

Action Agenda for a New Food and Land Use Economy in Ethiopia

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The
Food and Land Use
Coalition



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CHAPTER 1:

A Vision of a Sustainable Food and Land Use System in Ethiopia



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Recent political and administrative changes in Ethiopia have provided the country with a remarkable opportunity to build a new economy. Such an economy would not only create jobs, boost export earnings, ensure national food security, and turn Ethiopia into a middle-income country by 2030, it would also:

- provide all Ethiopians with the healthy, nutritious food they need;
- innovate with agricultural commercialization so that it benefits youth, closes gender gaps, and ensures sustainable land use practices; and
- safeguard a sustainable supply of wood, fiber, water, and other benefits from the country's natural resources for now and for future generations.

Moreover, such an economy could make Ethiopia an innovative leader in national planning and a pioneering investor in its human and natural capital, because it would:

- make economic development and land use plans predictable and transparent, leading to further investments from companies acknowledging the lower risk of future land and resource conflicts;

- align a prevention-oriented national health plan with coordinated efforts to boost farmers' productivity, increase food safety, expand access to balanced nutrition, and establish dietary guidelines to avoid a rapid rise of noncommunicable diseases such as diabetes and coronary heart disease; and
- build peace and security now and at the same time advance the country's long-term security by investing in the protection and restoration of Ethiopia's freshwater, forests, and other ecosystems to enhance the economy's resilience both to a changing climate as well as global market forces.

To put it more succinctly: *Envision 140 million Ethiopians living by 2030 in a productive, inclusive economy that is improving the health and well-being of all citizens, creating jobs, providing food and nutrition security, restoring degraded landscapes, protecting critical ecosystems, and expanding tree cover for future prosperity.*

Ethiopia can realize such a vision for its economy, in which governments, businesses, and communities jointly build an efficient, productive, and sustainable food and land use system. What is needed to make that happen is to have a dialogue and reach a consensus on the key objectives for a sustainable food and

land use system, the conviction to act quickly, and a clear idea of what to do. This is the idea behind the *Action Agenda for a New Food and Land Use Economy* presented in this document. This *Action Agenda* highlights promising entry points for actions that could demonstrate that real progress toward such a vision is possible with immediate benefits.

Critically, the strategic areas proposed by this *Action Agenda* align well with the Ethiopian government's ambition spelled out in its A New Horizon of Hope initiative, especially its focus on boosting agricultural production, agro-processing, and industrial development, and on strengthening the public and private sector. Moreover, the ideas behind the strategic action areas certainly can provide food for thought for innovations that put the preparation and implementation of the country's upcoming 10-year Perspective Development Plan and associated short-term plans on a solid footing.

The Food and Land Use Coalition aims to demonstrate within the *Action Agenda* that the positive economic impacts of such improvements would be highly significant. Table 1 presents a preview of the potential benefits of four prioritized strategic action areas of the *Action Agenda* for 2020–21, which are discussed more comprehensively in subsequent pages.

TABLE 1

Potential Benefits of Strategic Areas of the Action Agenda Prioritized for 2020–21

Strategic action area	Economic opportunity of action
Boost yields on existing crop and grazing lands	
Support sustainable agricultural commercialization of crops	Rural incomes and crop productivity increased. Income of at least 700,000 smallholder farming households increased and crop productivity on more than 350,000 hectares boosted over three years in areas prioritized for agricultural commercialization.
	Additional net benefits from integrated resource management realized at farm level and within agricultural landscapes . These include gains resulting from agricultural input efficiency, increased farmers' revenue, and drought and climate resilience.
	Innovation and resources of the private sector leveraged to establish sustainable value chains.
	Agricultural expenditures of more than US\$350 million nudged on a path to a green economy.

Continued on next page

TABLE 1

Potential Benefits of Strategic Areas of the Action Agenda Prioritized for 2020–21 (Cont'd)

Strategic action area	Economic opportunity of action
Boost yields on existing crop and grazing lands	
Boost yields of animal source foods from sustainably managed landscapes	Incidence of poverty reduced considerably for livestock-keeping households , based on implementing the Livestock Master Plan, an initial investment of US\$388 million over five years.
	Food and nutrition security increased. A significant meat production–consumption gap projected for 2030 closed, if dairy and poultry production can be increased and if promotional activities to change consumption preferences can shift the share of chicken in total meat consumption from 5 to 30 percent.
	Agricultural gross domestic product increased over five years (e.g., by US\$283 million from improved family dairy commercialization, by US\$59 million from improved family poultry operations), based on implementing the Livestock Master Plan.
	Potential of new export earnings from milk and poultry products realized .
Improve efficiencies in the food system	
Measure food loss for agricultural commercialization commodities and reduce loss where economically viable	About US\$100 million in expected total revenues from domestic and export markets saved (otherwise lost over three years) or ecosystem conversion for new production on 27,000 hectares avoided for 10 priority crops in Agricultural Commercialization Clusters —if estimated farmer loss rates are confirmed in the field and economically viable loss reduction interventions can be implemented.
	Foreign exchange savings and other economic gains achieved. In 2010, Ethiopia had an estimated total postharvest loss of 2.04 million tons of grain while the country's import requirements stood at 1.16 million tons. Reducing food loss can free up farmer time, labor, and household budgets for other purposes.
	Food-related health risks reduced. Aflatoxins—carcinogens associated with pre- and postharvest contamination of food and feed—are a serious health risk and economic burden (including resulting in agricultural exports failing to meet international quality standards).
	Environmental conditions improved because of reduced pressure to convert ecosystems, consume fresh water, and purchase fertilizer.
Innovate finance	
Support lending in the agriculture and forest sectors and rural areas	Value of smallholder production increased by up to 60 percent per hectare , if credit constraints are alleviated.
	Willingness of farmers and livestock keepers increased to experiment with improved technologies to sustainably boost agricultural productivity .
	Rural incomes, savings, and number of businesses and jobs increased, and poverty and gender gaps closed , once greater access to mobile banking is achieved.
	Long-term investments in sustainable resource use more likely , once financial services reach rural constituencies and financial innovations can be introduced (e.g., crop and livestock insurance, long-term funds to grow trees and restore landscapes, risk sharing facilities to grow coffee and protect forests).

Source: See Chapter 3.



CHAPTER 2:

Context

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2.1 Point of Departure

Ethiopia's economy is growing fast and its economic structure is gradually shifting away from a mainly rural, agricultural base. This will create opportunities to advance systemic changes that support a sustainable food and land use system.

Ethiopia, with a population of about 105 million in 2017 (World Bank n.d.), a gross domestic product (GDP) of US\$80.6 billion in 2017,

and a GDP per capita of US\$768, is among the world's fastest growing economies (IMF 2018a). Between 2006–07 and 2016–17, real GDP grew at an annual rate of 10.3 percent and decelerated to 7.7 percent in 2016–17 (IMF 2018a; World Bank 2017a). This growth was accompanied by significant progress in reducing poverty and improving nutritional status (World Bank 2017a). About 23.5 percent of the population was living below the national poverty line in 2016, down from 27 percent in 2010–11 (Government of Ethiopia 2017a; UNDP Ethiopia 2018). Child malnutrition, as measured by stunting of children under five, fell from 58 percent in 2000 to 37 percent in 2019

(Government of Ethiopia 2016a; Government of Ethiopia 2019a).

Agriculture plays a large role in the country's economy, contributing about 35 percent of GDP in 2017–18 (Government of Ethiopia 2019b) and 65 percent of employment in 2019 (World Bank 2019a).¹ Agricultural land to grow crops and raise livestock is by far the dominant land use nationally (about 15 percent² and 66 percent³ of Ethiopia's land area, respectively). Crop production directly contributed about 23 percent of the GDP in 2017–18, whereas livestock accounted for about nine percent, and other subsectors, mostly forestry, contributed slightly above three percent.⁴ About 15 million smallholder farms grow cereals such as wheat, maize, teff, sorghum, and barley, the leading crops in terms of area planted and quantity produced (Government of Ethiopia 2018a). More than 12.5 million households raise livestock across different production systems (FAO 2019a).

Ethiopia is one of the 12 global primary centers for origin and diversity of plant genetic resources. Its forests, woodlands, grasslands, wetlands, and rivers and its underlying biodiversity provide essential goods and services (Government of Ethiopia 2015a). They affect almost every sector of the economy, including agricultural productivity, food security, hydropower generation, human health, and climate resilience.

Ethiopia is one of the least urbanized countries in Africa, with currently about 19 percent of the population living in urban areas (World Bank 2015). This is expected to change rapidly, with the Central Statistical Agency projecting a

tripling of the urban population to 42 million by the 2030s (Government of Ethiopia 2013). Such a large rural–urban demographic shift, and an additional 40 million people overall by 2030, will profoundly affect the country's food and land use system.

The Ethiopian government aims to continue the current development trajectory and turn Ethiopia into a middle-income country (US\$1,050 GDP per capita) by 2025, and planners for the upcoming 10-year Perspective Development Plan foresee annual economic growth of 10 percent between 2020 and 2030.⁵ Structural economic transformation with rapid growth in infrastructure, manufacturing, and services, all supported by increased production and productivity in the agriculture sector will be required to achieve such growth. In fact, agriculture is not only expected to spur growth in agro-processing, but also envisioned to be a key driver of poverty reduction, improved nutrition, and inclusive growth in rural areas (Dorosh and Minten 2019). A productive and sustainable agriculture sector is also expected to meet rising food demand and shifts in consumption patterns in Ethiopia's growing cities and towns (Dorosh and Minten 2019). In addition, past planning (Government of Ethiopia 2016b) has been closely linked to the country's Climate-Resilient Green Economy (CRGE) strategy (Government of Ethiopia 2011), and is expected to be so in the future.⁶ This makes low-carbon and climate-resilient objectives, including sustainable management of Ethiopia's natural resources, central tenets of the country's growth and development priorities.

2.2 The Food and Land Use Challenge

A new, sustainable food and land use economy must simultaneously address four challenges in Ethiopia:

- Build a prosperous, market-driven, and resilient rural economy for farmers and livestock keepers, many of them facing diminishing farm sizes and loss of good grazing lands.
- Find a nutritious, more efficient way to feed 140 million people by the 2030s.
- Align the country's food and land use system with its CRGE strategy.
- Protect, and over time regenerate, biophysical resources and complex ecosystems.

Ethiopia has made considerable progress on each of these challenges individually and in specific geographic areas. The country can proudly point toward success stories such as boosting yields on existing croplands, restoring degraded lands, and improving nutrition. The following constraints, however, prevent these successes from being scaled up more rapidly and comprehensively throughout the country:

- lack of coordinated, cross-sectoral plans and associated challenges to implement existing plans;

- lack of a compelling economic narrative that addresses the four challenges holistically; and
- limited public and private sector capacity.

To address these food and land use challenges in an integrated manner and identify opportunities for innovative action will require a systematic approach that examines the interactions between different sectoral efforts and understands how they are affecting change together, rather than focusing on specific components in isolation. It also requires an integrated food and land use system perspective to detect unintended consequences resulting from negative feedback loops. For example, a transition from subsistence to commercial farming promoting monocropping can create economies of scale and boost farmers' income, but may also risk poor nutritional outcomes for rural children, especially if the food distribution system has bottlenecks and rural families cannot purchase healthy food.

Likewise, without a systems perspective, interventions may be conceived too narrowly, ignoring broader socioeconomic and environmental outcomes. For example, to overcome the challenge of food loss and waste, a narrow focus on value chain interventions could propose improved storage facilities without examining the effects of the resulting increase in food supply and a possible drop in food prices and farmers' income. Similarly, without a systems perspective, solutions to use byproducts or food remains in animal feed and composting to boost soil fertility may be overlooked (van Berkum et al. 2018).

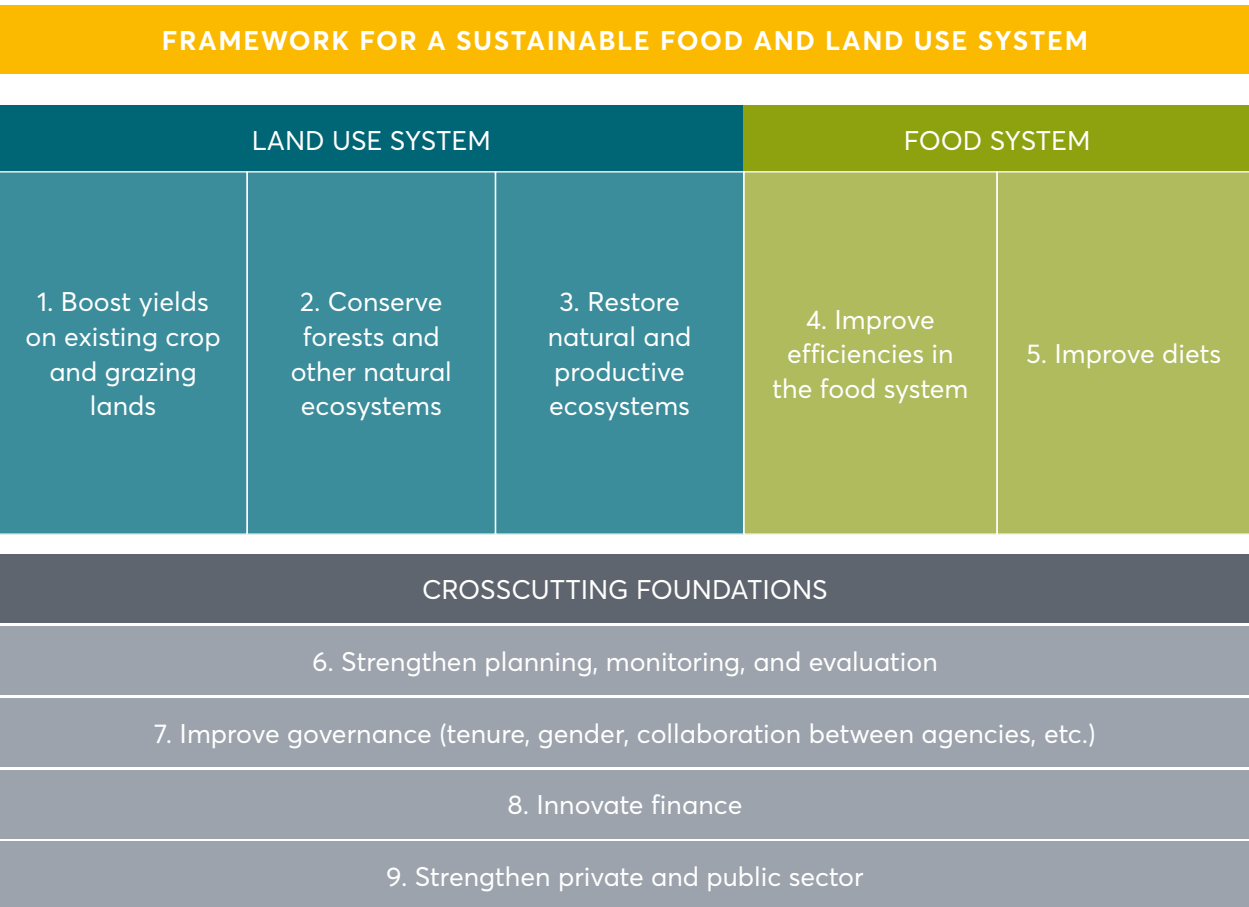
The *Action Agenda* identifies entry points for systemic change of these food and land use challenges, and provides a new narrative to encourage government, private sector, and civil society actions. Systemic change can come from innovations that create win-win synergies across economic sectors, avoid lock-in of costly land use, food production and consumption patterns, and leapfrog to more sustainable technologies and business models.

