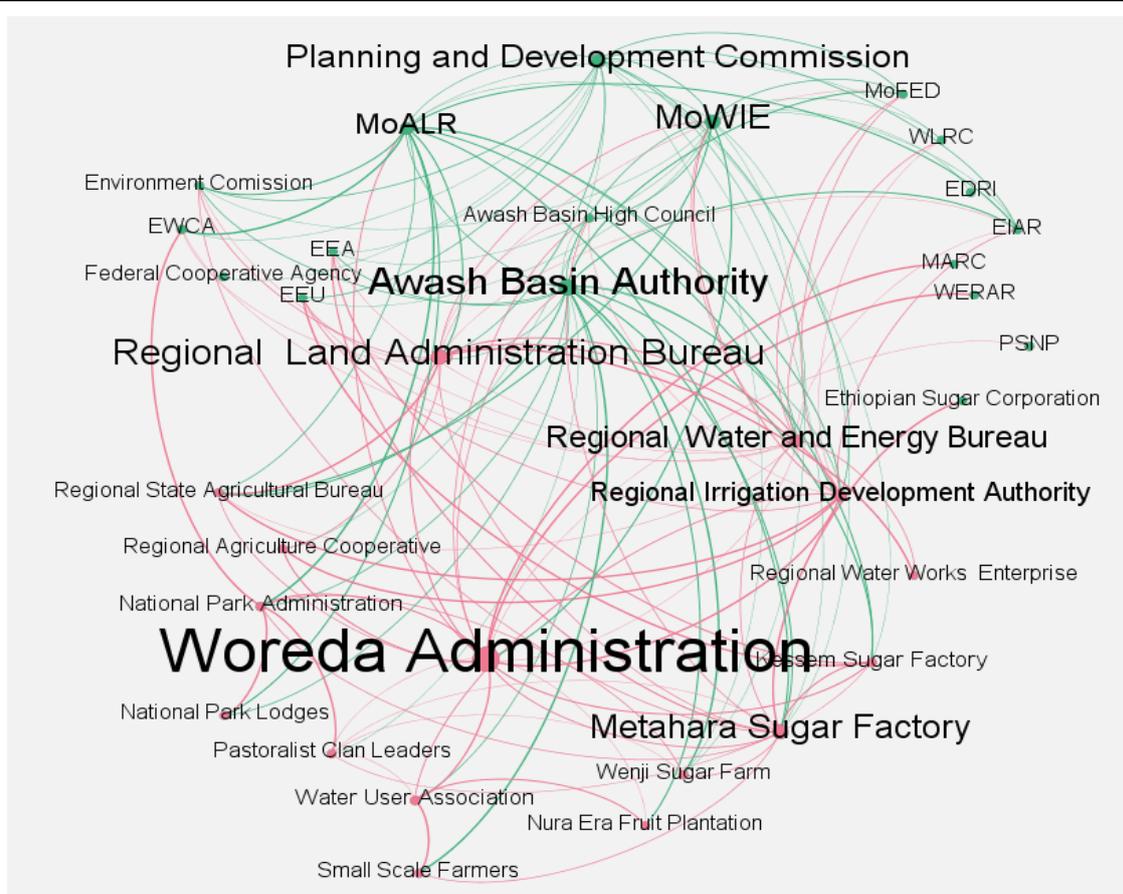
For the purpose of our study, which is concerned with identifying conditions that foster or hinder coordination in the existing WEF-nexus governance mechanisms, the most important network features are the existence of “bridging” linkages and the frequency of interaction between actors. To obtain this information, we developed a survey questionnaire that asked respondents to indicate whether, over the past twelve months, they had communicated with other national WEF-actors either at the federal level or within their regional state and if so, with what frequency.²⁴ The resulting network consisted of 35 actors, of whom 16 participated in the survey.²⁵

The network graph shown in Figure 9 was obtained by aggregating the individual respondents’ statements, using the visualisation software “GEPHI”. The network graph consists of two major components: nodes (circles) representing actors; and edges (connective lines) representing the communication between actors. The thickness of an edge increases with the frequency of communication with other actors as stated by the respondent. The colour of an edge corresponds to its source (that is, the actor from which communication originates). It is important to note, though, that edges do neither inform about the quality nor the form of communication (that is, written, phone, or personal contact), nor the exact content of the communication. To obtain this information, it is necessary to contextualise network data with the data collected in the qualitative expert interviews. The size of nodes and their descriptive labels²⁶ increases with the degree of actors’ betweenness centrality.

24 Answer options included: never, once a year, quarterly, monthly, or weekly.

25 The original, bigger network also included international actors such as intergovernmental organisations (IGOs) and bilateral donors (58 actors, 19 survey participants). However, in the end we decided to exclude international actors because they are not relevant to our central research question (horizontal and vertical domestic coordination) and made the network very convoluted and difficult to interpret.

26 For better readability, the names of some actors have been shortened. A table with full names that ranks actors according to their betweenness centrality is given in Annex 5.

Figure 9: Network of communication between WEF-nexus actors

Source: Authors

Betweenness centrality is an indicator that measures the number of times a particular actor functions as a “bridge” along the shortest path between two other actors. In relation to communication networks, betweenness centrality indicates the level of influence over the flow of resources within a network, with higher betweenness implying a higher level of influence. High betweenness centrality may indicate an actor’s potential to perform a role as a mediator or coordinator who links subgroups of the network by channelling information from one group to another and by brokering between the interests of different subgroups. However, there is also a risk that a central actor who does not properly fulfil his/her role becomes a bottleneck that prevents the efficient flow of communication through the network and hampers the reconciliation of diverging interests in the network (Hulse et al., 2018; Janssen et al., 2006; Schiffer & Hauck, 2010). Table 7 lists the six actors with the highest betweenness centrality.

Name	Betweenness centrality value
<i>Woreda</i> Administration	189.20
Awash Basin Authority	83.31
Regional Environment and Land Administration Bureau	76.47
Metahara Sugar Factory	65.66
Ministry of Water, Irrigation and Electricity (MoWIE)	65.20
Planning and Development Commission	56.23
Source: Authors	

7.1 Discussion of betweenness centrality values

As can be seen from the network graph in Figure 9 and Table 3, the actor with the highest betweenness centrality is the *woreda* administration. Particularly, the *woreda* administration acts as a bridge between several local actors that are otherwise not connected to higher levels of government. It thus plays an important role in vertical coordination. As has already been pointed out in the previous sections, the *woreda* administration has been assigned a broad array of tasks that include the provision of input for sectoral planning; the facilitation of land transfers; the support in the implementation of approved projects; the monitoring and enforcement of the conditions attached to project licenses; and the enforcement of land expropriations that are decided at higher levels of government; as well as dealing with the grievances and complaints of those affected by these expropriations. The *woreda* also attempts to intervene as mediator between upstream large-scale holders and downstream small-scale holders in the case of resource conflicts during drought (Interview 18). In addition, the *woreda* collects data from local actors that are necessary for regional and national planning. Sector ministries refer to *woreda* administrations to get quarterly updates on plan achievements (Interviews 21 and 28). Regional sectoral bureaus have representatives at *woreda* level who engage in focal group discussions with representatives of the *kebeles* (women, men, elders, etc.) to collect input for regional planning (Interview 5). The *woreda* also has autonomy to conduct feasibility studies for irrigation projects of up to 20 hectares (Interview 21). In addition, the *woreda* is the direct local liaison officer for the state sugar farms and transmits their interests to the competent authorities at higher administrative levels. Finally, the *woreda* administration assigns development agents to local communities.

However, the ability of the *woreda* administration to fulfil its functions in terms of vertical coordination and conflict resolution are constrained by financial and human resource capacity limitations. Furthermore, the *woreda* currently does not have irrigation development specialists. So far, at *woreda* level there are only water officers concerned with provision of agricultural services. At the time of field research for this study, the MoA had only recently begun to train irrigation development specialists (Interviews 2 and 21). Furthermore, the *woreda*'s financial limitations have resulted in a lack of trust among farmers in the *woreda*'s ability to deliver the services under their responsibility. As a result, small farmers sometimes try to bypass the *woreda* as their first point of contact and address their problems directly to higher levels of the regional administration. In general, the *woreda*'s development agents

enjoy a poor reputation among the small farmers to whom they are expected to provide extension services but are unable to do so due to a lack of qualified and “committed” staff. However, the above observations suggest that the *woreda* administration with the respective sectoral bureaus is a strategic entry point to tackle both coordination deficits and improve conflict resolution if the local governments have adequate resources for doing their business.