2.3 Framework for a Sustainable Food and Land Use System

While there is no universally agreed upon approach to examine food and land use issues, a common set of building blocks is emerging from the Food and Land Use Coalition's global and local engagements. Figure 1 summarizes five pillars across the food and land use system that need to be pursued simultaneously and summarizes four "crosscutting foundations" that provide the enabling conditions for sustainable action.

FIGURE 1

Framework for a Sustainable Food and Land Use System



Source: Derived from frameworks and analyses in *World Resources Report: Creating a Sustainable Food Future* (Searchinger et al. 2019) and *Growing Better: Ten Critical Transitions to Transform Food and Land Use* (Pharo et al. 2019), the Global Consultation Report of the Food and Land Use Coalition, and amended via stakeholder engagement. See Appendices A and B for more.



CHAPTER 3: Action Agenda

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Based on a review of government strategies, plans, and programs, and on discussions with food and land use experts,⁷ Food and Land Use Coalition partners selected a set of strategic action areas (Figure 2) per each of the pillars and crosscutting foundations outlined in the framework for a sustainable food and land use system (Figure 1). Most of the objectives of these strategic action areas overlap with the goals of existing, but often separate, government strategies and plans in Ethiopia. The added value of the selected areas is that they propose innovations that help to coordinate and harmonize actions across the government's existing strategies and plans so

that they reflect a more comprehensive food and land use system perspective.

Each strategic action area is intended to be pursued by a local action coalition, building on ongoing efforts and linking to existing institutions. Establishing coalitions pursuing innovative actions and investments for this comprehensive set of strategic areas would contribute considerably to a more sustainable food and land use system in Ethiopia. As such, this set of strategic action areas in Figure 2 represents the outline of an *Action Agenda for a New Food and Land Use Economy*, which is discussed in more detail in the following pages.

FIGURE 2

Strategic Action Areas for a New Food and Land Use Economy

LAND USE SYSTEM PILLARS	FOOD SYSTEM PILLARS
1. Boost yields on existing crop and grazing lands <ul style="list-style-type: none"> a. Support sustainable agricultural commercialization of crops b. Boost yields of animal source foods from sustainably managed landscapes 	4. Improve efficiencies in the food system <ul style="list-style-type: none"> a. Measure food loss for agricultural commercialization commodities and reduce loss where economically viable b. Measure and report food loss and waste for all agricultural commodities
2. Conserve forests and other natural ecosystems <ul style="list-style-type: none"> a. Establish coffee as a successful deforestation-free export commodity b. Advance commercial orientation and markets for sustainable wood and forest products c. Establish incentives for water-related ecosystem services 	5. Improve diets <ul style="list-style-type: none"> a. Scale up research-based community solutions to end child malnutrition b. Develop guidelines and other mechanisms for healthier diets
3. Restore natural and productive ecosystems <ul style="list-style-type: none"> a. Increase incentives for restoration enterprises 	
CROSSCUTTING FOUNDATIONS	
6. Strengthen planning, monitoring, and evaluation <ul style="list-style-type: none"> a. Identify science-based targets and pathways to achieve the Sustainable Development Goals b. Establish an enhanced system of land use planning and implementation 	
7. Improve governance <ul style="list-style-type: none"> a. Improve land governance b. Advance gender-responsive budgeting 	
8. Innovate finance <ul style="list-style-type: none"> a. Support lending in the agriculture and forest sectors and rural areas 	
9. Strengthen private and public sector <ul style="list-style-type: none"> a. Strengthen capacity of agriculture and forest sector institutions and partnerships * 	

Notes: a, b, and c: Strategic action area. The figure introduces altogether 16 strategic action areas.

*No specific, detailed action for crosscutting foundation 9 will be discussed in Chapter 3 of this document. Instead, institutional capacity building and partnership innovations are expected to be pursued directly through action coalitions that include the public and private sector for the five pillars and three other crosscutting foundations. Background studies and feedback from experts have highlighted the considerable capacity constraints of the government, private sector, and communities. Supporting local capacity and empowering federal, regional, and local actors to implement the new food and land use economy vision will be vitally important.

Source: Strategic action areas prioritized based on review of government strategies, plans, and programs, and discussions with food and land use experts.

3.1 Boost Yields on Existing Crop and Grazing Lands

CONTEXT

Through a combination of policy reforms, agricultural investments, and production enhancement initiatives, outlined originally in the Agricultural Transformation Agenda,⁸ subsistence farming is transitioning to commercial agriculture with better market linkages and growing adoption of modern inputs (Government of Ethiopia 2017b). The Central Statistical Agency reports increasing yields for key cereal crops between 2011–12 to 2016–17, resulting in a national average productivity increment of 20 percent for maize, 21 percent for teff, 27 percent for wheat, and 21 percent for barley during this five-year period (Government of Ethiopia 2017b).

To sustain agricultural growth and build the agro-processing sector, these gains need to continue and be adopted by a larger number of farmers throughout the country. This is especially important considering the country's demographic and employment challenges—about 65 million Ethiopians are below the age of 24 and youth unemployment is an especially critical concern in rural areas (United Nations 2019). More investment and policy support is required to overcome constraints on irrigation technologies, agricultural mechanization, modern inputs, and efficient use of water resources—all barriers to sustaining yield gains outlined in the government's A New Horizon of Hope (Office of the Prime Minister of Ethiopia 2018) and discussed in the preparation of the 10-Year Perspective Development Plan.⁹

The agricultural sector faces several structural challenges. The average farm size has declined over the past decade to less than a hectare (ha),¹⁰ and is expected to decline further in the future. Ethiopia's youth is less interested in farming, young farmers have less land, and the average age of a farmer is increasing (Dorosh and Minten 2019; Bezu and Holden 2014).

Other sustainability challenges need to be solved as well. Efforts to increase agricultural production must close productivity gaps across gender and become more nutrition-sensitive, climate-resilient, and environmentally sustainable (Government of Ethiopia 2017b; World Bank and Ethiopian Development Research Institute 2018). An assessment of land degradation in Ethiopia's rainfed highlands concluded that without additional soil and water conservation investments, annual crop production is expected to decline by more than five percent after 30 years (Hurni et al. 2015).

Ethiopia's national livestock herd produces about 1.1 million tons of meat, 419 million eggs, and 5.6 billion liters of milk per year (FAO 2019a). In addition, livestock provide about 68 million tons of organic fertilizer and almost 617 million days in animal traction (Shapiro et al. 2017). Overall, productivity and commercialization of the livestock sector is low. For example, average national dairy production of about 1.5 liters per cow per day is about one-eighth of Kenya's (World Bank 2017b). Demand for dairy and poultry products, especially in urban and peri-urban areas, outstrips supply resulting in high prices for consumers (Government of Ethiopia 2019c). As a result of low productivity, the sector has relatively high greenhouse gas (GHG) emissions per unit of product (World Bank 2017b).

At a project level, productivity for selected livestock commodities has increased, but not scaled nationally (ILRI n.d.). A national Livestock Master Plan has set ambitious targets (Shapiro et al. 2015; Shapiro et al. 2017). Progress toward related productivity targets within the past five-year plan, however, has been below expectations (World Bank 2017b; USAID 2013; Tilahun and Schmidt 2012).

Making agricultural commercialization of crops sustainable and achieving increased yields of animal source foods from sustainably managed landscapes represent two strategic entry points to advance a sustainable food and land use system. They align well with national priorities being considered under the upcoming 10-year Perspective Development Plan.¹¹

3.1.1 SUPPORT SUSTAINABLE AGRICULTURAL COMMERCIALIZATION OF CROPS

Objective and rationale for advancing action

The objective is to develop a model of sustainable agricultural commercialization, linking to the innovations in the Agricultural Commercialization Clusters led by the Ministry of Agriculture and the Agricultural Transformation Agency. The clusters seek to enable farmers to sell their products at a competitive price to viable markets and increase agricultural productivity in a sustainable manner.

Improving market linkages and managing soil, water, nutrients, and other input resources in an optimal, safe, and integrated manner are essential building blocks for achieving sustainability. Sustainability also requires staying within the limits of current agricultural areas to avoid further deforestation and ecosystem transformation (ProLand 2016). Where agroecological and economic conditions are favorable, land and resource managers can be incentivized to seek multiple benefits and services from the land by investing in mixed crop–livestock–tree system technologies on farms and mosaics of multiple land uses within landscapes. Moreover, to contribute to more equal economic opportunities and improve health and well-being, agricultural commercialization must ensure greater participation of women, youth, and people who are landless—as well as become more nutrition-sensitive.

The reason for this focus is because:

- Boosting the agricultural productivity and market orientation of smallholder farmers is a high economic development priority for the country and greatly contributes to increasing farmers' income and creating new jobs in agro-processing.
- New collaborative models focused on specific geographic areas are successfully transforming smallholder production in Agricultural Commercialization Clusters.
- The clusters can become geographic "innovation hubs" to move from subsistence farming toward productive, inclusive,

environmentally sustainable, and commercial forms of farming.

- Platforms are readily available to engage stakeholders and scale a successful model of sustainable agricultural commercialization.
- A sustainable agricultural commercialization model that has been scaled widely across the country carries the promise of reducing future pressure on the food and land use system.

Proposed action

Sustainable agricultural commercialization can evolve from the initial success of commercializing smallholder production. It can be achieved through the following actions:

- *Increase productivity and strengthen value chains for priority commodities in Agricultural Commercialization Clusters.* Better input usage, higher yields, and more marketed surplus are essential to move subsistence farmers into commercial operations with greater incomes.
- *Identify viable actions to advance inclusiveness, nutrition-sensitivity, sustainable resource use, and better choices of land use options within Agricultural Commercialization Clusters.* To make agricultural commercialization sustainable, it must boost productivity, market linkages, and value addition and advance inclusive technologies and environmental sustainability (Government of Ethiopia 2017c). The latter requires targeted interventions tailored for different scales such as a farm, watershed, or landscape.

The Agricultural Transformation Agenda (Government of Ethiopia 2017b) has already committed to inclusiveness, that is to increase participation of and benefits to women, youth, and marginalized people. Efficient use of natural resources (soil, land, water, and energy), as well as climate-smart and nutrition-sensitive practices are also key themes of the agenda. If one were to add other land use actions within a cluster such as agroforestry and tree-based landscape restoration on marginal agricultural land, farmers and communities could choose from a comprehensive set of land use options to create productive

and resilient agricultural landscapes. Such a comprehensive vision of land use options aligns well with the objectives of a sustainable food and land use system.

Interviews in 10 selected Commercialization Clusters found implementation gaps related to nutrition, inclusiveness, sustainable resource use, and land use options (The Synergos Institute and WLRC, Addis Ababa University 2019). Further analysis and stakeholder dialogue is needed to determine economically viable options to close key gaps.

- *Develop and scale up a model of sustainable agricultural commercialization within agricultural landscapes.* Select the most promising options from above to define the elements and scope of a scalable model. This may include:
 - strengthen value chain alliances for selected agricultural commodities and geographic areas so that they encourage sustainable resource use and land use practices;
 - provide technical and marketing support for secondary and rotational crops to minimize monocropping and jumpstart innovations with a strong nutrition contribution;
 - support input supply chains for watershed restoration, agroforestry, and cut-and-carry livestock production to encourage mixed crop-livestock-tree system technologies on farms or to establish trees into the preexisting mosaic of land uses within a landscape; or
 - develop a spatial planning tool that supports a group of farmers to build effective commercial farm enterprises and strengthen evidence-based planning within agricultural landscapes.
- *Provide incentives that encourage sustainable value chains and resource management within agricultural landscapes.* Producing more from the same areas of land, while using fewer resources and pursuing multiple land use options within a geographic area, will require meaningful incentives for farmers and communities. The focus will be to promote other ecologically sustainable cultivation such as fruits, timber, and root crops (e.g., enset), beside the cluster priority

commodities. Developing new governance and financing mechanisms that guarantee the sustainable use and conservation of natural resources is critical here. This may include a trust fund to finance watershed conservation and reward farmers to safeguard ecosystem services. Certification schemes can play a role in rewarding farmers' commitments. Moreover, land use planning and secure land tenure are vital means for promoting good agricultural practices.

Economic opportunity of action and cost of inaction

Advancing sustainable commercialization in Agricultural Commercialization Clusters is expected to create the following economic benefits:

- increase the income of at least 700,000 smallholder farming households and boost crop productivity on more than 350,000 ha over three years;¹²
- derive benefits from integrated resource management at farm-level and within agricultural landscapes, such as gains in input efficiency, income, and drought and climate resilience;¹³
- leverage the innovation and resources of the private sector to establish sustainable value chains; and
- nudge agricultural expenditures of more than US\$ 350 million on a path to a green economy.¹⁴

Who needs to act

The Ministry of Agriculture, Agricultural Transformation Agency, and established platforms (e.g., the steering committee of the Agricultural Commercialization Council, Regional Transformation Councils, Value Chain Alliances) will be essential. Private sector and civil society actors are needed to develop and scale up a model of sustainable agricultural commercialization. To identify incentives for integrated land use practices will require actions by government institutions with the mandate to improve the investment climate, establish frameworks to pay for ecosystem services, and certify sustainable practices.

3.1.2 BOOST YIELDS OF ANIMAL SOURCE FOODS FROM SUSTAINABLY MANAGED LANDSCAPES

Objective and rationale for advancing action

The objective is to scale up measures to boost yields of animal source foods and transform spatial patterns of raising livestock within rural and peri-urban landscapes in a manner that increases their economic returns, environmental sustainability, and climate resilience.

The rationale for this strategic area is as follows:

- Increasing the supply of animal source foods will reduce the country's nutrition deficits.
- A Ministry of Agriculture project is investing US\$176 million to implement key elements of the Livestock Master Plan in the highland livestock production zone. The project is targeting directly about 1 million households in 58 *woredas* between 2018 and 2024 with a focus on dairy cows, small ruminants, and poultry (World Bank 2017b). This creates an opportunity to establish good animal husbandry practices that are aligned with a sustainable food and land use system.
- The Agricultural Transformation Agency is supporting this project by linking more productive farmers to markets, strengthening training and extension services, and conducting studies to optimize geographic clustering (Government of Ethiopia 2017b). This creates an opening to learn from and link to the geographically focused crop commercialization efforts, and develop innovations that embed livestock production sustainably in rural landscapes.
- A new Ministry of Peace project is investing US\$451 million to increase livelihood resilience in the lowlands (World Bank 2019b). This creates an opportunity to strengthen market linkages and sustainability of pastoral and agro-pastoral production and make long-term investments in rangeland restoration.

Proposed action

The following actions can move Ethiopia toward a sustainable food and land use system:

- *Provide new technologies and services to boost yields of animal source foods and support other efforts to improve livestock productivity and market linkages.* Key measures include strengthening markets for livestock products and pioneering improvements in breeding, fodder production, feed additives, veterinary care, grazing practices, and rangeland restoration. Specific livestock value chains and actions to achieve livestock productivity gains are already prioritized for Ethiopia's different livestock production systems in the country's Livestock Master Plan (Shapiro et al. 2015).
- *Develop scalable models that embed livestock production in sustainably managed landscapes.* Policy responses to advance sustainable livestock production in agricultural landscapes must be tailored to the land use challenges of Ethiopia's different production systems. In the highlands, livestock production faces limited land availability and competes for land suitable for crops, forests, and urban areas. In the lowlands, pastoral livestock producers require access to riparian areas, especially during the dry season and drought. In many cases these areas are also suitable for irrigated agriculture.

Lead implementers of the Livestock Master Plan need to explore opportunities for three different models that embed livestock production in sustainably managed landscapes. Once established, each model can become a reference point for policy formulation and good practice guidelines to direct livestock sector development and land use planning in the rest of the country. These three models are:

- Model of **small to medium-size commercial dairy farms operating sustainably within an agricultural landscape in the highlands.**
- Model of **sustainable dairy and poultry production situated in peri-urban areas.**

- Model of a **sustainable agro-pastoral and pastoral production zone that ensures livestock mobility**. This model must address access and rights to grazing land and other resources and cover risks related to drought, floods, and resource conflicts (e.g., with irrigated crops).

Each model can be developed based on analytical work that goes together with multi-stakeholder engagement. The socioeconomic and environmental analysis would explore different scenarios to source feed, manage nutrients and water, restore degraded land to provide feed, or spatially consolidate grazing and croplands, for example. Based on the analytical findings and stakeholder feedback, an action coalition can then make a chosen model operational in one geographic area. The final step will be to scale the effort countrywide.

- *Promote activities that advance envisioned shift in consumption of animal source foods and strengthen monitoring and planning of national livestock production targets.* The Livestock Master Plan envisions an increase of low-GHG-emitting chickens and slowed down growth of high-emitting cattle through a higher offtake rate and other investments boosting animal productivity. With this approach, the Livestock Master Plan sought to align its production targets with those in the Livestock Investment Plan under the CRGE strategy. This resulted in a matching of targets for poultry meat, but not for cattle numbers.¹⁵

Growth of the poultry sector, as envisioned in the Livestock Master Plan, would close a projected meat production–consumption gap by 2030. This exceeds the CRGE target of increasing chicken in total meat consumption from 5 to 30 percent (Shapiro et al. 2017; Shapiro et al. 2015). The envisioned substituting of chicken for red meat coming from larger high-GHG-emitting ruminants will require promotional activities to change tastes and preferences from beef and mutton, as well as from native to exotic breeds of chicken (Shapiro et al. 2015).

The Livestock Master Plan projects a 52 percent growth of red meat production from family farms, pastoralists, and feedlots over five years. It foresees a reduction in annual growth rates of the national cattle herd, but total numbers would still increase, resulting in higher cattle numbers by 2030 than those in the CRGE strategy (Shapiro et al. 2015). To reduce poverty, average herd size per household, and animal productivity, livestock keepers will require financial incentives to change behavior (Shapiro et al. 2015).

For the time being, much can be gained from productivity gains for all livestock commodities since overall productivity is so low. Over the medium term, a more granular analysis of targeted pathways to supply animal source foods with a food and land use perspective is needed. It will be essential to monitor the socioeconomic and environmental investment impacts of production targets—perhaps under a national economic development planning and monitoring system.

Economic opportunity of action and cost of inaction

Implementing the Livestock Master Plan, with an initial investment of US\$388 million over five years, would reduce poverty considerably for livestock-keeping households¹⁶ and increase food and nutrition security. GDP is projected to grow over five years by about US\$283 million from improved family dairy commercialization and by about US\$59 million from improved family poultry interventions.¹⁷ There is potential for new export earnings from milk and poultry products (Shapiro et al. 2015).

Who needs to act

Lead actors are the Ministry of Agriculture, its associated structure from the federal to local level, the Agricultural Transformation Agency, and the Ministry of Peace. Other partners include institutions supporting research and trials on mixed tree–crop–livestock systems, sustainable intensification of mixed crop–livestock systems, and climate-smart livestock systems.¹⁸ Developing models of sustainable landscapes will require local stakeholders, including the government, private sector, and civil society.

3.2 Conserve Forests and Other Natural Ecosystems

CONTEXT

Ethiopia's current trends of forest loss and degradation resulting from land conversion and unsustainable woody biomass harvests need to be reversed to avoid limiting economic performance, exacerbating water stress, and undermining resilience at the national and household levels (World Bank and Ethiopian Development Research Institute 2018). A failure to do so would result in these negative trends reducing the future benefits expected from a growing forest economy and could impede other key economic sectors envisioned to drive Ethiopia's growth (World Bank and Ethiopian Development Research Institute 2018). For example, ongoing forest loss could make it costlier to increase the supply of electricity that relies on hydropower expansion and to expand irrigation that enables farmers to produce high-value nutritious fruits and vegetables and become less vulnerable to droughts. It could also make it a greater challenge to provide housing from locally sourced construction materials and to grow the service sector that benefits from new high-value forest-based tourism packages.

Other natural areas are disappearing as well, mainly as a result of constraints in land use planning. A detailed land use change assessment of major urban centers and associated transport corridors showed that urban expansion between 1986 and 2000 not only reduced cultivated land, it also reduced grasslands, wetlands, and other natural areas—affecting food and livestock production patterns, the supply of hydrological services, and the benefits derived from wetlands and biodiversity (Zeleeke et al. 2016).

The good news is that with the new 10-year National Forest Sector Development Plan (NFSDP), which was officially launched in 2018, the government aims to not only reverse forest trends, but also to increase forest cover from 15 to 20 percent within five years. The NFSDP also expressed continued commitment to restore

15 million ha of degraded and deforested lands under the New York Declaration on Forests and the Bonn Challenge.¹⁹ Successful NFSDP implementation is expected to have a net present value of US\$30.8 billion, with an average benefit of more than US\$3 for every US\$1 invested. The NFSDP seeks to create 630,000 full-time jobs and boost the value of agricultural and other sectors by US\$3.2 billion, primarily from reduction in soil erosion (Government of Ethiopia 2018b).

The next step is to implement the NFSDP. While initial funding for key components was secured through the US\$80 million REDD+ Forest Investment Program 2017 (Government of Ethiopia 2017d), additional financing is required.

Three strategic areas provide entry points to advance actions that help conserve forests and other natural ecosystems. All align well with key pillars in the NFSDP and include:

- establish coffee as a successful deforestation-free export commodity;
- advance commercial orientation and markets for sustainable wood and forest products; and
- establish incentives for water-related ecosystem services.

3.2.1 ESTABLISH COFFEE AS A SUCCESSFUL DEFORESTATION-FREE EXPORT COMMODITY

Objective and rationale for advancing action

The objective is to increase economic opportunities for smallholder coffee producers, grow Ethiopia's foreign exchange earnings, and establish a new model of sourcing coffee that protects forests and redirects market forces toward sustainable land and resource management.

The coffee sector already attracts investments to overcome productivity, processing, and marketing bottlenecks, which has immediate effects on farmers' income and can create new jobs in the coffee value chain (Minten et al. 2019a; Duguma 2017; Abayneh et al. 2017; Minten et al. 2014). The private sector is a key player in the coffee market and is investing in "good coffee" initiatives, which can create

a powerful momentum for change across supply chains to support forest protection and environmental and social sustainability (Baptista and Jenkins 2017; IDH n.d.a; Nestle Nespresso n.d.).

Overcoming the barriers to sustainable production of Ethiopia's foremost commodity and to support the transition to deforestation-free supply chains represents a major investment opportunity. The long-term goal is to establish deforestation-free coffee landscapes and to contribute to far fewer GHG emissions for value chains across the nation.

Proposed action

A partnership is already advancing important aspects of a more sustainable food and land use system. The Ethiopian Forest Coffee project, led by the Partnerships for Forests in collaboration with TechnoServe, GIZ, and others, is working with farmers and their cooperatives in Ethiopia's Kaffa, Sheka, Bench Maji, Ilubabor and Bale areas to strengthen their value chains and build a new brand of specialty coffee.²⁰ In addition, this partnership is also setting up forest cover and coffee traceability monitoring to assure consumers about the forest conservation practices in the sourcing area.²¹

To amplify these ongoing efforts and further get onto the path of a sustainable food and land use system, geographically targeted actions for Oromia and Southern Nations, Nationalities and Peoples' Regional States should be a priority. These two regions host 74 percent of Ethiopia's remaining forests and more than 13 million ha of protected areas with high biodiversity, including the remaining genetic pool of *Coffea arabica*. The regions' agro-ecological zones also include priority areas for agricultural commercialization of smallholder farming.

Clearing of forests for agricultural use has been a significant driver of land use change. The following actions can reverse this past land use trend and support transformation toward deforestation-free coffee value chains and a sustainable food and land use system:

- *Strengthen enabling conditions for the development of deforestation-free coffee landscapes and value chains.* Farmers and their cooperatives will require support to enhance the yield and quality of the

coffee product, increase value addition through processing, and access premium markets through certification and improved marketing. In addition, conditions need to be put in place for the coffee value chains to become deforestation-free. This can be achieved by mapping the current production practices and value chain support, and developing specific management objectives of deforestation-free coffee production for different geographic areas (i.e., coffee landscapes). A shift toward deforestation-free coffee landscapes will require committing coffee value chain stakeholders and other land users in the selected jurisdictions to a common management plan outlining agreed upon production and natural resource use practices. Regional and national coffee platforms to certify specialty coffee brands and jurisdictional traceability need to be strengthened to assist in branding and realize price premiums.

- *Facilitate increased investments in deforestation-free coffee value chains by global supply chain actors and secure price premiums for coffee growers.* International coffee buyers, traders, and roasters can help to secure financing and expertise on sustainable value chains. New partnerships with farmers and cooperatives for responsible sourcing can directly link to global markets. Foreign exchange and commodity exchange reforms are needed to secure a greater share of the export price for coffee growers (Tamru et al. 2019).
- *Support sustainable commercialization of smallholder farming and good land use planning practices in the selected coffee landscapes.* To reduce deforestation pressure in the selected coffee landscapes, the following actions in two other strategic areas of the *Action Agenda* are needed:

Adopt sustainable practices in areas prioritized for agricultural commercialization. Good agricultural practices and certifiable best practice production standards need to be adopted in agricultural land near wild coffee forests to prevent further forest loss. This applies specifically to crops prioritized in Agricultural Commercialization Clusters (e.g., coffee and wheat are often grown at similar elevations as in southeastern

Oromia). Support will be needed to integrate coffee, trees, and sustainable non-timber forest products into the prioritized cluster commodity value chains to encourage more mixed land uses in agricultural landscapes.

Advance a robust integrated land use planning system. Current land use planning capacity is limited in Ethiopia, and no land use policy has been finalized.²² Land use allocation and planning decisions are and have historically been based on a limited understanding of the impacts on the environment, landscapes, and ecosystems. Key elements of Ethiopia's roadmap for the National Integrated Land Use Plan and Policy need to be implemented (Bekele-Tesemma 2017).

Economic opportunity of action and cost of inaction

Strengthened coffee value chains and deforestation-free coffee landscapes can deliver multiple benefits, including:

- Adoption of better agronomic practices, improved varieties, and enhanced coffee bean processing will increase farmers' income since most of the 4 million smallholder farming households growing coffee have not benefitted yet from such efforts (Minten et al. 2019a). The East Africa Coffee Initiative demonstrated gains in income of 21 percent and in farm-gate prices of 25–45 percent (IPE Triple Line 2017).
- Exporters linked directly to the global coffee market benefitted from a higher export price (Minten et al. 2019a).
- Ethiopia has great potential to grow its share of the global specialty coffee market. Specialty coffees, clearly distinguishable by their geographic origin and taste characteristics, receive higher prices, and the market is growing consistently. The specialty coffee segment has had the strongest overall growth in the coffee market in the United States, for example (Sethi 2017). Many of the coffees from Ethiopia's production systems have the potential to qualify as specialty coffees.²³ Forest coffee and semi-forest coffee grown under the canopy of natural forests (either in an unmodified or slightly modified forest

ecosystem)²⁴ have about a 200 percent price premium over non-forest coffee (Government of Ethiopia 2018c).

- One scenario estimated that boosting the share of specialty coffee to 80 percent of Ethiopia's total coffee exports would grow revenues by 21 percent in 2007–08 (Chemonics 2010). Total coffee export revenues stood at US\$525 million that year (Chemonics 2010) and reached almost US\$917 million during 2017–18 (USDA 2019).

Who needs to act

Lead partners include the Coffee and Tea Marketing Agency of Ethiopia, the Ministry of Agriculture, the Agricultural Transformation Agency, the Ethiopia Commodity Exchange, the Environment, Forest and Climate Change Commission, and their corresponding subnational institutions and platforms. Collaboration with and learning from existing projects such as the one led by the Partnership for Forests will be essential. Partnering with companies sourcing coffee from Ethiopia such as Starbucks, Illy, Jacobs Douwe Egberts, Nespresso, and others can strengthen value chains and boost market linkages.

3.2.2 ADVANCE COMMERCIAL ORIENTATION AND MARKETS FOR SUSTAINABLE WOOD AND FOREST PRODUCTS

Objective and rationale for advancing action

The objective is to spur demand for wood and forest products by linking farmers and communities to markets and building sustainable wood and forest product value chains. This will provide farmers and other land managers with a wider choice of economically viable land use options.

The National Forest Sector Development Program is mandated to advance innovation and expand the space for private sector involvement in the forestry sector (Government of Ethiopia 2018c). There is a high probability of success in advancing this strategic area because the government is committed to a process of systemic change by attracting foreign investment and leveraging existing momentum to transform Ethiopia's forestry sector in a way that catalyzes economic growth, generates employment, contributes

toward self-sufficiency in forest products, and enhances ecosystem services. Investing in the long-term sustainability of the forest sector is a strategic move that aligns well with Ethiopia's national growth and transformation plan. The forest sector is also a strong component of the United Nations' Sustainable Development Goals (SDGs), particularly SDG 13 Climate Action and SDG 15 Life on Land (Government of Ethiopia 2018d).

Proposed action

The following effort can open the door to a sustainable food and land use system:

- *Explore the feasibility of developing demonstration bamboo plantations on degraded community lands for commercial purposes and link them to efforts to build a bamboo industry and new value chains.* Establishing such plantations on degraded land would require more effort and resources, but align well with Ethiopia's 10-year target of 200,000 ha of new bamboo plantations and the country's goal to sustainably manage its bamboo resources (Government of Ethiopia 2018c). This action also has the potential to attract public and private investment for industrial uses, which can be expanded to meet the growing domestic demand for forest products.
- *Establish a processing facility that commits to a sustainable forest product supply chain* and can serve as a beacon to transform the forest sector.
- *Strengthen environmental and social safeguards to ensure a sustainable forest sector and sustainable value chains*, and advance a holistic implementation of the new Forest Proclamation (Federal Negarit Gazette of the Federal Democratic Republic of Ethiopia 2018).