The Awash Basin Authority is the actor with the second highest degree of betweenness centrality in our network and is hence (at least theoretically) well situated to perform its role as a coordinator and resource conflict mediator. For example, the three offices of the AWBA (Upper, Middle and Lower Awash) coordinate planning and management of water resources with units of regional governments. Furthermore, the ABA provides data on water availability to Regional Agricultural Bureaus thereby enabling them to carry out the planning of small-scale irrigation projects (Interview 22). ABA also commissions consultants to conduct feasibility studies and, based on the findings of these studies, suggests sites for the construction of dams to federal authorities (Interview 16). ABA also commissions water-related research projects to academic institutions, for example, they contracted the University of Addis Ababa with the conduction of a study on water tariffs. Finally, the basin authority mediates in disputes over water between user groups in times of droughts.

However, the ability of the Awash Basin Authority to fulfil its role as coordinator and mediator is constrained by financial and human resource capacity limitations (Interview 23) as well as by an unclear attribution of competences and mandates between the Basin Authority, regional governments, and the federal government (Interview 13). Currently, the Awash Basin Authority is not adequately involved in the planning of projects. As a consequence, as one interviewee described it, “at this point in time everyone is developing as they wish, and there is no coordination among the different levels” (Interview 23). Finally, the statements of several interviewees suggest that only large and powerful water consumers (state sugar farms and private agro-industrial fruit plantations) have access to and profit from conflict mediation meetings organised by the Basin Authority whereas smallholders and WUAs are not invited (Interviews 16, 17 and 19). As one interviewee put it “basically the muscle, the power goes to the main irrigation schemes” (Interview 16).

Also noticeable in this context is the relatively small size of the Awash Basin High Council (betweenness centrality value 0.25) in the network graph when compared to the Awash Basin Authority. In the two-tier organisational set-up of Ethiopia’s river basin governance, Basin High Councils were meant to act as the highest policy and decision-making bodies, whereas Basin Authorities were meant to act as the administrative and technical arm of the Basin High Councils (Tamrat, 2008). The relatively insignificant position of the Basin High Council in the network corroborates statements of our interviewees who described the High Council as dysfunctional. According to interviewees, the High Council convened only infrequently given that it was difficult to bring its high-ranking political members to the table on a more regular basis (Interview 21). Moreover, as a mostly political body the High Council lacked the technical capacity and expertise to meet the diverse and multi-disciplinary tasks associated with integrated water management (Interview 13). In view of these difficulties, an organisational restructuring has been proposed.

Another noteworthy characteristic of the network is the fact that the Planning and Development Commission, as the highest national planning authority, only ranks sixth in terms of betweenness centrality. This can be attributed to the highly centralised and

hierarchical structure of the Ethiopian national planning system due to which the PDC does not maintain direct communication with sub-national level actors but information from the sub-national level is channelled to the top via the regional sector bureaus and federal sector ministries. While centralised management is often related to efficiency gains, it may also have some adverse effects. Sometimes the source of a conflict can be more easily identified at the lower working levels of government or, in the case of a resource conflict, at the local or regional level where the problem is geographically situated. By the time the institution at the top of the hierarchy learns about the conflict, valuable information about what actually caused it may be lost and, with that, the government's ability to solve the coordination problem that caused the conflict. As Guy Peters adequately puts it: "The top-down approach common to coordination may often not match the bottom-up reality of the problems" (Peters, 2015, p. 75).

Finally, it is noticeable that the Oromia Regional Environment and Land Administration Bureau has the third highest degree of betweenness centrality in the network, whereas the other Regional WEF-Sector Bureaus have comparatively lower centrality values (Water and Energy: 43.57, Irrigation Development: 29.24, Agriculture: 0.0). This is likely related to the high number of land conflicts in the region researched (Tamrat, 2010). Ethiopia's Constitution vests the power to administer land and other natural resources to regional states according to federal laws.²⁷ Accordingly, regional states enact detailed land laws under the shadow of federal land laws (Ayane, 2014). According to the land law of Oromia, the Regional Environment and Land Administration Bureau has the responsibility to ensure that the rights of persons holding rural land-use rights are not infringed and to take necessary measures should this occur. The Bureau is also in charge of contracting independent valuers who calculate the compensations for landholders whose lands have been expropriated for the realisation of public projects.²⁸

7.2 Discussion of frequency

To gain insight into the frequency of interaction between actors in the network, numerical values were attributed to the different response options regarding the frequency of communication. The thickness of an edge in the network graph in Figure 9 thus represents the frequency of communication between two actors, with thicker edges indicating more frequent communication.

The total number of communication interactions in the network is 169 and the average interaction frequency 2.1. However, as can be seen from the network graph in Figure 9 and Table 8, there is considerable variation regarding the frequency of interaction and more than half of the actors that do communicate with each other do so only every three months or once a year.

27 Constitution of the Federal Democratic Republic of Ethiopia, Articles 52(2)d and 51(5).

28 Oromia Regional National State Rural Land Administration and Use Regulation of 2012, Articles 25(3) and 25(8).

Table 8: Frequency of communication interaction between WEF-nexus actors		
Frequency of communication interaction	Numerical value	Occurrence
Weekly	4	26
Monthly	3	24
Quarterly	2	55
Annually	1	54
Total number of communication interactions		159
Average interaction frequency	2.1	
Source: Authors		

In fact, if actors who interact with all other actors less than on a quarterly basis were to be suppressed from the network graph, five actors would drop out completely from our communication network. Among these “drop-outs” would be the Planning and Development Commission, pastoralist clan leaders, and small contract farmers. It is revealing that precisely one of the highest-ranking political actors as well as two of the most vulnerable network members are the ones with the weakest involvement in the flow of communication. Put differently, this suggests that the plights and needs of the most vulnerable and marginalised WEF-actors in the researched region are unlikely to be heard and adequately considered at the apex of the national planning system.

Another problem that became evident from our qualitative expert interviews is that much of the upward communication from *woreda* to regional level and from regional to federal level takes place almost exclusively in the form of written status update reports within the context of GTP II performance monitoring. It is questionable whether exclusive written communication in a highly standardised format can contribute to detecting and overcoming coordination deficits. This would probably require more interactive and deliberative forms of communication.

8 Adherence of water and land governance in Ethiopia to the 2030 Agenda’s principles – an evaluation

This section assesses to what extent the current institutions and governance mechanisms conform to the principles of the 2030 Agenda. As explained in Section 2, the performance of a governance system is evaluated on the basis of the evaluative criteria applied to both outcomes and processes of the action situations selected, which cover key governance functions of resource abstraction, design of rules, coordination, knowledge generation in the various action arenas. We adopt four core principles of the 2030 Agenda to serve as the evaluative criteria for the outcomes and processes of governance. Below, we provide a brief discussion of the outcomes and processes in light of these four principles: i) indivisibility; ii) leaving no one behind; iii) inclusiveness; and iv) multi-stakeholder partnerships.

8.1 Indivisibility

Indicator: Reduced trade-offs among outcomes contributing to SDGs 1 (poverty eradication), 2 (food security), 6 (water security), 8 (economic growth), and 15 (sustainable ecosystems)

The outcomes of the land and water governance emerge from the action situations at the operational-choice level, which contribute to the achievement or non-achievement of SDGs and their targets. In its pursuit of agriculture-led economic growth, Ethiopia encourages the expansion of irrigated areas by allocating land obtained through expropriation of pastoralists and smallholder farmers, and by redistributing state land. While the increase in commercial, large-scale irrigated agriculture leads to economic growth (SDG 8), it alienates pastoralists from rangelands and waterholes, which are crucial resources for pastoral livelihoods although their rights are constitutionally recognised but have not yet been certified. This endangers their food security (SDG 2) and further pushes them into extreme poverty (SDG 1). Furthermore, untreated wastewater from settlements and industries and reverse flows from irrigated commercial agriculture which are regarded as the engines of economic growth (SDG 8) directly affect water quality, hence also the health of people (SDG 3) and wetland ecosystems in the basin (SDG 15). A lack of capacities for measuring and monitoring water use; water permits without specified limits; and ineffective on-farm water management by large commercial farms lead to soil salinisation in some areas while also endangering the water supply for the irrigation of downstream farmers. Therefore, in the lowlands of the Awash River Basin, we see major trade-offs in outcomes of action situations at operational-choice level which could be attributed to three key interrelated factors: Firstly, the trade-offs result from a lack of or the ineffective coordination and inclusive decision-making in the process of allocating land and water resources. Secondly, the human and financial capacities of environmental authorities and *woreda*- and *kebele*-level authorities in implementing social and environmental safeguards. Thirdly, rules and practices of expropriating land for public purposes together with inadequate compensation regulations are leading to a trade-off between the economic and social dimensions of sustainable development.