Any effort to advance commercial orientation and market development of wood and forest products would closely align with policy responses for another strategic area of the *Action Agenda*: improve framework conditions for restoration enterprises.

Economic opportunity of action and cost of inaction

The NFSDP estimates that improving management of highland and lowland bamboo resources on about 300,000 ha and

establishing 200,000 ha of new bamboo plantations (possibly promoted as an outgrower scheme with smallholder farmers) would be economically viable, with projected revenues exceeding labor and material costs by a factor of 2.2 (Government of Ethiopia 2018c). The estimated benefits from reducing soil erosion would be US\$138.9 million (Government of Ethiopia 2018c).

Who needs to act

The Forest Sector Transformation Unit within the Environment, Forest, and Climate Change Commission can initiate efforts to advance innovative and sustainable forest product value chains. It will require close partnerships with wood processing firms and parastatals, the Ethiopian Chamber of Commerce and Sectoral Association, the Ministry of Industry, Ministry of Trade, and the Development Bank of Ethiopia.

3.2.3 ESTABLISH INCENTIVES FOR WATER-RELATED ECOSYSTEM SERVICES

Objective and rationale for advancing action

The objective is to create incentives for sustainable water use and compatible land use practices that safeguard hydrological functions and biodiversity, and avoid further loss of tree and forest cover within watersheds.

A policy window has opened with a completed roadmap and feasibility study (UNDP et al. 2018a) to establish payment for ecosystem services schemes. The roadmap defines detailed actions and roles of key government stakeholders to implement Ethiopia's strategy to set up payment schemes for ecosystem services (UNDP et al. 2018b). As a first step, the government is preparing a framework law to support such schemes.

One promising area in the roadmap is the implementation of water-related ecosystem services, which can create multiple wins across food and land use sectors. A functioning framework to establish payments for water-related ecosystem services will expand the choice of economically viable land use options for farmers and other land managers, which in turn can provide greater returns on investments for hydropower generation. If this is implemented, it can improve land tenure security, community empowerment, and ensure

a better balance between environmental, social, and economic objectives.

Proposed action

The following actions are needed to establish a functioning system for water-related ecosystem services:

- *Establish a National Committee for Natural Capital and Ecosystem Services (and associated institutions)* to advance Ethiopia's Strategic Plan on Payments for Ecosystem Services.²⁵
- *Support new regulatory framework for water-related ecosystem services* (e.g., fees related to waterworks, water supply and transfers, waste discharge, hydropower generation).
- *Support preparation of watershed management plans that reflect hydrologic ecosystem services* (e.g., to safeguard shallow groundwater supplies for agriculture, to ensure urban water supply for drinking water and manufacturing, to attenuate hydrological flows and mitigate flooding effects).
- *Initiate payment schemes* for hydrological services and associated performance contracts.

Economic opportunity of action and cost of inaction

Case studies show that the lifetime of hydropower reservoirs can be extended, dredging costs of irrigation canals can be reduced, and water treatment costs for cities and manufacturers can be lowered through watershed restoration and compatible land use practices that reduce erosion and increase water infiltration capacity. For example, high sedimentation rates have reduced storage capacity of the Koka Reservoir on the Awash River by 30 percent, affecting hydropower generation negatively (Gebreselassie et al. 2016). About 96 percent of Ethiopia's electricity comes from hydropower, making continued watershed protection and land restoration a worthwhile investment (World Bank and Ethiopian Development Research Institute 2018). Since the relationship between land use practices and hydrological flows are highly location-specific (Gebrehiwot 2015) and data are incomplete, no national estimate on the value of watershed protection benefits are available yet (UNEP 2016).

Who needs to act

Setting up the National Committee will require leadership from the Environment, Forest and Climate Change Commission and participation from the Ministry of Water, Irrigation and Energy, Ministry of Agriculture, and other government institutions. Mapping of watershed resources and modeling hydrological potential by government and research institutes are critical tasks from which participatory watershed management planning can evolve. Finally, local land and water users within priority watersheds will be the key actors to set up new payment schemes.

3.3 Restore Natural and Productive Ecosystems

CONTEXT

The government has acknowledged land degradation as a serious threat and established ambitious restoration targets in the millions of hectares.²⁶ Unmitigated erosion and soil nutrient loss is lowering agriculture production in the order of 0.8 to 1.9 percent of Ethiopia's GDP per year (World Bank 2019c; Yesuf et al. 2005; Sonneveld 2002).²⁷

Over the past decades, large government programs (e.g., Sustainable Land Management Programme, Productive Safety Net Programme, Agricultural Growth Programme) and community restoration projects have aimed to reverse natural resource degradation and rehabilitate degraded landscapes. These efforts have supported farmers and other land managers to build soil and water conservation structures, establish area exclosures to encourage natural regeneration of vegetation, plant trees and fodder grasses, and invest in other restoration technologies.

In fact, Ethiopia is acknowledged as a global leader in landscape restoration, especially in the Tigray region (Whiting 2017). More recently, the government has launched a massive national tree planting campaign (Ploszajski 2019). National and international studies have documented how restoration investments can benefit rural people (Schmidt and Tadesse 2019; Ding et al. 2017). While household survey data and assessments of restoration programs in

Ethiopia provide evidence that farmers within and outside of these programs are constructing soil and water conservation structures on their land, the following steps should be taken to address two issues that require further attention if Ethiopia wants to achieve a more sustainable food and land use system:

- Provide incentives for long-term maintenance of soil and water conservation structures, sustainable land management practices, and tree-based landscape restoration (Schmidt et al. 2017; Schmidt and Tadesse 2019).
- Establish more accurate baselines and monitoring systems to boost effectiveness and geographic targeting of restoration efforts.²⁸

Boosting incentives for restoration is prioritized in the *Action Agenda* because it links to the dominant rural land uses and provides farm, landscape, and national-level benefits over the short and long term.

3.3.1 INCREASE INCENTIVES FOR RESTORATION ENTERPRISES

Objective and rationale for advancing action

This strategic area aims to accelerate the restoration of agricultural lands (which include croplands and rangelands), forests, other ecosystems, and watersheds. The specific objective is to improve the policy framework for restoration enterprises so that new restoration models can be developed, including those that could leverage the innovation, speed, and resources of the private sector.

The reason for this choice is the fact that despite Ethiopia's globally celebrated success in restoring degraded landscapes in parts of the country, current community-based restoration has not reached the speed or scale to achieve Ethiopia's restoration targets in time (Government of Ethiopia 2017d). This raises the question as to whether it is possible to identify new restoration models that include private sector innovations.

A new Forest Sector Transformation Unit within the Environment, Forest and Climate Change Commission is tasked with promoting public-private partnerships, and the government has expressed political goodwill to strengthen the framework conditions for business. This creates

an opportunity to test innovative models that might accelerate tree-based restoration, thereby complementing community-based restoration efforts. A national assessment has delineated 82 million ha suitable for tree-based restoration of which 11.4 million ha are top priority restoration landscapes (Government of Ethiopia 2018e).

Proposed action

The proposed action aims to identify barriers that constrain a community or company from starting new enterprises to make money from sustainably managing forests and farms, for example, by planting trees, restoring degraded forests and agricultural lands, or generating other new products and services. If key constraints such as land availability and finance could be removed and associated business environment and support services strengthened, it would open a new path to restore land with the help of the private sector and markets. The following key actions can advance restoration enterprises and ultimately support a sustainable food and land use system:

- *Examine suitability of emerging international business models to restore degraded land in Ethiopia.* To develop more specific recommendations that support restoration enterprises, it is necessary to understand the business models being advanced in other countries. The following examples of reference models are all highly relevant to the goals in Ethiopia's NFSDP and the National Forest Investment Program:

Establish an **outgrower scheme on farm or community land** (i.e., distributed plantation scheme) to grow roundwood.²⁹

Start a **sustainable bamboo processing business sourcing from certified plantations established on degraded land** reflecting the unique challenges to certify the sustainability of bamboo operations.³⁰

Restore degraded agricultural land to a full shade-grown coffee landscape.³¹

Increase tree cover in agricultural landscapes through financing and technical support to smallholder farmers coordinated by a nonprofit social enterprise.³²

Grant concessions to companies to restore degraded land, and halt forest degradation and loss (ecosystem restoration concessions).³³

Other factors guiding the selection of possible reference models should align with specific restoration challenges in Ethiopia, such as involving small-scale farmers, restoring degraded communal land, and using new restoration technologies and practices (e.g., greater use of indigenous tree species, shift from short-rotation monoculture plantations to long-rotation mixed species plantations).³⁴

The idea is to prepare a synthesis of reference models and examine whether they can be applied in their entirety or partially within Ethiopia. The objective is not to transplant these models, but to gain insights as to whether constraints should be addressed at the policy or at the business and market level. The study would specifically check whether these models would encounter possible structural constraints, many of them highlighted in the *Ethiopia Forest Sector Review* (Government of Ethiopia 2017e). It is expected that some of the structural issues from this analysis would overlap with the challenges encountered in establishing a vibrant commercial forest sector and being pursued by the stakeholders in the Public-Private Dialogue for Forest Investment and other proponents seeking to improve Ethiopia's investment climate (Ethiopian Chamber of Commerce and Sectorial Association 2017).³⁵

- *Based on international experience and aligned with national and local priorities, establish new demonstration restoration enterprises in selected suitable areas.* Once potential restoration models and suitable areas that are amendable to test them have been identified, invite existing or new companies to work with local stakeholders to determine the scope and locations of demonstration sites. This effort needs to be well embedded within regional action plans for the NFSDP and strategic efforts to establish industrial forestry clusters. Adopting a participatory forest landscape restoration planning approach is essential.³⁶ To increase long-term sustainability, good

alignment is required with planning of transport infrastructure and the location of processing industries.

- *Nurture established restoration enterprises and provide business expertise, capital, and policy support for further scaling up.* Farmers growing woodlots, wood-processing companies sourcing bamboo, and state forest enterprises seeking to establish a larger consistent wood supply all could benefit from new technical, financial, and policy support. Such support could, for example, strengthen value chains and market access, test "good-practice" woodlot management, establish demonstration plantations that mix fast-growing species and native trees, introduce new business models to reforest land with a mix of native trees, and establish a national system that certifies sustainable forestry and value chains.

Likewise, Ethiopia has a nascent group of small companies seeking to grow their business in the restoration economy. These entrepreneurs are finding new ways to make money from sustainably managing farms and forests, and providing products and services that help restore lands.

To grow these businesses and develop sustainable products and services that benefit these companies and the rural communities they operate in will require additional business and investment support, as well as accessing opportunities to learn from international experiences applying a wide range of business models. Such services can be provided by business accelerators that link promising entrepreneurs with capital and expertise. For example, the Land Accelerator, which was launched in Nairobi in 2018, is the first business accelerator focusing exclusively on enterprises in the land restoration sector.³⁷ Building on such support is essential to nurture entrepreneurship in Ethiopia's restoration economy. This could be further enhanced by a small financing facility providing seed funding of new restoration enterprises.³⁸

Economic opportunity of action and cost of inaction

Following the key steps mentioned above would grow the forest economy and have

positive spillovers in the agriculture and other sectors. Most importantly, it would increase the likelihood of reversing the negative trends of forest loss and land degradation and of achieving the forest cover targets set out in the NFSDP.³⁹ Improving the policy framework for restoration enterprise would add the option of leveraging business expertise to restore land and provide short- and long-term benefits:

- Since restoration activities are economically viable in Ethiopia, new business opportunities can be realized.⁴⁰
- Cost of damages from land degradation can be reduced or avoided.⁴¹
- New economic opportunities can be realized, and agricultural yields and water-related benefits can be safeguarded.⁴²

Without improving the policy framework, Ethiopia risks missing out on restoration innovations as are being successfully implemented by investment funds and companies in Latin America, for example (Initiative 20x20 n.d.).

Who needs to act

Leadership is required from the Environment, Forest, and Climate Change Commission, including the Forest Sector Transformation Unit and Regional Bureaus of Environment, Forest and Climate Change or their correspondents. The Ethiopia Forest Research Institute and other international research bodies, the Ethiopian Chamber of Commerce and Sectoral Association, the Ministry of Industry, Ministry of Trade, and various firms and parastatals all are stakeholders in improving the policy framework for restoration enterprises. The Development Bank of Ethiopia is key to initiating a public-private support program.

3.4 Improve Efficiencies in the Food System

CONTEXT

Ethiopia loses a significant share of the food it produces, with experts suggesting that the bulk is lost somewhere from the point of harvest to when food arrives at the processor

or manufacturer. Postharvest loss, based on household surveys, range between 2 to 4 percent for cereals and milk.⁴³ Other studies suggest higher loss for other commodities, but the underlying survey methods are unclear.⁴⁴

While Ethiopia has gained valuable insights from ad hoc studies of food loss for selected commodities, no national effort is systematically measuring and regularly reporting on food loss and waste. This lack of comparable data prevents the country from identifying hot spots of inefficiencies and proposing solutions that can benefit all actors at every stage of the value chain. Reducing food loss and waste are key steps to improving food security and decreasing the environmental footprint of the food system.

The following two entry points provide opportunities to make Ethiopia's food system more efficient:

- Measure food loss for agricultural commercialization commodities and reduce loss where economically viable.
- Measure and report food loss and waste for all agricultural commodities.

Actions for the former can be pursued immediately as part of the commercialization of smallholder farming pursued under the Agricultural Transformation Agenda. The latter will require more time.

3.4.1. MEASURE FOOD LOSS FOR AGRICULTURAL COMMERCIALIZATION COMMODITIES AND REDUCE LOSS WHERE ECONOMICALLY VIABLE

Objective and rationale for advancing action

The immediate objective is to reduce food loss in the value chains prioritized in the Agricultural Commercialization Clusters. This would result in increased food availability, an improvement in farmers' livelihoods, and reduced pressure on natural resources.⁴⁵ It will be a key step toward the long-term objective of reducing food loss for all commodities during the production, handling, storage, processing, and packaging of food as a sustainable solution to improve efficiency in the food system.

Food loss issues are high on the government's agenda, at the national and regional level (as they are at the global level) (FAO 2019b). In 2018, the government showed its commitment to this issue with a postharvest loss management strategy aimed at reducing the level of postharvest loss of grain from 25 to 5 percent by 2020 (Government of Ethiopia 2018f). Experts agree that postharvest loss reduction interventions can enhance food security (Affognon et al. 2015).

Interviews in 10 Agricultural Commercialization Clusters indicate that lack of storage and mechanization technologies is resulting in farmer loss (The Synergos Institute and WLRC, Addis Ababa University 2019). The existing farmer loss reduction targets for the clusters thus represent a direct entry point (targets to reduce annual farmer loss for 10 cluster commodities are pegged at 30–50 percent).⁴⁶ Monitoring to track cluster performance is in place.

Proposed action

The following actions are expected to open the door to a more efficient food system:

- *Systematically measure food loss for the value chains prioritized in the Agricultural Commercialization Clusters.* A standard approach to measuring loss along the supply chain (e.g., on-farm harvest and postharvest operations, storage, transportation, processing, packaging) will be required (FAO 2019b).
- *Identify economic opportunities to reduce food loss in the cluster value chains.* If large losses occur, explore options to reduce food loss through better storage, technologies (e.g., for harvesting, threshing, packaging), skill development in postharvest loss management, and market access. Determine economic cost and benefits of these options.
- *Commit value chain alliances to reduce food loss for cluster commodities with greatest economic opportunities.* This could be linked to a green agro-processing facility in one of Ethiopia's new industrial parks that is focused on clean energy, efficient water use, sustainable agriculture, and the circular economy.

- *Share evidence generated from reducing food loss for cluster commodities and call for systematic measurement and reporting of food loss nationally.* The long-term goal is to systematically measure and report on food loss and food waste across the country, which is expected to identify national hot spots for actions (see next strategic action area).

Economic opportunity of action and cost of inaction

There is a strong economic case to reduce food loss, alongside investment to boost agricultural productivity. Indeed, one could argue that investing in food loss reduction can be better value for money than securing productivity increases—if extra food needs to be produced and if large losses occur in the value chain. The following estimates only indicate the potential of a large-scale “economic prize” (more exact numbers by agricultural commodity will be required, based on precise food loss measurements and analysis of net benefits of specific loss reduction interventions):

Save US\$100 million in expected total revenues from domestic and export markets over three years for 10 prioritized crops in Agricultural Commercialization Clusters. Achieving the planned farmers' loss rate targets is equivalent to not losing US\$100 million in total revenues from domestic and export markets for these commodities or avoiding expanding into other ecosystems with new production on 27,000 ha of land.⁴⁷

Potential foreign exchange savings and other economic gain. In 2010, Ethiopia had an estimated total postharvest loss of 2.04 million tons of grain, while the country's import requirements stood at 1.16 million tons (African Union Commission 2018). Theoretically, had Ethiopia been successful at cutting postharvest losses by 50 percent in 2010, the country would not have had to import grains (African Union Commission 2018). Apart from the mere physical tonnage in losses, there is considerably more lost in the overall value of inputs, including labor and time. Reducing food loss near farms can also free up farmers' household budgets, which can then be spent on health, education, and other benefits.

Reduced food-related health risks. Improving postharvest operations and other efforts in the food value chain can directly affect food-

related health risks caused by aflatoxins. These poisonous carcinogens are often found to be associated with pre- and postharvest contamination of food and feed. The Ethiopian Biotechnology Institute, in its preliminary field and laboratory tests, found that the extent and existence of aflatoxins has become a serious health risk and economic burden in the country, including agricultural exports failing to meet international quality standards (Fikade 2018).

Reduced pressure to convert natural ecosystems, consume fresh water, and purchase fertilizer. Lower food loss reduces negative environmental impacts on soil, water, and climate (WRI 2013).

Who needs to act

The Ministry of Agriculture, Agricultural Transformation Agency, and Agricultural Transformation Council from the federal to regional level will be key to initiating change. They will need to strengthen their work with value chain alliances for selected commodities that include farmers, cooperatives, agro-processing companies, grain storage producers, microfinance institutions, Agricultural Technical Vocational Education and Training centers, the Ethiopian Commodity Exchange, and research institutions.

3.4.2 MEASURE AND REPORT FOOD LOSS AND WASTE FOR ALL AGRICULTURAL COMMODITIES

Objective and rationale for advancing action

The objective is to implement publicly accessible and transparent measuring and reporting of food loss and waste. If food loss and waste is systematically measured, monitored, and reported, it will be possible to move beyond the farmers' loss reduction targets for the 10 crops prioritized for commercialization and establish the foundation from which to promote greater efficiency throughout Ethiopia's food system. The Ethiopian government and associated stakeholders would then be able to measure food loss and waste from all crops, including fruits, vegetables, and other agricultural commodities, including livestock, across the value chain at the national level.

The availability of robust and relevant national data on food loss and waste is expected to become increasingly important within Ethiopia's rapidly changing economy with anticipated shifts in rural-urban demographics, diets, and consumption patterns. Such data are essential to develop national strategies and guide public and private sector commitments for actions, which could then be universally adopted. Having a reporting system in place enables the country to set baselines and track progress toward loss reduction and targets, thereby overcoming the limitations of ad hoc studies.

Establishing such a systematic and standard mechanism can evolve from ongoing government efforts, including Ethiopia's commitment to reduce postharvest loss of major grain crops by 2020 (Government of Ethiopia 2018f) and efforts to achieve the commitment made in the 2014 Malabo Declaration on reducing postharvest loss by 2025 (African Union Commission 2018). Most importantly, it will become the underpinning from which to accelerate Ethiopia's progress toward meeting Target 12.3 of the SDGs, which seeks to halve per capita rates of food waste and food losses by 2030.

Proposed action

The following action can help transition to a more efficient food system:

- *Establish an action coalition to measure and report food loss and waste systematically throughout the country.* Partners would explore the feasibility of the adoption of the Food Loss and Waste Accounting and Reporting Standard, a global effort that provides a reference standard and guidance for this purpose.⁴⁸
- *Commit large farmers' cooperatives, agro-processing companies, and other key stakeholders* in food value chains to specific food loss and waste reduction targets.
- *Develop new funds and financing products that improve storage solutions and other technologies* to remove inefficiencies in selected hot spots.

Economic opportunity of action and costs of inaction

Fully functioning monitoring and reporting would allow to take corrective measures for all

agricultural commodities. If the country could achieve similar reductions in farmers' losses as are envisioned for the 10 commodities in the Agricultural Commercialization Clusters, this would translate into land savings of 1 million ha.⁴⁹ Moreover, putting such a system in place could avoid future losses, help to close the food gap that needs to be closed to accommodate an additional 30 million Ethiopians by 2030, and increase land and water efficiency.

Who needs to act

Lead actors will be the Central Statistical Agency and the Ministry of Agriculture and their corresponding counterparts from the regional to local levels. The Food and Agriculture Organization (FAO) of the United Nations and other international development cooperation partners can share technical expertise on measurement and developing standards.

3.5 Improve Diets

CONTEXT

While good progress has been achieved in reducing chronic child undernutrition in Ethiopia, levels are still high when compared internationally (Gebru et al. 2018). A greater supply of and access to animal source foods, fresh vegetables, fruits, and legumes could boost diet diversity with positive health impacts, especially for children and pregnant women (Gebru et al. 2018).

Unhealthy dietary habits, often linked to ultra-processed foods, are still low in Ethiopia. For example, consumption of saturated fats, sugary beverages, processed meats, cholesterol, and sodium is considerably below the global average (Gebru et al. 2018). While information on trends of food consumption and diets is still incomplete for Ethiopia, selected studies are signaling disconcerting patterns (Gebru et al. 2018). Unhealthy dietary habits, especially in urban areas, have started to increase (Gebru et al. 2018). Another study indicated that eight percent of women were overweight and rates were increasing (Gebru et al. 2018). A global study projected a doubling in the number of adults with diabetes in Ethiopia between 2011 and 2030, from 1.4 million to 2.7 million (Gebru et al. 2018), and more recent studies

highlighted the increased risk of diet-related noncommunicable diseases (Misganaw et al. 2017; Melaku et al. 2016).

The good news is that government and community programs are in place to close final gaps in child malnutrition (Government of Ethiopia 2016c). The government's priority to establish a prevention-oriented national health plan⁵⁰ that avoids a rapid rise of noncommunicable diseases, such as diabetes and coronary heart disease, can be aligned with coordinated efforts to boost farmers' productivity, increase food safety, and expand access to balanced nutrition. Future agricultural commercialization and agro-processing can increase the supply of safe food, including animal source foods, fresh vegetables, fruits, and legumes. Policies can be put in place to increase access to and encourage consumption of healthy food and avoid unhealthy habits.

The *Action Agenda* has prioritized the following two strategic entry points to improve diets:

- Scale up research-based community solutions to end child malnutrition
- Develop guidelines and other mechanisms for healthier diets

3.5.1 SCALE UP RESEARCH-BASED COMMUNITY SOLUTIONS TO END CHILD MALNUTRITION

Objective and rationale for advancing action

The objective is to support the scaling up of successful research-based community solutions to improve child nutrition, reduce malnutrition rates, and decrease the proportion of stunted children.

This strategic action area builds on the government's commitment to end stunting among children under two years by 2030, as pledged in the 2015 Seqota Declaration and outlined in a 15-year multi-sectoral Seqota Declaration Implementation Plan (Government of Ethiopia 2016c). Achieving this goal⁵¹ will require doubling the speed of stunting reduction, which would be an unprecedented rate in Africa (Big Win Philanthropy n.d.). If successfully implemented, lessons learned can inform nutritional transformations in other countries.

Proposed action

The proposed action is closely aligned with the Seqota Declaration Implementation Plan, led by an intersectoral partnership of federal, regional, and community level actors, including health, education, water, social protection, agriculture and natural resources, livestock and fishery, and women and children affairs. The Implementation Plan has been launched in pilot *woredas* neighboring the town of Seqota in the Tekeze River basin. Communities in this historically highly food insecure region, spanning Amhara and Tigray, have some of the highest prevalence of child stunting in the country (Mason et al. 2015).

The Seqota Implementation Plan seeks to integrate sectoral initiatives under a single system for planning, budgeting, reporting, and collective oversight, and test new integrated, high-impact interventions that reach vulnerable households and communities (Big Win Philanthropy n.d.). Such interventions will not only be directed at causes limiting the supply of and access to food and nutrients, but also target indirect causes of undernutrition. This means removing barriers such as shortages of clean water, problems with sanitation, limitations in irrigation and other agricultural inputs, shortages at health centers, and lack of quality education.⁵² In the Implementation Plan's innovation phase during 2016–20, priority intervention packages will be evaluated to generate evidence. Based on this experience, suitable packages will be promoted during 2021–25, targeting the most vulnerable *woredas*. The government intends to scale up successfully tested packages to the whole country during 2026–30.

The following actions aim to amplify good practices to end child malnutrition under the Seqota Declaration and further contribute to a sustainable food and land use system:

- *Establish a periodic learning event to identify and promote cross-sectoral innovations that successfully advance food and nutrition security, and sustainable natural resources management.* The event aims to build knowledge for stakeholders of the Seqota Declaration Implementation Plan and the Agricultural Transformation Agenda. Both efforts are searching for new solutions to complex problems, testing them, and taking them to scale. For example, the

former is introducing Community Labs⁵³ and Agricultural Innovation and Technology Centers.⁵⁴ Likewise, the latter is advancing Agricultural Commercialization Clusters, Value Chain Alliances, and nutrition-sensitivity, inclusiveness, and sustainable resources management in value chains.

- *Develop and implement a communications plan to promote new integrated high-impact interventions to end child malnutrition.* This plan would build on the learning event above and leverage national and international ambassadors to build support among senior policymakers, business, and other stakeholders.
- *Create financial incentives for innovative business solutions in the agriculture, water, and sanitation sector to end child malnutrition.* To close the existing funding gap,⁵⁵ prepare a national plan that establishes financial incentives for sustainable business solutions to end child malnutrition (e.g., alliances between local food processors and commercial smallholder cooperatives boosting sustainable production of fruits and vegetables, agri-business entrepreneurs introducing innovative and sustainable ways to close gaps in protein supply).

Economic opportunity of action and cost of inaction

Without adequate food and nutrition, people cannot live, learn, or work, and societies cannot achieve their aspirations for inclusive economic growth, human development, environmental health, and innovation. According to *The Cost of Hunger in Ethiopia* study, the total losses associated with child undernutrition were estimated at US\$ 1.8 billion (55.5 billion Ethiopian birr)—equivalent to 16.5 percent of GDP in 2009 (Ethiopian Health and Nutrition Research Institute 2013). Stunted children today mean stunted economies tomorrow, and the cost of inaction on malnutrition is immense (Evans 2016). At least 28 percent of all child mortality in Ethiopia is associated with undernutrition (Ethiopian Health and Nutrition Research Institute 2013), with international estimates suggesting even higher numbers.⁵⁶ About 16 percent of all repetitions in primary school are associated with stunting, and stunted children achieve 1.1 fewer years in school education (Ethiopian Health and Nutrition Research Institute 2013).

Who needs to act

Key partners will be the stakeholders of Ethiopia's National Nutrition Program.⁵⁷ They include the government sectors and their respective structures at all levels advancing the Seqota Declaration Implementation Plan. Different working groups (e.g., on nutrition, food fortification) and civil society and private sector actors can advise on solutions and help to scale up best practices (USAID 2018).

3.5.2 DEVELOP GUIDELINES AND OTHER MECHANISMS FOR HEALTHIER DIETS

Objective and rationale for advancing action

The objective is to develop and promote food-based dietary guidelines and other mechanisms that encourage better and healthier diets. This strategic area seeks to help promote overall health, contribute to the management of specific diet-related diseases and prevention of risk factors, and reduce rates of micronutrient deficiency and protein-energy malnutrition.

Strategic actions can be advanced by linking to an existing consortium, which is developing food-based dietary guidelines, food system indicators, and a food and diet tracking system in Ethiopia (CGIAR Research Program on Agriculture for Nutrition and Health 2019; Gebru et al. 2018). These efforts can guide policies that avoid further increasing the risk of the triple burden of malnutrition⁵⁸ as well as several public health problems experienced by the entirety of the population of the country.

Proposed action

The proposed actions to address diet-related risks will support efforts by national multidisciplinary technical working groups on diets and nutrition:

- *Promote Ethiopia's envisioned food-based dietary guidelines* and a proposed new healthy eating index to measure diet quality.⁵⁹
- *Establish a coalition of government, private sector, and civil society actors that translates dietary guidelines into government programs* (e.g., food assistance programs, food purchases for government offices, schools, military), industry standards (e.g., limits on use of additives), and subsidy reform that

guides a rapidly growing food industry toward a healthier food supply and food marketing.

Economic opportunity of action and cost of inaction

Avoiding or reducing unhealthy diets can lower the future burden of noncommunicable diseases, and lower overall health care costs. For example, the per capita annual economic costs (just health care cost alone) associated with unhealthy diets was estimated to range from US\$160–US\$175 for the United Kingdom, US\$71 for Australia, and US\$3.9 for China (Candari et al. 2017).

Most of Ethiopia's spending on health care has been focused on combating infectious diseases and maternal and childhood disorders, including malnutrition. Average 2016 health spending per capita in Ethiopia was about US\$31 per person with 23 percent of it coming from the government.⁶⁰

However, a transition from infectious to noncommunicable diseases is underway (Abebe et al. 2017). These diseases are linked to various risk factors. Four of them—physical inactivity, inadequate intake of fruits and vegetables, alcohol consumption, and cigarette smoking—were already widely prevalent across the country in 2012 (Government of Ethiopia 2015b). The same study also found high prevalence of obesity and elevated blood pressure in urban areas.

A growing noncommunicable disease burden, which has been observed in other countries with greater urbanization, will create economic pressure (Angkurawaranon et al. 2014). It can exacerbate poverty, slow down development, and increase health inequities. It will also impose a huge demand on Ethiopia's health care system.