8.2 Leaving no one behind (LNOB)

Indicator: Weak and marginalised groups are included and not alienated from the benefits/resources

As evident from the key trade-offs between social and economic goals, the marginalised groups in the basin, the pastoral communities, are alienated from the pastures and water sources through expropriations for either expansion of large irrigation schemes, or for ecological conservation. Deprived of their livelihood resources, their food security is endangered and their vulnerability to poverty increased. Although their rights are constitutionally recognised, the key factor driving the marginalisation of pastoralists is that their rights to access commonly used resources have yet to be certified. The large number of pastoralists cutting across multiple jurisdictions make it difficult to measure how many there are, to draw boundaries and to recognise the rights and grant titles. Without titles, pastoralists also become ineligible to receive compensation in the event of expropriation. While regional constitutions recognise women's land rights, these provisions are rarely applied because of biased attitudes towards women (the central question is whether their statutory rights can be

enforced by local administrations against traditional authorities). The GTP II and the policies to expand irrigated agriculture may lead to further land expropriations. When the government offers pastoralists, or peasants cultivating under rain-fed conditions, alternative livelihoods such as irrigated agriculture, then these would have to be accompanied by broad support measures such as the establishment of farmer cooperatives that operate in conjunction with large farms to cultivate and sell sugarcane to the enterprises as out-growers.

8.3 Inclusiveness and participatory decision-making

Indicator: Participation of civil society in water and land governance and SDG implementation

Building the integrated visions and strategies needed to support sustainability transformation requires a broad societal consensus that can only be achieved through the engagement and inclusion of all major societal groups. In addition, compliance with the 2030 Agenda's principle of "leaving no one behind" will also require engaging with the full diversity of societal stakeholders, including representatives of marginalised and minority groups (UN, 2018b).

However, as of yet, both sub-national levels of government and non-government stakeholders have only been weakly involved in the process of elaborating national plans (GTPs) which are binding for the development of regional development policies and plans and the alignment of GTPs with the SDGs. Currently, neither regional governments nor non-state stakeholders have been able to provide input into the initial phases of the elaboration of the GTP and are only consulted on it at a very late stage.

Instead, Ethiopia's VNR of 2017 indicates the so-called Public Wing as the major institutional set up that allows all public officials and stakeholders to "[...] participate in discussions pertaining to common developmental objectives" (FDRE, 2017a, p. 5). Our interview partners described the Public Wing (*ye hezeb kinf* in Amharic) as an institutionalised practice or system that exists within each public institution and serves the purpose of continuous self-auditing and improvement. Public Wing groups include members from civil society, the private sector, as well as academia and are convened every three months by their chairperson in order to discuss the achievements and set-backs of the respective institution. According to one interviewee, Public Wing groups therefore play an important role in improving "efficiency and GTP performance as well as creating accountability and responsibility of public institutions" (Interview 28).

However, the scarce existing literature on the Public Wing provides more critical assessments of this practice. Here, the Public Wing is sometimes referred to as "one-to-five system", given that each public official is requested to monitor, mobilise, and train five other persons. This system is functional from the federal down to the *kebele* (village) level. Conveners of one-to-five groups call for meetings in which they inform the group members about government policies (De Freytas-Tamura, 2017). On the upside, the Public Wing can thus be described as a top-down information cascade, and it appears that it has been helpful in the past to disseminate information and raise community awareness about developmental objectives (IRBC [Immigration and Refugee Board of Canada], 2016). On the downside, the system has been described as a "grassroots system of community monitoring and surveillance [that] contributes to fears of speaking about sensitive issues

outside of one's closest circles" (Human Rights Watch, 2016, p. 52). In addition to conveying information, one-to-five group conveners are also expected to monitor and report on the activities of their group members and to ask questions to assess the extent to which they are receptive of government policies. Criticism of the system or failure to attend group meetings may result in sanctions including harassment by the *kebele* leadership, refusal of administrative services, and the loss of access to public sector employment (IRBC, 2016; Human Rights Watch, 2016).

It hence appears that the Ethiopian approach to civil society participation in SDG implementation has thus far focused on raising awareness and creating knowledge amongst stakeholders, rather than engaging them in genuinely participatory ways. Whether the Public Wing is an adequate institution to ensure participatory and inclusive decision-making to build true ownership and societal support of the SDGs is at least doubtful.

Furthermore, the Ethiopian Environmental and Social Impact Assessment (ESIA) instrument has the potential to balance economic development targets with social targets by giving people affected by development projects along with stakeholders from, for example, the energy and environmental/nature conservation sectors, a voice. However, operational guidelines regarding the mandatory procedures of public meetings, consultations with affected communities, information dissemination and disclosure are as yet either non-existent or not effective.

Indicator: Use of functioning multi-stakeholder platforms for joint decision-making on (re)allocation of water and land resources and as a means of implementation of the 2030 Agenda

With regard to water governance, Ethiopia, being one of the early adopters of IWRM principles, has revised its laws and policies to form river basin councils and authorities, which are basically constituted with representatives from different stakeholder groups. However, only two of the twelve basins have river basin councils and river basin authorities. The Awash River Basin is one of the two. Even in the Awash Basin, where the councils and authorities are instituted, there is no clear understanding of the roles and competencies of the members of the council. Even the relationships among regional authorities, federal authorities, and river basin authority lack clear definition. Precise data on water resources, water-use permits assigned and water actually used are not yet available due to capacity constraints. Participation of the public in regional policy processes is moderate, and it is even more limited at the national level. WUAs, which are relatively new, do not have the required capacities or authority to perform management functions and, moreover, are not actively involved in the decision-making processes of water allocation and management.

SDG target 6.5 is a target dedicated to the "implementation of IWRM at all levels" and measured by the indicator 6.5.1: degree of IWRM implementation (score of 1-100). Several countries implementing IWRM reported on the 6.5.1 baseline indicator during 2017-2018. Overall the score for degree of implementation of IWRM as reported by Ethiopia in 2017 was medium-low (31.5). According to Bertule et al. (2018, p. 9), the medium-low score, which ranges from 31-50 indicates that "elements of IWRM are generally institutionalized, and implementation is underway". As of the date of reporting, only two of the twelve basins in the country had established river basin councils and authorities and developed basin management plans. Inter-sectoral coordination remained quite weak and was mostly informal.

Participation of non-state actors and lower levels of government in national water resources policy formulation is quite limited. Further, the coverage of monitoring of water resources is very limited owing to insufficient and poor maintenance of monitoring facilities. Overall, the report on the 6.5.1 indicator shows that the process of creating an enabling institutional environment for inclusive decision-making is still currently underway. However, designing and implementing management instruments suffers from lack of financial and human capacities. Overall, the process of reporting on the progress of the 6.5.1 indicator, which is relevant for cross-sectoral coordination, is sufficiently laid out by UNEP-DHI and the Global Water Partnership (GWP) network. However, little is known from the reports on the actual process leading to the scores reported. It is not clear from the reports how the consensus among various participants in the reporting process was achieved. Although the participants in the reporting process in Ethiopia included a wide set of stakeholders (relevant sectors of the government, non-government, academia, basin authorities, and so on), the government bodies responsible for SDG mainstreaming (namely, the PDC, the Ministries of Finance and Economic Development, Revenue, etc.) were not part of the process.

With regard to land, federal and regional authorities have the ultimate power/authority to decide on land expropriation for *public purposes*, and on the allocation of land. Participation of the people affected (such as pastoralists), or of their representatives, is not yet foreseen in official procedures. Local bodies at the *woreda* level, which execute expropriation orders and allocate land, are confronted with social distortions because of unfair legal provisions. An outstanding critical issue of which the Ethiopian government is aware is the certification of land-use rights for communal (pastoralists) landholding systems.

With regard to national planning and SDG implementation, the process of GTP formulation does not include all sectors and levels of government. While the National Planning Commission provides a platform for regional governments and line or sectoral ministries to review the GTP drafts, other stakeholders such as the civil societies and local authorities are involved in the GTP consultation at a very last stage. This suggests that the main intention of their consultation appears to be to raise awareness about and build endorsement for the GTP among stakeholders rather than to meaningfully integrate their inputs. The alignment of the SDGs with the national development plans was a task exclusively carried out by the PDC without any involvement from other stakeholders. However, in 2019, a steering committee (SC) and a technical committee (TC) were constituted for the implementation of SDGs. The SC is jointly led by the PDC and the UN Resident Coordinator and counts on representation from federal sectoral ministries, UN agencies, civil society organisations, and industry. The TC, in turn, is to provide coordinated, strategic and coherent inter-agency support to the federal government in the process of aligning national development objectives with the SDGs. As these platforms are new, their potential to contribute effectively to policy coordination across sectors and levels and to increase civil society participation in SDG implementation remains to be tested.

9 Discussion, conclusions, and recommendations

In this study, we assessed the performance of water and land governance systems in the Ethiopian Awash River basin in managing the interdependencies among different SDGs related to water, energy and food securities. In the Awash River Basin, we found that water scarcity is increasing as a result of the limited storage capacities of reservoirs and of both unsustainable land and water use upstream as well as poor maintenance of water delivery infrastructure that serves irrigated agriculture. Furthermore, on-farm irrigation practices are not efficient due to lack of human capacities at the *woreda* and *kebele* levels to provide extension services to farmers practising irrigation, while infrastructure is poorly maintained due to limited financial resources. Poor management of water resources at the basin and individual farm levels is resulting in soil salinisation, pollution of water bodies, and reduced water availability for downstream users. Access to water is closely intertwined with tenure security of land. The increasing demand for expansion of commercial large farms and policy-backed expropriations are leading to the loss of access to communal land for pastoralists. Overall, at the operational level, we observed major trade-offs between the goals focusing on economic growth (SDG 8) and the food security (SDG 2) of pastoralists and smallholder farmers. In addition, the deteriorating water quality due to pollution is also affecting the health of the population (SDG 3) who depend on the basin's drinking water resources (SDG 6) as well as the water quality in wetland ecosystems located in the basin (SDG 15).

As a next step to identifying the key interdependencies or conflicts among goals dependent on land and water resources, we analysed the governance system in this part of Ethiopia to assess the effectiveness of coordination mechanisms in performing various governance functions. This was done using the polycentricity lens, which states that public goods or services are provided through interactions between different, formally independent decision-making centres. The IAD framework, in combination with the concept of networks of action situations, was helpful in delineating different action situations that spread across different arenas (operational, collective and constitutional). Different functions of the polycentric water and land governance systems result as outcomes from distinct action situations (Table 5). Within each action situation, the interactions among different actors or decision-making units were assessed for their effectiveness of coordination. The factors that determined the effectiveness of coordination in relation to delivering key governance functions are shown in Table 5. Coordination (horizontal and vertical) among different decision-making centres is key for achieving sustainable outcomes in polycentric systems (Pahl-Wostl, 2019; Weitz et al., 2017). Deficits in the social and environmental orientation of the national policy framework (GTP I and II) also result from ineffective coordination among sectors and levels, and the non-inclusion of non-state actors in the formulation and implementation of associated programmes. Formation of “political will”²⁹ to mitigate trade-offs among social, ecological and economic objectives requires effective coordination at the constitutional-choice level. Contrary to this, we found that in Ethiopia top-down, hierarchical decision-making leads to ineffective vertical coordination.

Based on the analysis of action situations, interactions, outcomes, and conditions affecting them, we present below the main coordination problems at the operational-, collective- and constitutional-choice levels of water and land governance in the lower Awash River Basin

29 Political will as defined by Post et al. (2015, p. 659) is “the extent of committed support among key decision makers for a particular policy solution to a particular problem”.

in Ethiopia (see Table 9). We also discuss the key institutional and capacity constraints causing these coordination problems.

Table 9: Institutional and capacity constraints for governance functions at various levels			
Governance function(s)	Coordination and conflict	Institutions (gaps/deficits)	Capacity constraints
<u>National planning process:</u> Drafting and ratifying GTPs, mainstreaming of SDGs	Coordination among sectoral ministries (horizontal) in drafting the GTP Ineffective (vertical) coordination: insufficient involvement of regional governments and non-governmental stakeholders	GTPs are highly binding on regional governments' policies Regional policies strongly aligned with national policies; little sensitivity to regional context PDC's institutional structure not suited to facilitate horizontal and vertical coordination Ability of newly instituted steering committee for SDG implementation in improving cross-sectoral coordination and civil society participation remains to be tested	Weak institutional, organisational and human capacities for national monitoring and evaluation system Weak capacities for evidence and science-based approaches to SDG implementation
<u>Water allocation:</u> Planning, licensing, implementation of irrigation and hydro-power projects, water permits	Coordination among MoWIE, MoA, and regional governments in planning and implementing large/medium, small and community irrigation schemes respectively No involvement of local communities Conflict over authority to issue water permits among basin authority, federal and regional authorities	Lack of operational guidelines for allocating water, infrastructure management and maintenance, water permits, tariffs, minimum flow requirements Difficulty in enforcement of customary access rights of pastoralists to water	Data on water availability, water permits issues and water actually utilised is unavailable No comprehensive, updated basin management and water allocation plans
<u>Environmental and social regulation:</u> Environmental and social impact assessment (ESIA) and clearance of projects	Coordination between EIA Directorate at federal level, regional environmental bureaus, environmental units of sector agencies Improper integration of environmental and social concerns in sectoral projects Ineffective regulation	Unclear status of whether EIA is binding for other ministries and licensing authorities Lack of operational rules for implementing EIA Subordinate role of Federal Environment Commission vis-à-vis project authorising agencies	Environment units at operational levels do not have sufficient, qualified staff and financial resources Lack of qualified consultants and trained practitioners
<u>Operation and maintenance of water infrastructure:</u> Enforcement of water permits, maintenance and repairs of water infrastructure	No institutionalised coordination among assigned headwork operators, farm water managers and WUAs Defunct or defective infrastructure leading to less water storage, soil degradation, no measurement of actual water use	No clear mandates assigned with regard to operation and maintenance of water structures Management rights devolved to WUAs Lack of operational guidelines for maintenance of water infrastructure	Lack of human capacities for irrigation advisory services at the local level WUAs lack financial capacities for operation, maintenance and repairs Farmers lack capacities to adopt efficient irrigation technologies and practices
Source: Authors			

9.1 Operational-choice action arena

Ethiopia reformed its water policies almost two decades ago based on the IWRM principles. WUAs at the lowest level of management were instituted in 2014 and management rights were devolved. Despite the required formal rules for coordination at the operational level, coordination among actors, especially, headwork operators, farm managers and WUAs is insufficient. Capacity constraints are often cited as causes for non-performance of governance functions, especially by the regional, *woreda* and *kebele* authorities. They lack the financial resources and capacities to generate data, monitor and control resource use and to provide extension services on irrigation and irrigation infrastructure maintenance. *Woreda* administrations, with their high “betweenness centrality” may be potential actors for designing and implementing coordination mechanisms among competing uses of land and water. Farmers also lack capacities to invest in water-efficient irrigation technologies and practices and, without any extension support on irrigation and lack of measurement and restriction of actual water use, unsustainable irrigation practices increase the hazard of soil salinisation and human-induced water scarcity downstream. The absence of operational guidelines for operation and maintenance of structures and mandates that have not been clearly laid out is leading to deteriorated and defunct infrastructure.

Recommendations

Strengthen capacities of *woreda* (district) administrations: Our analysis revealed that *woreda* (district) administrations play a key role in vertical coordination. On the one hand, many of the policies and regulations decided at the national level have to be implemented and enforced by the *woreda* administration’s staff. On the other hand, *woreda* administrations act as mediators in the communication between local actors and national level actors who do not directly communicate with each other. However, due to insufficient financial and human resources and skills, *woredas* are not able to fulfil their mediating role effectively. By targeting financial and technical assistance at the *woreda* level, Development Cooperation could contribute towards overcoming vertical coordination deficits.

Develop operational guidelines with a clear definition of mandates for water infrastructure operation and maintenance: Mandates and responsibilities of different actors at the operational-choice level, such as operators of the main hydraulic water infrastructure, WUAs and local authorities need to be clearly defined. Further, operational guidelines that clearly specify such mandates along with a tariff scheme devised to incentivise the efficient use of water need to be developed. A cost-sharing scheme for financing water infrastructure management needs to be devised. The guidelines also need to include platforms and procedures for conflict resolution between upstream and downstream users.

Strengthen capacities for measurement and efficiency of water use: Capacities of the WUAs need to be developed for measuring the actual use of water resources, in combination with a tariff system for water use. Further, capacities of *woreda* and *kebele* authorities need to be developed in order to provide extension services to farmers in support of efficient irrigation technologies and practices.

Support livelihoods and income diversification for pastoralists and smallholder farmers: As livestock continues to play an important role in pastoralist and smallholder livelihoods in the lower Awash River Basin, there is a need to design policies and programmes that support

pastoralists' mobility along with diversifying their income opportunities. One such opportunity is the integration into out-grower schemes for peasants and agro-pastoralists.

Capacities for awarding compensation and resettlement upon expropriation: *Woreda* and *kebele* authorities, which are responsible for implementing expropriation and resettlement, need to be capacitated to estimate the actual losses incurred by expropriated households, based on valuation guidelines developed at the collective-choice level. Such valuations should also include the lost access to transit corridors as a result of land reallocations to projects such as irrigation schemes.

9.2 Collective-choice action arena

There are three key governance services delivered at the collective-choice level, namely i) land allocation; ii) water allocation; and iii) ensuring compliance with environmental and social objectives.