Who needs to act

Lead institutions will be implementers of the National Nutrition Program and the Ethiopian Public Health Institute. The collaborators developing the new food-based dietary guidelines and partners supporting the Ethiopia country program of the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) can provide important technical and analytical support.

3.6 Strengthen Planning, Monitoring, and Evaluation

CONTEXT

Recent developments are creating an opening to build a sustainable food and land use system through Ethiopia's economic development and spatial planning processes.

First, the national government, in its A New Horizon of Hope initiative, is aiming to strengthen the capacity and performance of the public sector in the coming years. This is within the context of advancing other immediate political and economic changes, including boosting agricultural production, agro-processing, and industrial development (Office of the Prime Minister of Ethiopia 2018).

Second, the Planning and Development Commission and major government sectors are preparing important national economic development plans. This includes a new 10-year Perspective Development Plan, which puts forward a vision of the country's economic structure, and associated short-term plans, which establish key objectives and planning targets for major economic sectors.

Third, awareness that the lack of integrated, participatory land use planning can result in suboptimal economic outcomes and costly land and resource use conflicts prompted Ethiopian decision-makers to launch the National Integrated Land Use Plan and Policy (NILUPP) initiative in June 2016. The government has raised start-up funds and established an NILUPP Facilitation Office, housed at the Environment, Forest and Climate Change Commission. A roadmap outlining key actions to develop and implement the NILUPP at various scales is in place, and a draft National Integrated Land Use Policy has been presented for review (Bekele-Tesemma 2017). Implementing the roadmap is estimated to cost close to US\$60 million over three years, with a large share of the budget allocated to preparing urban and rural plans at various scales.⁶¹ Most of these funds still need to be raised.

Together these developments provide the following two strategic entry points for actions:

- Identify science-based targets and pathways to achieve the SDGs.
- Establish an enhanced system of land use planning and implementation.

3.6.1 IDENTIFY SCIENCE-BASED TARGETS AND PATHWAYS TO ACHIEVE THE SDGS

Objective and rationale for advancing action

This strategic area aims to build capacity to prepare evidence-based development plans and functioning monitoring systems for implementation. The objective is to support decision-makers with analyses and tools so that they can identify more specific targets and associated pathways toward a sustainable food and land use system.

Designing a sustainable food and land use system for the next generation of Ethiopians requires addressing four challenges simultaneously in the following ways:

- Build a prosperous, market-driven, and resilient rural economy for farmers and livestock keepers, many of them facing diminishing farm sizes and loss of good grazing lands.
- Find a nutritious, more efficient way to feed 140 million people by the 2030s.
- Align the country's food and land use system with its CRGE strategy.
- Protect, and over time regenerate, biophysical resources and complex ecosystems.

Formulating new integrated policies and prioritizing harmonized local actions to meet these challenges, however, is complex because of multiple economic and biophysical interactions involving trade-offs and synergies. In addition, demand for land, water, and other resources can exceed supply in selected locations, resulting in economic trade-offs. Better planning can discover such biophysical constraints before they occur. Finally, food production and other sectors of the economy are not only affecting the environment, but are being threatened by local, regional, and global environmental changes. These include

air and water pollution, freshwater stress, land degradation, and climate change.

Ethiopia needs the capacity to design and deliver a food and land use system that supports economic growth, new jobs, and healthy diets, while safeguarding the underlying natural capital upon which the economy depends. This demands a planning system that examines these complex interactions. Such an evaluation can be achieved with analytical tools that integrate across different knowledge domains such as macro-economy, agronomy, hydrology, ecology, and climate science. Recent global and national developments are creating an opening to strengthen this capacity.

At the global level, the Food, Agriculture, Biodiversity, Land Use and Energy Pathways (FABLE) Consortium (a member of the Food and Land Use Coalition) has mobilized institutions in more than 20 countries to develop the data and modeling infrastructure needed to identify long-term pathways toward sustainable food and land use systems (Food and Land Use Coalition 2018). The aim is to promote ambitious, integrated national strategies to achieve a country's SDGs and to ensure alignment between national and global objectives under Agenda 2030 and the Paris Agreement on climate change.

As part of this effort, the Consortium is developing and sharing lessons from new planning tools that include a simple spreadsheet-based calculator and more sophisticated geospatial economic models (IIASA and SDSN 2019). These tools can explore the effects of different land use and economic development scenarios on key pillars within the framework for a sustainable food and land use system.

The Policy Studies Institute (PSI) has developed the spreadsheet-based calculator for Ethiopia (Molla and Woldeyes 2019). It is also working on a geospatially explicit partial-equilibrium model to explore scenarios for a more sustainable food and land use system in Ethiopia. The associated analyses will inform the global and national Food and Land Use Coalition efforts.

Proposed action

Moving to evidence-based development planning that evaluates the complex interactions within a food and land use system is a multiyear effort. It can rely on a stepwise approach while the capacity for integrated

modeling and analysis is growing within research institutions and planning departments in Ethiopia:

- *Introduce an integrated food and land use system perspective into new national planning processes and the design of a new national monitoring system.* The discussions supporting the national 10-year Perspective Development Plan (2020–30) and associated subsequent short-term plans can benefit from the integrated food and land use perspective outlined in the FABLE findings (Molla and Woldeyes 2019). Such a perspective can also be useful when determining the scope and indicators for a monitoring framework.
- *Within two to three years, assess how much progress the country has made toward a sustainable food and land use system.* This assessment (around 2022–23) would examine how much progress has been made vis-à-vis key pillars within the framework for a sustainable food and land use system. At that point in time, it would also be possible to examine how past planning processes and the approach to select objectives and targets can be strengthened to advance a sustainable food and land use system.
- *Based on the assessment above, adjust objectives, targets, and planning processes so that they better advance a sustainable food and land use system in short-term plans.* By then, analysts in Ethiopia will have deeper experience with building new geospatial economic models and introducing scenarios into policy discussions. Based on this experience, recommendations for adjustments can be developed for future short-term plans, and their scope and approach can be redefined. The recommendations would aim to adjust targets and propose planning innovations that help to find new paths toward a sustainable food and land use system.

Economic opportunity of action and cost of inaction

No study has yet demonstrated that economic development planning with an integrated food and land use perspective provides greater net benefits than just a well-executed multi-sectoral plan. However, more integrated, participative planning that links a macroeconomic and

biophysical perspective, spans multiple sectors, and which examines interactions within the food and land use system, is better equipped to derive the following benefits:

- Anticipate and manage risks of large system shifts within the food and land use system.
- Identify win-win synergies within the food and land use system and create opportunities for collaboration.
- Identify trade-offs within the food and land use system and establish effective partnerships to manage them.
- Reduce implementation costs of government programs and use government resources more efficiently because of the above.

Who needs to act

The Planning and Development Commission and government partners involved in the 10-year planning cycle and subsequent short-term plans will be the lead actors. Broad participation of the beneficiaries of the planning process, including national and international stakeholders involved in achieving the SDGs, can help advance elements of the *Action Agenda*.

3.6.2 ESTABLISH AN ENHANCED SYSTEM OF LAND USE PLANNING AND IMPLEMENTATION

Objective and rationale for advancing action

The objective is to improve land use plans and planning processes, which can play a significant role in enabling the transition to a more sustainable food and land use system because they influence what activities are conducted where and by whom. Integrated, participatory land use planning that follows international good practices carries the promise that Ethiopia's allocation and management of land and resources become more efficient, effective, equitable, and overall more sustainable.

To achieve a more sustainable food and land use system, it is essential that the planning processes envision a sustainable food and land use system over the long term. This includes

evaluating multiple objectives related to key pillars of a sustainable food and land use system, such as boosting yields on existing crop and grazing lands, conserving forests and other natural ecosystems, restoring natural and productive ecosystems, and improving efficiencies in the food system. Such an examination of multiple objectives can be done with different decision support tools that integrate economic, social, and environmental objectives and explore different land use and economic development scenarios.

Ideally, such planning would result in evidence-based land use targets and outline principles or even specific pathways by which to achieve them. With legally binding land use plans (and associated guidelines) at multiple scales, and an effective system to monitor, enforce, and adjudicate land use decisions, Ethiopia can shift toward a more sustainable food and land use system.

Proposed action

Making evidence-based, participatory land use planning a reality will require multiple coordinated actions. All will build upon the NILUPP roadmap document, but aim at interventions that can accelerate technical, political, and financial support for implementation and introduce a food and land use system perspective into the planning process:

- *Raise NILUPP profile and strengthen roadmap document, including its approach to preparing plans.* Compiling economic evidence that shows the relevance of land use planning to economic development decisions and current government priorities is an essential first step to raising awareness and building support for the NILUPP. In addition, the NILUPP Facilitation Office, in close collaboration with other interested stakeholders, can explore options to improve upon specific steps in the roadmap document based on new information of ongoing subnational land use planning efforts and a review of the government programs being pursued under the upcoming national 10-year Perspective Development Plan. The latter would aim to ensure that trade-offs and synergies between different land use options are systematically examined in the planning of government priorities.

- *Share experiences about land allocation practices and build constituency for land use planning.* More evidence is needed to show how land allocation practices are resulting in suboptimal socioeconomic and environmental outcomes, especially within peri-urban areas. The NILUPP Facilitation Office, with support from land use planning stakeholders, can highlight the latest information on land allocation and land use planning practices by organizing a set of panel discussions or other public events (e.g., land use planning in Gambella region has been completed, and lessons can be shared).⁶²
- *Develop effective integrated land use policy framework.* Improving upon the draft National Integrated Land Use Policy (Government of Ethiopia 2019d) and producing a technically sound and broadly validated integrated land use policy is feasible, if key stakeholders pursue this with a sense of urgency.
- *Set up an independent federal land use planning and administration institution.* Establishing greater clarity on this new institution, while finalizing the Land Use Policy, could be part of a concerted effort that seeks to boost evidence-based planning in Ethiopia and strengthen the institutions within, and the performance of, the public sector. It will require, however, a strong multi-sectoral champion such as the Prime Minister's Office or the Planning and Development Commission.
- *Build knowledge and decision support tools to advance a sustainable food and land use system.* Implementing the NILUPP is expected to proceed in a stepwise approach because financing and technical capacity gaps need to be closed first. A technical land use planning capacity assessment of government institutions is underway, which will inform planning priorities.⁶³ To identify paths toward a sustainable food and land use system, new decision support tools that can explore different land use scenarios (e.g., geospatial economic models) need to be built and used by planning institutions.

Economic opportunity of action and cost of inaction

Establishing and operating a land use

planning system costs money and time, but it is critical to ensuring more integrated land use practices and to building a solid foundation for an economy that provides citizens with a sustainable supply of food, fiber, and other benefits. In fact, it is indispensable to delivering on Ethiopia's economic and political development agenda, for the reasons summarized below:

- Economic growth targets of major plans and strategies can be achieved by allocating land and resources more efficiently and with fewer conflicts.
- Economic competitiveness can be boosted because of positive governance perception (i.e., transparent and predictable planning).
- Resilience of rural economies, cities, and the manufacturing sector can be increased by safeguarding natural and built capital. Case studies have demonstrated that local land use planning can be an effective tool for promoting the provision of non-market ecosystem services (Dempsey et al. 2017).

Without planning, negative land use trends and land and resource conflicts are more likely. In addition, the country cannot benefit from geographically focused land use innovations.

For example, land use planning combined with infrastructure planning can help establish competitive regional food systems that boost a local, vibrant food economy in metropolitan areas (Cohen et al. 2017). Such systems have safeguarded nearby farm communities, improved access to and lowered the costs of healthy foods in cities, and raised city dwellers' awareness about the food system with positive behavioral effects on healthy eating (Conrad and Ackerman 2010).

Likewise, land use planning that is monitored and enforced creates opportunities to benefit from certified commodity value chains. The value chains can be linked to a verified sourcing area, such as coffee from deforestation-free coffee landscapes (IDH n.d.b).

Finally, such planning is essential to leapfrog from basic forestry practices (e.g., fuelwood with low economic returns) to mixed land uses and low- or no-impact uses of natural forest (with a higher return). Such an approach has been proposed in Ethiopia's National Forest Sector Development Program (Government of Ethiopia 2018b).

Who needs to act

The NILUPP Facilitation Office, in close collaboration with the Environment, Forest and Climate Change Commission, the Ministry of Agriculture, and other land use stakeholders, can advance actions. Leadership support from decision-makers with a multi-sectoral perspective (e.g., the Prime Minister's Office, Planning and Development Commission) can help overcome institutional stalemates.

3.7 Improve Governance

CONTEXT

Following principles of good governance is a prerequisite for a sustainable food and land use system. The way public institutions manage public resources and the process of decision-making to manage public affairs can be designed to boost yields on existing crop and grazing lands, conserve forests and other natural ecosystems, restore natural and productive ecosystems, improve efficiencies in the food system, and improve diets. For the *Action Agenda*, land governance and gender-responsive budgeting provide two strategic entry points to advance actions toward a sustainable food and land use system.

Improving land governance. Key elements defining land governance include the way property rights to land are defined, exchanged, and transformed; the way in which public oversight over land use and land management is conducted; the way state-owned land is managed; and the way land ownership information is collected, managed, and made publicly available (Hailu 2016).

The way land governance is implemented can greatly influence how agricultural and nonagricultural land is being used and whether long-term sustainability investments are being made. Land registration and certification of smallholder farms and communal land, for example, can encourage land managers to engage in higher value, more productive land uses (Byamugisha 2014). Secure rights can provide incentives for longer-term investments to enhance land productivity, protect local communities, and safeguard the environment in general (Falk 2016). Likewise, the level of clarity of land tenure on forest lands can affect the

willingness of land managers to invest in future forest productivity or convert to other land uses (ProLand 2016). Finally, overlapping rights and claims can create conflicts (Hailu 2016) and greater uncertainty for investors (Deininger and Ali 2007).

The government is supporting the gradual reform of land administration and tenure within Ethiopia's system of state ownership of land. For example, the last five-year plan committed to scale up second-level land certification in the highlands (Government of Ethiopia 2016b), and innovative, pilot-level projects of community certification of land, for example for rangeland communities, are underway (Woldegiorgis 2018).

But gaps in land governance remain. A recent assessment highlights the following challenges requiring urgent attention: (i) strengthen rights to forest and common lands; (ii) increase effectiveness of rural land use regulations; (iii) improve public land management; (iv) make large land transfers to private investors more transparent and competitive; (v) and strengthen public provision of land information (Hailu 2016).

Advancing gender-responsive budgeting.

Supporting gender equity can greatly boost economic growth and environmental and social sustainability. National budgeting is not only a powerful means to influence development priorities, it can also be applied to close gender gaps.

For example, women's agricultural productivity in Ethiopia is on average lower than men's. Female farmers produce 36 percent less per hectare than male farmers, but this gap decreases to 6 percent when considering additional individual, household, and plot level characteristics that may influence differences in productivity levels (Buehren et al. 2019). This means increasing women's access to factors of production such as land, extension services, agricultural inputs, and credit can narrow the agricultural productivity gap (Buehren et al. 2019).