The existing national regulations on land, which are implemented by the regional and local authorities, create tenure insecurity in general and particularly of pastoralists to their communal grazing land. One factor is that the vast extent of the land cuts across different administrative boundaries; administrative units have to coordinate and come to an agreement in identifying the boundaries as well as the issuance of certified group titles. A second factor relates to the eminent domain powers of the governments that allow expropriation on the grounds of ill-defined "public purpose". Further, the economic growth-oriented GTP I and II encourage private investments in land and therefore enable expropriations. Pastoralists and smallholder farmers with unregistered landholdings are also not eligible for compensation and are left with no legal recourse as the adjudication only happens on the amount of compensation payments for assets on land, and not land per se. The state still lacks capacities to scale up the process of registration and certification of communal lands of pastoralists. The *woreda* and *kebele* authorities further lack valuation guidelines and capacities for compensating expropriated pastoralists and farmers. There is even still no binding policy framework for the resettlement of pastoralists to guide the local authorities in providing such compensation.

The key outcomes of the action situation concerning allocation of water resources in the basin are water management and allocation plans at basin level (with specifications needed for sub-basins), water permits for users, and implementation of irrigation and hydro-power projects. The roles and responsibilities for developing and implementing irrigation projects are clearly defined on paper, with the MoWIE being responsible for large and medium projects, and the MoA being responsible for small and community projects. However, responsibilities for managing irrigation schemes are not clearly assigned. Further, there is also a conflict among authorities at the federal, basin and regional levels over issuance of water permits. The reason for the conflict is the lack of operational guidelines for water permits, requirements of minimum flow in the basin, and maintenance of infrastructure. The required information on the resource system and the actual resource use is being generated, but capacity constraints delay their feed-in into decision-making. As of now, issuing water permits are not based on overall water availability, nor can water abstractions be monitored and controlled.

The key policy instrument to ensure the compliance of projects with environmental and social regulations is the Environmental and Social Impact Assessment (ESIA) that is

implemented through vertical coordination among environmental bureaus. Integration of social and ecological regulations in sectoral projects needs to be improved; results of an ESIA should be mandatory for all projects and their authorising authorities. The lack of operational rules for implementing an ESIA and the sub-ordinate role of Federal Environment Commission in relation to other sectoral agencies authorising the projects weakens the regulation and its effectiveness. Enforcement of environmental regulations also suffers from inadequate capacities within environmental units at the operational level. There are insufficient qualified staff and financial resources for conducting the ESIA. Further, lack of qualified consultants and trained practitioners generate poor-quality ESIA reports.

Recommendations

Continue with developing a water permit system: Efforts need to be continued and strengthened towards developing a water permit system that balances competing uses including ecosystem services in the basin, without compromising the sustainability of water resources. Such a permit system should also allow for specification of the quantity of water allowed under each permit, and corresponding tariff, in order for them to be effective. Further, the informal access rights of pastoralists to water in the basin needs to be recognised and ensured in a water permit system.

Operational guidelines for issuing water permits: Guidelines specifying the roles of federal, regional and river basin authorities related to the issuing of water permits to different users are essential in order to avoid conflicts over the process of awarding water permits. Such operational guidelines should be based on basin management plans, minimum flow requirements, and data on availability and actual use of water. Guidelines must ensure that the process of issuing water permits is participatory through inclusion of community-level organisations.

Strengthen capacities of basin authorities: Capacities of river basin authorities for preparing basin management and water allocation plans need to be developed. These capacities include continuous collection, maintenance and use data on water availability in the basin, actual use under existing permits, and minimum flow requirements to ensure crucial ecosystem services. Further, the authorities also need to be capacitated to support WUAs in enforcing water-use rights of farmers.

Develop a Resettlement Policy Framework: A binding resettlement policy framework needs to be developed which includes compensation guidelines, methods to calculate compensation payments, and actors responsible for awarding compensations. In addition, the existing rules for compensation that do not compensate loss of land, but only the assets on land, need to be revised to include the compensation for lost access to both formally recognised as well as customary rights to communal grazing lands.

Scaling up of certification of communal land rights: A study should be commissioned to learn from past and ongoing initiatives to certify pastoralist group titles, and how they take account of the rights of women. Based on the findings, strategies to scale up successful certification of customary rights to communal land for pastoralists should be developed.

Strengthening institutions to perform an Environmental and Social Impact Assessment (ESIA): Better integration of the ESIA into sectoral ministries and making it

binding for issuance of permits is crucial for its effectiveness. Operational guidelines clearly specifying the requirements, process, and binding nature of ESIA for issuing permits to sectoral projects need to be developed and adopted both across sectors and project authorising agencies. Further, the capacities of environmental units at various levels, especially at regional and *woreda* levels need to be strengthened to conduct ESIA. Both human and financial capacities need to be developed for generating good-quality reports.

9.3 Constitutional-choice action arena

This action arena includes the processes involved in delivering framework regulations and policies for national development and the processes that mainstream SDGs into the national plans. Some degree of coordination occurs among different federal ministries in drafting the GTPs. However, there are insufficient and ineffective measures to include regional governments as well as non-government stakeholders in the process of drafting and ratifying the GTPs which are binding for the development of regional development policies and plans. Neither regional governments nor non-state stakeholders are able to provide input in the initial phases of the elaboration of the GTP and are only consulted on it at a very late stage. Furthermore, the Planning and Development Commission (PDC) is also responsible for mainstreaming the SDGs into national policies and plans. However, as our analysis has shown, the process of mainstreaming the SDGs into GTP II remained incomplete and superficial. Also, the structure and composition of the PDC is ill-suited to facilitate horizontal and vertical policy coherence and an adequate involvement of civil society in national planning. Another problem resides in the weak institutional and organisational structures and the lack of human and technical capacities in the national monitoring and evaluation system. The lack of human resources and skilled personnel constrains the application of evidence- and science-based approaches to support SDG implementation and progress monitoring, which makes it difficult to hold the national government accountable for its actions towards achieving the SDGs. The establishment of a UN-supported SDG steering committee and a SDG technical committee in 2019 – which included government and non-government stakeholders at various levels – may be instrumental in improving vertical and horizontal coordination and policy coherence.

Coordination problems, especially across different levels, are also rooted in the political system and regime type. While the current prime minister, Abiy Ahmed, has undertaken concrete steps towards ameliorating the autocratic nature of Ethiopia's federal government, the ruling EPRDF coalition, through its People's Democratic Organizations (PDO) continues to occupy key political posts at all levels of government, and hence maintains strong control on the political process as well as political outcomes. As a consequence, the process of formulation and ratification of GTP II and its alignment with the SDGs, which preceded Abiy's administration, was characterised by extremely hierarchical, top-down decision-making with little, if any, involvement of the lower levels of government and non-state stakeholders. Further, the "ethnic" federalist system, in which the federated units are defined and segregated by ethnicity has fuelled inter-ethnic conflicts. The former privileged access of the ethnic Tigray minority to the power centres in politics, administration and the economy has led to dissatisfaction among other ethnic groups, specifically the Oromo as the largest ethno-linguistic group. In the past this led to protests and violent struggles, demanding land reform, more inclusive political participation, and an end to human rights abuses.

Overall, if an integrated implementation of the SDGs is to be achieved by 2030, the existing governance structures for water and land use and management in Ethiopia must be improved. Complying with the 2030 Agenda's core principles of the indivisibility of social, economic, and environmental goals and LNOB will require increased efforts to mitigate the inherent trade-offs between multiple SDGs and targets and respect for human rights of vulnerable groups. The current bias of development planning towards the objective of economic growth through industrialised agriculture leads to the continued neglect of marginalised pastoral communities whose livelihood resources are threatened due to violations of their constitutionally recognised rights. Complying with the 2030 Agenda's core principles of inclusive and participatory policymaking and multi-stakeholder partnerships, in turn, will require efforts to overcome Ethiopia's autocratic legacy of hierarchical top-down decision-making and instead ensure a meaningful participation of the broadest possible spectrum of societal groups and stakeholders in processes of national planning and priority setting. So far, existing consultation mechanisms in national planning are mainly aimed at disseminating information about, and creating public endorsement for, the GTP. However, they are neither designed to collect and include the needs and capacities of regional governments and local communities nor are they adequate to build broad societal consensus.

In the case of specially designed governance frameworks for managing water resources, based on the principles of IWRM, the inter-sectoral and inter-level coordination for water use and management was found to be ineffective. After two decades of water policy reform, significant strides in achieving coordination among different uses are yet to be made. The SDG implementation process has the potential to provide a fresh impetus to achieving policy integration in water sectors through the indicator (6.5.1) that measures the degree of implementation of IWRM. Donor support for strengthening the capacities to implement and report on indicator 6.5.1 could be directed to fill the institutional and capacity gaps highlighted in this study.

Recommendations

Evidence- and science-based approaches: Our analysis has shown that efforts to apply evidence- and science-based approaches to support integrated SDG implementation in Ethiopia need to be stepped up. While at the time of data collection for this study, some initiatives for data-based monitoring and the evaluation of the SDGs had commenced, no efforts to map and assess SDG interlinkages or strategies to address SDG interdependencies had been undertaken. Yet doing so will be paramount to mitigating the trade-offs observed in this study, for example the trade-off between the objectives to increase economic growth and well-being through industrialised agriculture and preserving the livelihoods of marginalised population groups. Development Cooperation should provide technical support to national government in the application of science-based assessments of national SDG interlinkages, integrating their findings into national development frameworks and translating them into actionable policy initiatives.