The government has unequivocally committed to addressing gender inequality, which prevents sustainable changes and equitable development. New conducive legal, policy, and institutional frameworks and new midterm plans aiming to close gaps for Ethiopian women and girls demonstrate this commitment (UN Women 2018).

3.7.1 IMPROVE LAND GOVERNANCE

Objective and rationale for advancing action

The objective is to strengthen public provision of land information, encourage more sustainable land allocation practices for agricultural investments, and stimulate more effective enforcement of land laws. Addressing these key land governance challenges outlined in Ethiopia's national assessment (Hailu 2016) can contribute to more efficient, equitable, and sustainable land and resource use, and reduce suboptimal economic, social, and environmental outcomes. Improving these aspects of land governance must go hand in hand with actions to advance Ethiopia's draft national land use policy, participatory integrated land use planning, and establishing an independent federal land use planning and administration institution.

Proposed action

The following actions are expected to open the doors for a sustainable food and land use system:

- *Accelerate public provision of up-to-date land information, especially of public lands.* While official delineation of croplands has progressed consistently, land which was classified as forest, protected area, or wetland, is being diverted to other uses (Hailu 2016). To safeguard land providing multiple ecosystem services and public goods, the official demarcation, mapping, and registration of public lands must accelerate.⁶⁴ This must be aligned with a computerized land information system that supports public access. Indonesia's OneMap Initiative, a land information portal being set up to clarify land holdings of different government agencies, can be an inspiration for such an effort (Gokkon 2018).
- *Strengthen public processes and safeguards for agricultural investments and other large-scale land acquisitions.* Performance gaps in allocating land for large-scale agricultural investments, a key driver of land use change, must be closed. Notable necessary improvements include increasing institutional effectiveness of multiple land investment institutions,

seeking comprehensive consultations and new benefit sharing models with local communities, and encouraging clear and enforceable land contract clauses to safeguard water, biodiversity, and other natural resources (Hailu 2016).

- *Develop an accountability mechanism to track enforcement of land laws advancing a more sustainable food and land use system.* Although Ethiopia has enacted laws to achieve social and environmental objectives (e.g., Environmental Impact Assessment Proclamation 292/2002),⁶⁵ considerable gaps remain in applying and enforcing these laws within the context of land allocation decisions (Hailu 2016). To achieve more sustainable food and land use will require a functioning monitoring system to enforce existing legislative provisions or propose new ones. This in turn will require a review of current capabilities and practices within government structures and awareness of landholders to apply land laws that support a sustainable food and land use system.

Economic opportunity of action and cost of inaction

Removing bottlenecks in land administration and strengthening land and resource security can create incentives for more sustainable land and resource management:

- Research shows that improved land administration results in economic and social returns. It is feasible through reform within a system of state ownership of land (e.g., China, Vietnam) (Bruce and Li 2009; Jin and Deininger 2009; Do and Iyer 2008).
- Similarly, a nationwide programme of land tenure regularization in Rwanda has resulted in positive effects on investment, gender, and the incidence of conflict (World Bank 2009).

Who needs to act

Lead agencies will be the Ministry of Agriculture and other federal and regional institutions with a mandate for land administration, land holding and resource rights, and land use. The National Council on Land Governance, Environment and Sustainable Development, and a technical committee associated with it, are expected to be key conveners to advance actions outlined above.

3.7.2 ADVANCE GENDER-RESPONSIVE BUDGETING

Objective and rationale for advancing action

The objective is to advance gender-responsive budgeting for programs aimed at agricultural productivity, land and resource security, and enhanced nutrition outcomes. Gender responsive budgeting would ensure that resources are allocated equitably, and that women and men are empowered to contribute meaningfully to achieve the objectives of key pillars within the framework of a sustainable food and land use system.

In 2016, the government committed to consider gender issues during public budgeting preparation, the result of which has been a growing gender focus in the budget process (UN Women 2018). Such a focus aims to increase the quantity of resources allocated for interventions to close gender gaps, thereby establishing a stronger foundation to improve agricultural productivity; food, land, and resource security; environmental sustainability; and health and nutrition outcomes. If Ethiopia wants to turn its commitment to gender equality into concrete action, the monitoring of gender-responsive budgeting is critical. This will require establishing accountability mechanisms that track the budgeting of these interventions and then revising budgets and policies to overcome any barriers or accelerating efforts.

Proposed action

The following actions can close gender gaps within Ethiopia's food and land use system:

- *Develop accountability mechanisms that track gender-responsive budgeting of efforts to boost agricultural productivity, land and resource security, and nutrition outcomes.* This would accelerate resources that target women, which can significantly improve agricultural productivity, women's control of resources and assets, and health and nutrition outcomes.
- *Support efforts to shift budgets* so that they close gender gaps in an attempt to improve agricultural productivity, land and resource security, and nutrition outcomes.

- *Support reforms of associated key policies realizing women's economic potential in agriculture.* This includes expanding access to customized agricultural extension services for female farmers; increasing women's access to key inputs such as seeds, fertilizer and pesticides; building women's assets (e.g., land through co-titling); improving access to credit; and other reforms (Buehren et al. 2019). It is also essential to monitor smallholder commercialization closely to detect unintended risks that can lower nutritional outcomes or widen gender gaps within households.⁶⁶

Economic opportunity of action and cost of inaction

Closing the gender gap in agricultural productivity would increase Ethiopia's total GDP by at least US\$200 million and lift more than 1 million people out of poverty (Government of Ethiopia et al. 2018). Closing this gap will require policy reforms and additional resources (IMF 2018b). However, the benefits of closing the gap are expected to exceed the government resources needed to close the gap (Government of Ethiopia et al. 2018). Likewise, empowering women is central to addressing malnutrition, without which the effectiveness of nutrition-sensitive programming will be compromised. International evidence shows that gender equality influences nutrition by the quality of care provided in a household since women are generally responsible for household food production, preparation, preservation, childcare, and health and hygiene (European Commission 2019). Gender equality also influences nutrition through the health status of women and girls of reproductive age (Haddad n.d.).

Who needs to act

The Ministry of Finance and Economic Cooperation; Ministry of Women, Children and Youth; Ministry of Agriculture; and Ministry of Peace all are lead actors working closely with civil society actors and development cooperation partners such as UN Women.

3.8 Innovate Finance

Context

The purpose of engaging in this strategic area is to stimulate actions that encourage the development of innovative financial products and services that support key pillars of the framework for a sustainable food and land use system. Public, private, domestic, and international enterprises are expected to drive and support these innovations.

As more than 64 percent of farmers in Ethiopia produce their crops on less than one hectare of land, and these account for an estimated 95 percent of total agricultural production (Gebreselassie 2006), it is crucial to enhance smallholders' income by improving their productivity through access to financial and agricultural services. Access to credit for rural finance, however, has been very low. For instance, the agriculture sector receives less than 10 percent of banks' lending, with the bulk reaching the more developed export subsector (Mukasa et al. 2017). Thus more specialization in agricultural finance is required since it has been proven to be an important driver of agricultural development (ISSD 2015). Likewise, innovative finance, with a different risk profile and longer time horizon, is needed to support communities and other enterprises motivated to grow trees and restore degraded landscapes.

The financial sector in Ethiopia is currently dominated by state-owned financial institutions and in 2016 consisted of 18 banks, 17 insurance companies, 35 microfinance institutions, and five capital goods finance companies (National Bank of Ethiopia 2017). In addition, there were more than 18,000 rural savings and credit cooperatives in Ethiopia in 2016 (National Bank of Ethiopia 2017).

Rural savings and credit cooperatives are economically important financial institutions in rural and remote parts of the country offering savings and credit for farmers and the poor. These cooperatives, and their unions, can play a key role in strengthening rural finance—most likely not in the form they exist today, but through reform that will make them more effective, efficient, and sustainable.

Both rural savings and credit cooperatives and microfinance institutions are also important partners in advancing Ethiopia's new Input Voucher System (Ethiopian Agricultural Transformation Agency n.d.). The Input Voucher System provides smallholders with cash or credit vouchers that they can redeem at nearby cooperative stores to obtain agricultural inputs such as fertilizer, improved seeds, and tools. This encourages farmers to experiment with improved technologies and can become an important means to increase production and productivity in a sustainable manner.

Despite the progress with the Input Voucher System and the reach of rural savings and credit cooperatives, most rural Ethiopians are unable to access and use financial products (National Bank of Ethiopia 2017). About 35 percent of adults in Ethiopia had a bank account in 2017, with a 12-percentage point gap between men and women, and the majority of accounts were in urban areas (Demirgüç-Kunt et al. 2018). Survey data suggest that most smallholder farmers are credit-constrained (Mukasa et al. 2017). And most households experiencing a bad harvest or livestock loss receive no compensation through either an insurance payout or government assistance (Demirgüç-Kunt et al. 2018).

In 2018, the government initiated broader financial reforms through a national working group which aims to make the financial sector more proficient and competitive (*New Business Ethiopia* 2019). The government has also approved a national financial inclusion strategy (National Bank of Ethiopia 2017) and recognized financial inclusion as a priority in the last five-year plan of 2015–16 (Government of Ethiopia 2016b). Linking the ongoing reform of the financial sector with efforts to create opportunities for improved and new financial products and services for agriculture, forestry, and other sustainable rural land uses is thus of paramount importance.

3.8.1 SUPPORT LENDING IN THE AGRICULTURE AND FOREST SECTORS AND RURAL AREAS

Objective and rationale for advancing action

The objective is to create opportunities for improved or new financial products and services that are aligned with sustainable value

chain improvements and long-term natural capital formation.

There is a window to advance action as the financial sector is undergoing reform focused on building the capacity of Ethiopian financial institutions to be more competitive and competent, as well as strengthening their role in building the economy and broadening their support for national public sector projects. Various international programs, as well as large rural finance programs, have aimed to strengthen the rural finance sector in the country. Strengthening the financial sector to increase lending for agriculture and forestry, and rural areas overall, would also encourage this sector to play a more proactive role in advocating laws and regulations that would bring about a systemic change.

Proposed action

The following efforts are expected to increase financial flows from which more targeted products and services can deliver a sustainable food and land use system. The *Action Agenda* has prioritized the following support:

- *Increase market penetration of formal financial institutions in rural areas.* Formal financial institutions such as commercial banks, leasing companies, and insurance companies will require a strong business case to enter this rural market. The microfinance institutions and rural savings and credit cooperatives sector, on the other hand, are already in this market (see below).
- *Formalize and strengthen the rural savings and credit cooperatives sector.* The sector needs to be strengthened, through consolidation and other means, to appropriately serve the rural population in financing a more sustainable food and land use system. The Federal Cooperative Agency overseeing the sector will require support to implement the roadmap for the rural saving and credit cooperatives sector.⁶⁷ Initial efforts will require further formalizing the sector, developing liquidity linkages with commercial banks and microfinance institutions, and enhancing the sector's technology to deliver services (e.g., by improving farmers' ability to make transactions).
- *Strengthen and expand mobile banking services.* Mobile phone platforms have

brought financial services to millions who had never held a bank account [e.g., M-Pesa in Kenya has processed more than US\$32 billion between July 2016 and July 2017 (McGath 2018)]. In 2013, Ethiopia launched its first mobile money service, M-BIRR (Fox 2018). It has been used by more than 800,000 households, representing more than 3 million people, to receive financial assistance under Ethiopia's Productive Safety Net Programme. M-BIRR and other start-ups can be scaled more widely. Further understanding will be required of the Kenya experience, Ethiopia's current digital finance regulations, and other constraints limiting innovations in digital finance. (For example, Ethio telecom, the sole phone service provider in Ethiopia, is not allowed to provide financial services directly as in Kenya.)

- *Boost competitiveness and efficiency of the banking sector specifically and financial sector overall.* The Ethiopian financial sector has been stagnant. Few innovations, limited products and services, and slow policy development characterize the current environment. Opening the sector to foreign participation would increase competition and efficiency, resulting in improved products and services, in addition to bringing greater liquidity in the financial system. Greater competition generally demands that banks continuously upgrade their skills and technology to stay in business, which in turn typically benefits urban and rural consumers. The issue of foreign bank entry into the Ethiopian financial sector should be seriously considered based on balanced analytical evidence and move beyond the automatic dismissal based on the "infant industry" argument.
- *Support ways to increase loanable funds in the financial system, with the goal of increasing lending in the agriculture and forest sectors, and rural areas overall.* Multiple options to increase the availability of loanable funds in the financial system should be explored such as:
 - *Consider the market to determine deposit rate.* Offering an interest rate above the inflation rate could motivate people to save more in formal institutions.

Capture remittances. Support new policies and regulations to capture potential remittance inflows. In Ethiopia, with its large diaspora outside the country, annual remittances are only US\$4 billion (albeit second in Africa after Nigeria). Supporting policies and enhancing technologies that would expand the formal channels and reduce the cost of transferring funds would likely contribute to the financing of a more sustainable food and land use system.

Identify key barriers that constrain lending to agriculture, forestry, and rural areas overall and propose innovative finance schemes. Other policies in Ethiopia require systematic examination to enhance lending and introduce innovations to finance the agriculture and forestry sectors. For example, a risk-sharing facility has helped to increase lending to coffee farmer cooperatives in Ethiopia,⁶⁸ and other, international banking efforts have promoted innovations that support healthy nutrition, increased availability and access to food, and price stability (Rabobank 2016).

Economic opportunity of action and cost of inaction

If bank lending goes to agriculture, and if farmers had better access to financial products and services, they could save, borrow, and transfer money more easily, safely, and economically. They could acquire agricultural inputs more easily, improve yields, and consequently incomes. Once financial services reach rural constituencies, it opens the door for innovations that insure crops and livestock,

restore land, grow trees, and facilitate other long-term resource investments. Inaction, that is continued traditional credit policies that focus on short-term lending and trade finance, will exacerbate rural financial exclusion and notably stunt the growth of small and medium-size enterprises in rural areas, which are key job creators.

Alleviating credit constraints for Ethiopian smallholder farmers could increase their value of production up to 60 percent per hectare (Mukasa 2017). Greater access to mobile banking would boost incomes and grow the economy. For example, increased access to mobile money services enabled women-headed households in Kenya to increase their savings by more 20 percent, allowed 185,000 women to leave farming and develop business or retail activities, and reduced extreme poverty among women-headed households by 22 percent (Demirgüç-Kunt et al. 2018). Farmers in Malawi, who had their earnings deposited into savings accounts, spent 13 percent more on farming equipment and increased their crop values by 15 percent (Demirgüç-Kunt et al. 2018).

Who needs to act

Lead partners are the National Bank of Ethiopia, Ministry of Finance and Economic Corporation, financial institutions, bankers' associations, private banks, insurance companies, microfinance institutions, rural savings and credit cooperatives and their unions, and international sources of finance such as the International Fund for Agricultural Development, International Finance Corporation, and others.