A clear definition of “public purposes” in the legislation for expropriation: The Proclamation No. 455/2005 on Expropriation of Landholdings for Public Purposes and Payment of Compensation needs to be revised towards providing more clarity on what constitutes a “public purpose” that justifies expropriation of land. Furthermore, the adherence of the legislation to the principles of leaving no one behind (LNOB) and indivisibility of social, environmental, and economic sustainability goals needs to be ensured.

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Annexes

Annex 1: Legal framework for land administration	
Document	Content
FDRE Constitution Proclamation No. 1/1995	Ownership is exclusively vested in the state and the peoples of Ethiopia; land is their common property.
FDRE Proclamation on Rural Land Administration and Land Use No. 456/2005 Regional proclamations	Devolve authority to regional governments, establishes rural land administrations, empowers government to change communal land into private holdings.
Environmental Impact Assessment Proclamation No. 299/2002	ESIA required for project approval (Investment Proclamation No. 280/2002 deviates).
Expropriation of Landholdings for Public Purposes and Payment of Compensation Proclamation No. 455/2005	Defines principles for expropriation and compensation, and requires the establishment of a grievance redressing mechanism.
Council of Ministers Regulation on Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes No. 135/2007	Rules for compensation and assistance to displaced persons; defines procedures (eligibility, valuation).
Development, Conservation and Utilisation of Wildlife Proclamation No. 541/2007 Forest Development, Conservation and Utilisation Proclamation No. 542/ 2007	Rules for management and use of forest land and wildlife areas. Defines circumstances under which protected areas can be acquired for investment?

Annex 2: Collective land titles under United States Agency for International Development's (USAID) Land Administration to Nurture Development (LAND) Project

Three Borana communities covering over 40,000 households (over 255,000 people) now have the title to collectively use 2.7 million ha of land – an area larger than the country of Rwanda. The Certificates officially recognise traditional community landholdings that embrace dry- and wet-season grazing areas, livestock movement corridors, water points, and other natural resources. They also empower customary institutions, through the development of written bylaws, to govern land management and ensure that all members of the community benefit from the strengthened tenure security. The written bylaws recognise neighbouring communities' access to grazing areas, water points and travel corridors per traditional customs – an important step in mitigating tensions over land access and use.

The hardest obstacle to developing this legislation was obtaining agreement between government officials and the pastoral communities over the size of the communal pastoral landholding to be registered and certified. [...] The pastoralists in the Guji and Borana pilot areas wanted their customary traditional grazing areas to be the unit of landholding to be certified and registered but these can cover hundreds of thousands of hectares and straddle multiple administrative boundaries. Oromia officials were reluctant to certify a landholding this big in the name of a single community. Further, they argued that the traditional grazing areas had to be subdivided per administrative boundaries to be more effectively administered and managed by local land administration officials. The pastoral communities steadfastly argued that the government must recognise their constitutional rights to land based on customary possession and certify the uncontested boundaries of their landholdings, as was done previously in the highland regions.

After nearly three years of negotiations, Oromia officials accepted the communities' arguments and, with assistance from LAND, developed legislation providing the legal basis to register and certify community landholdings and enable customary institutions to function as Community Land Governance Entities that held the title to communal land, managed rangeland resources and represented the community in dealings with third parties, including the government and the private sector.

Sources: <https://www.land-links.org/2018/03/formally-recognizing-pastoral-community-land-rights-in-ethiopia/>; <https://www.land-links.org/2018/09/pastoral-communities-receive-2-7-million-hectares-of-land-in-ethiopia/>; <https://fic.tufts.edu/assets/Tufts-Range-Enclosure-Review-PLI.pdf>, retrieved 29 October 2019

Annex 3: Legal framework for water allocation and management	
Legal instrument	Contents
Constitution of the Federal Republic of Ethiopia Proclamation No.1/1995	All natural resources are “a common property of the Nations, Nationalities, and Peoples of Ethiopia”, vested in the State. It centralises planning and management, recognises the rights of people to access and sufficient quantity and quality.
Ethiopian Water Resources Management Proclamation No. 197/2000, the legal framework	Rights to water resources are vested in the State, its management should be permit-based, prioritises domestic use. Planning, management, utilisation and protection is with the MoWIE (transregional, transboundary), which can delegate duties to appropriate bodies (Basin Authorities).
Ethiopian Water Resources Management Regulation No. 115/2005, issued by the Council of Ministers	Centralises key powers and duties (permit system, conflict arbitration and resolution), defines tasks on federal level. Water permit holders must comply with provisions of EIA (No. 299/2002) and Pollution Control (No. 300/2002).
River Basin Councils and Authorities Proclamation No. 534/2007	The Council of Ministers can establish river basin organisations. Basin High Councils are the highest decision-making bodies. River Basin Authorities are their administrative, technical arm (and prepare basin plan, allocate water, issue permits, monitor implementation and compliance).
Awash Basin High Council and Authority Regulation No. 156/2008, issued by the Council of Ministers (restructured in 2011, then again in 2018)	Assigns administrative, regulatory and operational roles. Basin authority prepares basin plan, allocates water, issues permits, and monitors compliance.
Irrigation Water Users’ Associations Proclamation No. 841/2014	WUAs have their own legal basis.

Annex 4: The legal framework of the EIA system	
Document	Content
Constitution of FDRE Proclamation No. 01/1995	Promotes sustainable development, right of citizens to a clean environment, public consultations and entitlement to compensation, enactment of EIA legislation.
Establishment of Environmental Protection Authority (EPA) Proclamation No. 09/1995	Establishes EPA (EIA department) and Environmental Protection Council (EPC) that oversees EPA and coordinates sectoral agencies. The EPA has no mandate for EIA, EIA not legally required (voluntary basis).
Conservation Strategy of Ethiopia, 1997	Establishes EIA as a planning tool.
General EIA Guideline, 2000	Not approved by EPC.
Environmental Impact Assessment Proclamation No. 299/2002 (framework law)	EIAs are mandatory for major projects, require authorisation from EPA prior to issuing any license. It strengthens the role of the EPA.
Environmental Protection Organs Establishment Proclamation No. 295/2002	Reestablishes EPA and EPC, and Regional Environmental and Environment Units in ministries. EPA is to prepare policies, laws, directives; reviews, decides and implements follow-up processes. EPC is to review and approve directives, guidelines and standards as proposed by EPA.
EIA Procedural and Review Guidelines by EPA (draft), 2003	Yet not approved by EPC.
Categories of projects subject to EIA, Directive No. 09/2008	Dams, reservoirs, irrigation schemes, commercial production of horticulture/floriculture in green houses. Public instruments are not mentioned.
Ministry of Environment, Forest and Climate Change, EIA Directorate, 2015	Performs regulatory functions, EIA. Council of Ministers delegated EIA to sector ministries (2008-2018).
Environment, Forest and Climate Change Commission, Directorate for EIA, 2018	Accountable to Prime Minister's Office. In 2018, the Commission applied for the revocation of the delegation of power to sector ministries.

Annex 5: Full list of WEF-actors included in the social network analysis ranked by betweenness centrality			
Rank	Full name	Label name	Betweenness centrality value
1	Woreda Administration	Woreda Administration	189.20
2	Awash Basin Authority	Awash Basin Authority	83.31
3	Regional Environment and Land Administration Bureau	Regional Land Administration Bureau	76.47
4	Metahara Sugar Farm and Factory	Metahara Sugar Farm and Factory	65.66
5	Ministry of Water, Irrigation and Electricity	MoWIE	65.20
6	National Planning Commission	National Planning Commission	56.23
7	Oromiya Water, Mineral and Energy Bureau	Regional Water and Energy Bureau	43.57
8	Ministry of Agriculture and Livestock Resources	MoA	36.51
9	Oromyia Irrigation Development Authority	Regional Irrigation Development Authority	29.24
10	Awash National Park Administration	National Park Administration	10.17
11	Water User Administration	Water User Administration	9.80
12	Kessem Sugar Farm and Factory	Kessem Sugar Farm and Factory	8.34
13	Pastoralist Clan Leaders	Pastoralist Clan Leaders	3.52
14	Wonji Sugar Farm	Wonji Sugar Farm	2.47
15	Regional Agriculture Cooperative	Regional Agriculture Cooperative	1.57
16	Ethiopian Wildlife Conservation Authority	EWCA	1.41
17	Ethiopian Electric Utility	EEU	1.12
18	Ethiopian Electric Authority	EEA	0.77
19	Small Scale Farmers	Small Scale Farmers	0.50
20	Ministry of Finance and Economic Development	MoFED	0.26
21	Ethiopian Institute for Agricultural Research	EIAR	0.26
22	Commission for Environment, Forest and Climate Change	Environment Commission	0.26
23	Awash Basin High Council	Awash Basin High Council	0.25
24	Productivity SafetyNet Program	PSNP	0.00

Annex 6: Overview of interviews by respondent category	
Respondent category	Interview number
Donor Agency	1
Donor Agency	2
Federal Ministry	3
Academia	4
Regional Government Bureau	5
Federal Ministry	6
Federal Ministry	7
Federal Commission	8
Federal Authority	9
Donor Agency	10
Donor Agency	11
Donor Agency	12
Federal Authority	13
Wildlife Expert	14
State Sugar Farm	15
Federal Authority	16
State Sugar Farm	17
<i>Woreda</i> (District) Administration	18
Water User Organisation	19
Federal Authority	20
Federal Ministry	21
Regional State Bureau	22
Academia	23
Donor Agency	24
Intergovernmental Organisation	25
Intergovernmental Organisation	26
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Federal Commission	28
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Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

GTP Output	GTP II Indicator		Full or partial with SDG indicators from Global Indicator Framework
Population	Total Poverty Head count (%)	1	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
Double digit economy growth rate	Real GDP growth rate (%)	1	8.1.1 Annual growth rate of real GDP per capita
Structurally transformed industrial lead economy	Share of industry sector in GDP (%)	2	9.2.1 and 9.3.1. combined
	Share of manufacturing industry in GDP (%)	3	9.2.1 Manufacturing value added as a proportion of GDP and per capita
Strengthened capacity of micro and small-scale industries	Growth of micro and small-scale manufacturing industry	1	9.3.1 Proportion of small-scale industries in total industry value added
	The share of micro and small-scale in total GDP	1	9.3.1 Proportion of small-scale industries in total industry value added
Increased domestic revenue	The share of domestic revenue in GDP (%)	2	17.1.2 Proportion of domestic budget funded by domestic taxes
	The share of total revenue (including grants) in GDP (%)	1	17.1.1 Total government revenue as a proportion of GDP, by source
	The share of tax revenue as (%) in GDP	2	17.1.2 Proportion of domestic budget funded by domestic taxes
	Non-tax revenue as (%) share of GDP	3	17.1.1 Total government revenue as a proportion of GDP, by source
Increased domestic saving and investment	The share of total investment in GDP (%)	2	1.b.1 Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups
Increased capital	The share of total government expenditure in GDP (%)	2	1.b.1 Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

Reduced number of people who live below the national poverty line	The share of pro-poor investment in total government expenditure	1	1.a.1 Proportion of domestically generated resources allocated by the government directly to poverty reduction programmes
Reduced number of unemployment	Percentage of total unemployment	1	8.5.2 Unemployment rate, by sex, age and persons with disabilities
	Percentage of urban unemployment	3	
Increased number of stable and accessible financial institutions	Number of bank branches	1	8.10.1 (a) Number of commercial bank branches per 100,000 adults and (b) number of automated teller machines (ATMs) per 100,000 adults
Ensure stable macro economy with integrated monetary and fiscal policy	The share of budget deficit in GDP (%)	3	16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar)
Consistent reproductive and economic growth	Percentage of population aged 15 or below	3	
Increased production of major food crops	Major food crops production (in millions of quintals)	2	2.4.1 Proportion of agricultural area under productive and sustainable agriculture
Increased production of export crops	Export crops production (in millions of quintals)	3	17.11.1 Developing countries' and least developed countries' share of global exports
Increased productivity of major food crops	Average productivity of crops (quintal/ha)	2	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
Increased productivity of export crops	Average productivity of export crops (quintal/ha)	3	2.b.1 Agricultural export subsidies
Improved agriculture extension services	Total number of households benefited from extension services (thousands)	3	2.a.1 The agriculture orientation index for government expenditures
	Total number of rural households (thousands)	3	
	Total number of rural youth (thousands)	3	

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

	Number of rural youth employed in new jobs	3	12.a.1 Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies
	Number of rural youth employed in new jobs	3	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
Increased agricultural input utilisation	Quantity of improved seed supplied (in thousand quintals)	2	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
Developed agricultural mechanisation	Number of farm tillage technologies	3	2.4.1 Proportion of agricultural area under productive and sustainable agriculture
	Number of sowing and planting technologies	3	15.3.1 Proportion of land that is degraded over total land area
	Number of crop protection technologies	3	15.3.1 Proportion of land that is degraded over total land area
	Number of power supply technologies	3	7.1.2 Proportion of population with primary reliance on clean fuels and technology
Newly	Number of newly established small and medium-scale agro industries	2	9.3.1 Proportion of small-scale industries in total industry value added
Increased size of land for agricultural investment	Cultivated land (in thousand hectares)	1	2.4.1 Proportion of agricultural area under productive and sustainable agriculture
Quantity of production	Total production (in thousand tons)	2	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
Land size under mechanised farming with reduced carbon emission	Land size under small-scale mechanised farming	2	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
	Size of cultivated land under modern mechanized farming (ha)	2	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
Increased livestock production	Fish production (in thousand tons)	2	14.4.1 Proportion of fish stocks within biologically sustainable levels
	Number of livestock technologies supplied by research	2	14.a.1 Proportion of total research budget allocated to research in the field of marine technology

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)			
Increased number of genetically improved breeds	Reduced amount of CO2 (in million metric tons)	1	9.4.1 CO2 emission per unit of value added
Instalment of sustainable land administration system	Number of farm households which have secondary land certificate (in millions)	2	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognised documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure
Plans prepared and implemented for sustainable land administration and utilisation	Number of regional governments that have prepared rural land-use masterplan	3	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
	Number of regional governments implementing rural land-use master plan	3	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
Strengthened and expanded natural resource management practices	Number of planned community watersheds	2	6.5.1 Degree of integrated water resources management implementation (0-100)
	Areas enclosed and protected for rehabilitation (in thousand hectares)	3	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
	Areas covered by soil and water conservation structures	2	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
Increased conservation of genes, species and ecosystems in situ and ex situ	Number of forest and rangeland areas studied for dynamicity of species diversity	3	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
	Number of forest and rangeland plant species /Accessions conserved ex situ (cold room)	3	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
	Number of forest and rangeland plant species conserved ex situ (botanical gardens)	2	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

	Number/hectare of forest and rangeland in-situ conservation sites	2	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
	Number of field gene banks established	1	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
	Number of crop and horticultural species conserved in gene bank	2	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
	Number of horticultural species conserved in field gene bank	2	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
	Number of animal species diversity and distribution identified	2	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
	Number of animal breed status and threats identified	1	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
	Number of semen/breed or species conserved ex situ	3	2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
Increased number of characterised genetic resources and evaluated for use as input in agriculture, industry and further research	Number of animal breeds/species characterised	2	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
	Number of animal species/breeds valued	2	2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
Ensure household-level food security	Total number of households benefited from productive safety net programme (in million)	1	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, new-borns, work-injury victims, and the poor and the vulnerable

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

Increased foreign earning from agricultural exports	Total agricultural export earnings (in million USD)	2	2.a.1 The agriculture orientation index for government expenditures
Industrial zones with a standard waste-discharging system	Number of industrial zones with a standard waste-discharging system	2	6.3.1 Proportion of wastewater safely treated
	Factories with energy saving system	2	7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment (FDI) in financial transfer for infrastructure and technology to sustainable development services
Increased construction of road infrastructure	Length of all-weather road (in km)	3	9.1.1 Proportion of the rural population who live within 2 km of an all-season road
	Average time taken to reach nearest all-weather roads (in hours)	2	9.1.1 Proportion of the rural population who live within 2 km of an all-season road
	Areas 5 km further away from all-weather roads (%)	2	9.1.1 Proportion of the rural population who live within 2 km of an all-season road
Improved public transport supply and services	Number of passengers (million)	1	9.1.2 Passenger and freight volumes, by mode of transport
	Public transport supply (%)	1	11.2.1 Proportion of population who have convenient access to public transport, by sex, age and persons with disabilities
Reduced traffic death rate	Number of car accident deaths per 10,000 vehicles	1	3.6.1 Death rate due to road traffic injuries
Generated and produced electric power	Electric power generation capacity (Megawatt)	3	7.3.1 Energy intensity measured in terms of primary energy and GDP
	Production of electric power (Gigawatt)	2	7.2.1 Renewable energy share in the total final energy consumption
Growth of renewable green electric power	Production of hydroelectric power (Megawatt)	2	7.2.1 Renewable energy share in the total final energy consumption
	" solar	2	7.2.1 Renewable energy share in the total final energy consumption
	" geothermal	2	7.2.1 Renewable energy share in the total final energy consumption

Annex 7: Alignment of GTP II policy matrix indicators with indicators of Global Indicator Framework for the Sustainable Development Goals developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)			
	" from wastes	2	7.2.1 Renewable energy share in the total final energy consumption
	" sugar	2	7.2.1 Renewable energy share in the total final energy consumption
	" biomass	2	7.2.1 Renewable energy share in the total final energy consumption
Increase revenue from electric power export	Foreign exchange earnings from electric power (USD million)	3	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
Coverage of electric service	Numbers of consumer with access to electricity (in millions)	1	7.1.1 Proportion of population with access to electricity
	Coverage of electricity service (%)	1	7.1.1 Proportion of population with access to electricity
Developed ICT services	Institutions, information centres, public libraries and schools with 2 MB and above broadband connection (%)	2	4.a.1 Proportion of schools with access to (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)
Improved communication system	Percentage of <i>kebeles</i> having two computers, telephone, post and internet	2	5.b.1 Proportion of individuals who own a mobile telephone, by sex
Increased broadband internet services	Universities and higher education institutions broadband service (%)	2	17.6.2 Fixed Internet broadband subscriptions per 100 inhabitants, by speed
Quality services provided to customers	Number of mobile users (in thousands)	1	5.b.1 Proportion of individuals who own a mobile telephone, by sex
	Number of broadband internet service users in thousands	2	5.b.1 Proportion of individuals who own a mobile telephone, by sex
	Narrow band internet users in thousands	3	17.8.1 Proportion of individuals using the Internet
Improved communication infrastructure and services	Mobile service coverage in per cent	1	9.c.1 Proportion of population covered by a mobile network, by technology
Increased access to safe drinking water	Rural potable water supply coverage in standard of GTP II (25l, capita, day within 1 km radius)	2	6.1.1 Proportion of population using safely managed drinking water services

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	Rural potable water supply coverage in standard of GTP II (by pipe) (%)	2	6.1.1 Proportion of population using safely managed drinking water services
	Urban potable water supply coverage in standard of GTP II (%)	2	6.1.1 Proportion of population using safely managed drinking water services
	National potable water supply coverage as standard of GTP II (%)	1	6.1.1 Proportion of population using safely managed drinking water services
	Total (urban and rural) potable water supply coverage by GTP II standard (pipe) %	2	6.1.1 Proportion of population using safely managed drinking water services
Strengthened urban waste management and sewerage system	Number of urban sanitation system constructed	2	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
Conserved and rehabilitated water bodies	Area of land rehabilitated and conserved (ha)	2	14.5.1 Coverage of protected areas in relation to marine areas
Access to productive safety net program	Number of beneficiaries	1	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable
Development of slum area	Percentage developed slum areas	2	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing
Improved urban solid waste collection and disposal system	Coverage of solid waste collection and disposal (in percentage)	2	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
	Number of urban centres that have increased solid waste collection coverage and implemented solid waste reuse system	1	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
Established permanent structure for urban climatic resilient green economic development	Number of urban centres that have established structure	1	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically

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Urban centres that prepared modern sanitary landfills and waste disposal sites	Number of urban centres with more than 100,000 inhabitant that have completed the construction of a waste disposal site	2	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
	Number of urban centres with 20,000-100,000 inhabitants that have completed and started the usage of waste disposal site	2	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
Protected and organised national parks	Established wild animal protected areas	2	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
	Newly registered wild animals protected area and cultural heritages by UNESCO	2	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
Improved language development and utilisation	Built national, cultural and tourism statistical information system	2	17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding
Improved tourism market linkages	Number of tourist (million)	2	8.9.1 Tourism direct GDP as a proportion of total GDP and in growth rate
	Tourism sector revenue	1	8.9.1 Tourism direct GDP as a proportion of total GDP and in growth rate
Increased primary school gross enrolment	Primary school first cycle (1-4) gross enrolment rate (GER) including AEB (%)	2	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex

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	Male and female gross enrolment	2	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
	Primary school second cycle (5-8) GER (%)	2	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
	Male and female gross enrolment	2	4.3.1 Participation rate of youths and adults in formal and non-formal education and training in the previous 12 months, by sex
	Primary school (1-8) GER Including Male and Female Gross enrolment including AEB (%)	2	4.3.1 Participation rate of youths and adults in formal and non-formal education and training in the previous 12 months, by sex
	Male and female gross enrolment	2	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
Increased primary school net enrolment	See above	2	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
Decreased adult illiteracy rate	Adult education enrolment (in millions)	2	4.c.1 Proportion of teachers in (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organised teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country
	Adult education enrolment rate %	2	4.a.1 Proportion of schools with access to (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)
Increased secondary school enrolment	Gross enrolment rate for grade 9-10 (%)	2	
	Male and female rate	2	

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	Gross enrolment rate for grade 11-12 (%)	2	
	Male and female rate	2	
	Total number of students admitted to preparatory school (11-12) in (%)	2	
	Ratio of girls	2	
Increased number of qualified teachers	Share of first cycle primary school, secondary school	2	
Increased number of students with special needs	Regular	2	
Improved health conditions	Primary health service coverage (%)	1	3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)
Reduced maternal mortality	Maternal mortality rate per 100,000	1	3.1.1 Maternal mortality ratio
Improved child health condition	Contraceptive prevalence rate (CPR) (%)	2	5.6.1 Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care
	Deliveries attended by skilled health personnel (%)	1	3.1.2 Proportion of births attended by skilled health personnel
	Pentavalent 3 vaccination coverage (%)	1	3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)
	Reduced under-5 mortality per 1,000 children	1	3.2.1 Under-5 mortality rate
	Neonatal mortality per 1,000 children	1	3.2.2 Neonatal mortality rate

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Eliminated child malnutrition problem	Under-5 stunting rate (%)	1	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age
	Under-5 wasting rate (%)	1	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age
Successful TB vaccination and control	Detection rate of all forms of TB (%)	1	3.3.2 Tuberculosis incidence per 100,000 population
Reduced malaria epidemic	Incidence rate of malaria (%)	1	3.3.3 Malaria incidence per 1,000 population
Reduced HIV/AIDS transmission	HIV/AIDS incidence rate (%)	1	3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations
Clean and healthy environment	Proportion of open defecation free and verified <i>kebeles</i> (%)	2	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
Improved health and health related risk management	Proportion of population benefited rehabilitation service (%)	2	3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance-use disorders
Established research funds to enhance national technological capability	Established research fund	3	9.5.1 Research and development expenditure as a proportion of GDP
Increased number of researchers in fields of natural science, engineering, medicine and agriculture	Researchers in number	1	9.5.2 Researchers (in full-time equivalent) per million inhabitants
Change agencies who transform the developmental goals into results	Percentage of effective public servants	2	16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions
Institutions achieve their missions with effectiveness and efficiency	Percentage of effective and efficient institutions	3	16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar)

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Reduced crime rates and incidences	Percent of attempted crimes	2	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age
Strengthened capacity to take legal measures against corruption	Recorded corruption charges	1	16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months
Reduced number of crimes	Reduced crime rate per 1,000 people	1	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age
Improved document registration and authentication	Document registration and authentication service (%)	1	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognised documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure
Better economic benefits for organized women	Number of women benefited from micro and small enterprises	3	2.3.2 Average income of small-scale food producers, by sex and indigenous status
Better economic benefit for rural women	Number of women who obtained land ownership certificate	2	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognised documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure
Improvement of women's leadership participation at all levels	Per cent of women in parliament	1	5.5.1 Proportion of seats held by women in (a) national parliaments and (b) local governments
Protect the rights of children	Per cent of children who have a birth certificate	1	16.9.1 Proportion of children under 5 years of age whose births have been registered with a civil authority, by age
	Children whose rights are respected	2	8.7.1 Proportion and number of children aged 5-17 years engaged in child labour, by sex and age
People who are aware of and benefited from social security services	Number of citizens (50% women) benefited from social safety net programs	1	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable

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Increased private sector social security coverage, accessibility and benefits	Registered number of civil servants	2	16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions
Growth of informal economic sectors receiving job security and safety extension services	Per cent of informal economic sectors accessed through job security and safety extension services	2	8.3.1 Proportion of informal employment in non-agriculture employment, by sex
Reducing 147 million metric tons of greenhouse gas emissions from economic sectors	Number of communities aware about climate change (in millions)	2	12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
High external assistance	Amount of aid (in million USD)	3	17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) donors' gross national income (GNI)
Improved forest coverage	Increased forest coverage (%)	1	15.1.1 Forest area as a proportion of total land area
	Forest coverage (%)	1	15.1.1 Forest area as a proportion of total land area

Legend

1 = Well aligned: There is a target indicator in GTP II that has either a) a perfect match among the Global Framework indicators or b) a close match, that is, an indicator that is similar in scope and ambition

2 = Partially aligned: There is a target indicator in GTP II that corresponds to an indicator in the Global Indicator Framework but remains behind it in scope and/or ambition

3 = Not aligned: The GTP II indicator has no equivalent or close or distant match in the Global Indicator Framework.

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Discussion Papers

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