CHAPTER 4:

Rollout of the Action Agenda

@Ethiopian Agricultural Transformation Agency (ATA)

4.1 Prioritizing a Set of Strategic Action Areas

Achieving a sustainable food and land use system will require innovations in all the proposed strategic action areas. Pursuing all of them immediately, however, must overcome considerable coordination challenges and raise new financial resources. To reduce the risk of further delays, it makes sense to focus first on a narrow set of strategic action areas, especially those that can quickly demonstrate the advantages of a new food and land use economy. The following criteria were used to prioritize a two-year *Action Agenda* with the most immediate benefits:

- **Economic and political relevance.** Strategic action areas that support economic transformation, include dominant land uses, affect the largest population share, and align well with government priorities in the A New Horizon of Hope initiative are top priority.
- **Institutional readiness to launch and scale up actions.** Strategic action areas with the most experienced and motivated public, private, and civil society institutions and with mechanisms to scale innovations are top priority.

- **Ability to unlock other strategic action areas.** Strategic action areas where early action can drive positive effects across multiple food and land use system pillars are top priority.

Figure 3 outlines first four strategic action areas that provide immediate opportunities to strengthen action coalitions and inform policy actions (see Box 1 for ranking). This set, covering all pillars and a crosscutting foundation of the sustainable food and land system framework, opens the door through which to launch a new food and land use economy. These areas align closely with government priorities to transform the economy, create jobs, reduce poverty, and ensure food security. Actions in these areas affect most of the rural population and the country's dominant land uses. All four areas have promising entry points to test no-regret innovations in line with a sustainable food and land use system. Most importantly, this set can become a key with which other strategic action areas can be unlocked.

The remaining 11 strategic action areas all require more time. For example, new efforts by the private sector in forest restoration or action by a new land use planning and administration institution depend on the speed of ongoing institutional and policy framework reforms. Likewise, the timing of science-based targets, new land use plans, and guidelines for healthy

diets is influenced by the time required to build analytical capacity and raise budget resources.

Actions for the 11 strategic action areas, however, must not automatically wait until 2021. Political change is underway, national planning

is evolving quickly, and government priorities and investment flows may shift considerably. This in turn can change the calculus for new institutions to pursue building a new food and land use economy and kickstart efforts under the 11 strategic action areas.

FIGURE 3

Rollout of the Action Agenda



Source: Prioritization based on criteria in Box 1 and review of government strategies, plans, and programs, and discussions with food and land use experts.

Prioritizing Strategic Action Areas for 2020–21

To identify strategic action areas with the greatest potential to demonstrate success over the coming two years, all strategic action areas were compared against each other. A simple screening applied an ordinal scale (greater opportunity; intermediate opportunity; lower opportunity) for each of the chosen criteria (economic and political relevance; institutional readiness and mechanisms for scale up; and potential to unlock other strategic action areas). Figure 4 summarizes the relative and total scores for each of the 15 strategic action areas. The *Action Agenda* for 2020–21 prioritized four strategic action areas: the top two areas for the land use system pillars and the top areas for the food system pillars and the crosscutting foundations, respectively (all highlighted by an orange square).

FIGURE 4

Prioritizing Strategic Action Areas

<div>3 Greater opportunity</div> <div>2 Intermediate opportunity</div> <div>1 Lower opportunity</div>	Action Agenda for 2020-21			
	Economic and political relevance	Institutional readiness and scale up	Unlock other strategic action areas	TOTAL SCORE
1. BOOST YIELDS ON EXISTING CROP AND GRAZING LANDS				
a. Support sustainable agricultural commercialization of crops	●	●	●	9
b. Boost yields of animal source foods from sustainably managed landscapes	●	●	●	8
2. CONSERVE FORESTS AND OTHER NATURAL ECOSYSTEMS				
a. Establish coffee as a successful deforestation-free export commodity	●	●	●	6
b. Advance commercial orientation and markets for sustainable wood and forest products	●	●	●	5
c. Establish incentives for water-related ecosystem services	●	●	●	4
3. RESTORE NATURAL AND PRODUCTIVE ECOSYSTEMS				
a. Increase incentives for restoration enterprises	●	●	●	5
4. IMPROVE EFFICIENCIES IN THE FOOD SYSTEM				
a. Measure food loss for agricultural commercialization commodities and reduce loss where economically viable	●	●	●	8
b. Measure and report food loss and waste for all agricultural commodities	●	●	●	6
5. IMPROVE DIETS				
a. Scale up research-based community solutions to end child malnutrition	●	●	●	7
b. Develop guidelines and other mechanisms for healthier diets	●	●	●	4
6. STRENGTHEN PLANNING, MONITORING, AND EVALUATION				
a. Identify science-based targets and pathways to achieve the Sustainable Development Goals	●	●	●	5
b. Establish an enhanced system of land use planning and implementation	●	●	●	6
7. IMPROVE GOVERNANCE				
a. Improve land governance	●	●	●	6
b. Advance gender-responsive budgeting	●	●	●	7
8. INNOVATE FINANCE				
a. Support lending in the agriculture and forest sectors and rural areas	●	●	●	8

Source: Prioritization based on review of government strategies, plans, and programs, and discussions with food and land use experts.

4.2 Summary of Action Agenda for 2020–21

With these four strategic choices, the Government of Ethiopia, the private sector, and civil society can join forces to design and deliver a food and land use system that is fit for the future, creates jobs, achieves healthy diets, and restores and protects critical ecosystems.

The underlying ideas for these strategic action areas, discussed in detail earlier in this document, have been developed by a network of Ethiopian and international experts and government, private sector, and civil society representatives over a year of engagement (see Box 2). Below are highlights of the *Action Agenda* for 2020–21, including their respective objectives and top reasons for selection, headlines of proposed action (more granular information was introduced in Chapter 3), and summary of envisioned food and land use system innovations advancing systemic change.

BOX 2

Action Agenda: Process on Content Development and Stakeholder Engagement

The World Resources Institute, in close collaboration with other core partners of the Food and Land Use Coalition in Ethiopia (the Water and Land Resource Centre at Addis Ababa University, the Policy Studies Institute, and the Synergos Institute), coordinated the process for the *Action Agenda*, developed the content with the help of experts, and engaged stakeholders of the *Action Agenda* within the government, private sector, and civil society. This included the following steps:

- 1) Zero draft summary of an Action Agenda.** Reviewed national strategies, plans, and flagship programs covering key sectors of Ethiopia's food and land use system (e.g., Agricultural Transformation Agenda, National Forest Sector Development Plan, Livestock Master Plan, Growth and Transformation Plan, Climate-Resilient Green Economy strategy, National Integrated Land Use Plan and Policy Roadmap, Agricultural Commercialization Cluster Project Appraisal Document). Identified a set of pillars, crosscutting foundations, and strategic action areas. Based on this information, produced a zero draft summary of an *Action Agenda*, following the template of an Action Agenda for Colombia (August–September 2018).
- 2) Small group meetings with experts to review the zero draft and develop new ideas.** Tested these pillars, crosscutting foundations, and strategic action areas and solicited new ideas in national expert meetings (October–November 2018).
- 3) First draft summary of an Action Agenda.** Building on comments from these meetings, produced first draft summary of an Action Agenda for review by national and global Food and Land Use Coalition partners (November–December 2018).
- 4) First draft of complete Action Agenda.** Based on this review, revised set of pillars, crosscutting foundations, and strategic action areas and wrote first draft of complete Action Agenda. Briefed senior decision-makers in the Planning and Development Commission, Ministry of Agriculture, Agricultural Transformation Agency, Environment, Forest and Climate Change Commission, and others on outline and key strategic direction (January–March 2019).
- 5) Internal review of first draft of complete Action Agenda and revision of priority actions.** Solicited internal review of first draft within Food and Land Use Coalition. Revised top priorities for action for each strategic action area based on assessment of sectoral plans and direct engagement with key experts. To advance a sustainable food and land use system, prioritized actions that added a food and land use system perspective to existing government efforts or encouraged a holistic approach bridging multiple pillars of the food and land use system framework (April–May 2019).

Action Agenda: Process on Content Development and Stakeholder Engagement (Cont'd)

6) Second draft of complete Action Agenda. Wrote second draft of complete Action Agenda. Solicited internal review of second draft within Food and Land Use Coalition (June–August 2019).

7) Validation workshop. Reviewed assessment of efforts to advance a sustainable food and land use system within Agricultural Commercialization Clusters of Amhara, Oromia, Southern Nations, Nationalities, and Peoples' Region, and Tigray (August 2019).

8) Selection of strategic areas for 2020–21 and external review draft of Action Agenda. Prioritized strategic action areas for 2020–21 with the help of national experts and decision-makers in key sectors. Finalized external review draft of Action Agenda (September–October 2019).

9) Peer review of external review draft and final technical revisions. Peer reviewed external review draft of Action Agenda and circulated to key national food and land use system stakeholders for feedback. Revised Action Agenda for launch event in January 2020 (November–December 2019).

4.2.1 SUPPORT SUSTAINABLE AGRICULTURAL COMMERCIALIZATION OF CROPS

Objective and top reasons for selection

The objective is to develop a model of sustainable agricultural commercialization, linking to the innovations in the Agricultural Commercialization Clusters led by the Ministry of Agriculture and the Agricultural Transformation Agency. The clusters seek to enable farmers to sell their products at a competitive price to viable markets and increase agricultural productivity in a sustainable manner.

This strategic action area is going to build on the success of the productivity and market-linkage innovations in the clusters and benefit from readily available platforms to engage the public and private sector and scale up successful models. Agricultural commercialization is expected to be the key driver of economic growth and transformation in the coming years. In addition, cropland expansion by subsistence farming has been the largest driver of past forest loss in Ethiopia. This trend can be disrupted with new, geographically focused models of commercially growing crops that are inclusive, nutrition-sensitive, and environmentally sustainable.

Proposed action

Sustainable agricultural commercialization can evolve from the initial success of commercializing smallholder production. Support for the following actions is a priority:

- *Increase productivity and strengthen value chains for priority commodities* in Agricultural Commercialization Clusters.
- *Identify viable actions* to advance inclusiveness, nutrition-sensitivity, sustainable resource use, and better choices of land use options within Agricultural Commercialization Clusters.
- *Develop and scale up a model* of sustainable agricultural commercialization within agricultural landscapes.
- *Provide incentives that encourage sustainable value chains* and resource management within agricultural landscapes.

Envisioned food and land use system innovation

The goal is to establish a model of sustainable agricultural commercialization and influence the top driver of land use and ecosystem change. The emphasis is to introduce innovative practices within value chains and geographic areas (i.e., agricultural landscapes) that support sustainable resource management, nutrition-sensitive and inclusive crop production, and

more integrated land use practices within Agricultural Commercialization Clusters.

4.2.2 BOOST YIELDS OF ANIMAL SOURCE FOODS FROM SUSTAINABLY MANAGED LANDSCAPES

Objective and top reasons for selection

The objective is to scale up measures to boost yields of animal source foods and transform spatial patterns of raising livestock within rural and peri-urban landscapes in a manner that increases their economic returns, environmental sustainability, and climate resilience.

Increasing the supply of animal source foods will decrease the country's nutrition deficits and help cut the high economic and social costs of child undernutrition. Investing in increased livestock productivity is associated with strong poverty reduction effects and can be an important engine of economic growth. A multiyear livestock sector development project is finally unlocking important elements of the Livestock Master Plan in the highland production system. The close collaboration between the Ministry of Agriculture and the Agricultural Transformation Agency on this project creates opportunities to learn from experiences within Agricultural Commercialization Clusters and harmonize crop and livestock interventions. Likewise, a new Ministry of Peace project creates an opportunity to strengthen market linkages and sustainability of pastoral and agro-pastoral production and make long-term investments in rangeland restoration.

Proposed action

The following efforts represent key steps toward a more sustainable food and land use system:

- *Provide new technologies and services* to boost yields of animal source foods and support other efforts to improve livestock productivity and market linkages.
- *Develop scalable models that embed livestock production within sustainably managed agricultural landscapes.* This includes three models to be explored: (i) *small to medium-size commercial dairy farms operating sustainably within an agricultural landscape in the highlands*; (ii) *sustainable dairy and poultry production situated in peri-urban areas*; and

(iii) *sustainable agro-pastoral and pastoral production zones that ensure livestock mobility.*

- *Promote activities that advance envisioned shift in consumption* of animal source foods and strengthen monitoring and planning of national livestock production targets.

Envisioned food and land use system innovation

The goal is to establish good animal husbandry practices that are aligned with a sustainable food and land use system. This can be achieved by new dairy and poultry production technologies and practices that are more productive and rely on a location-specific, environmentally sustainable approach to source feed, manage nutrients and water, and restore degraded land. The same is true if improved market linkages for pastoral and agro-pastoral production can be aligned with rangeland restoration. Key will be location-specific, participatory models that resolve economic, social, and environmental trade-offs. If Ethiopia can establish sustainable dairy and poultry production supported by promotional activities to change tastes and preferences to increase the share of chicken in total meat consumption from 5 to 30 percent, it can close a significant meat production–consumption gap projected for 2030 and advance a more sustainable food and land use system.

4.2.3 MEASURE FOOD LOSS FOR AGRICULTURAL COMMERCIALIZATION COMMODITIES AND REDUCE LOSS WHERE ECONOMICALLY VIABLE

Objective and top reasons for selection

The immediate objective is to reduce food loss in the value chains prioritized in the Agricultural Commercialization Clusters. It will be a key step toward the long-term objective of reducing food loss for all commodities during the production, handling, storage, processing, and packaging of food as a sustainable solution to improve efficiency in the food system.

Focusing on the commodities prioritized in the Agricultural Commercialization Clusters has the advantage of working with readily available monitoring and implementation platforms, and can increase the efficiency of Ethiopia's food

system with immediate benefits for farmers and the environment. In the long term, the chosen entry point linking to existing value chains can open the door for permanent measurement and reporting of both food loss and food waste.

Proposed action

The following actions represent key steps toward a more efficient food system:

- *Systematically measure food loss* for the value chains prioritized in the Agricultural Commercialization Clusters.
- *Identify economic opportunities* to reduce food loss in the cluster value chains.
- *Commit value chain alliances* to reduce food loss for cluster commodities with greatest economic opportunities.
- *Share evidence* generated from reducing food loss for cluster commodities and call for systematic measurement and reporting of food loss nationally.

Envisioned food and land use system innovation

The *Action Agenda* prioritizes private sector engagement to boost storage and other value chain improvements, all in line with planned targets to lower farmer loss. This is expected to become a reference point from which to measure and report food loss regularly in the country.

4.2.4 SUPPORT LENDING IN THE AGRICULTURE AND FOREST SECTORS AND RURAL AREAS

Objective and top reasons for selection

The objective is to create opportunities for improved or new financial products and services that are aligned with sustainable value chain improvements and long-term natural capital formation.

The ongoing reform process to build a more proficient and competitive financial sector in Ethiopia and the government's commitment to increase financial inclusion have created an

opening to support innovations that increase lending to the agriculture and forest sectors, and rural areas overall. This area ranked first among the crosscutting foundations because it can immediately support the other three strategic action areas of *Action Agenda* for 2020–21 and help scale up successful innovations. A more competitive and efficient financial sector is essential to advance sustainable commercialization of smallholder farming and livestock keeping. This in turn creates a strong foundation from which to develop innovative products and services that finance other strategic action areas in the future, namely, to grow trees on agricultural and other lands, restore degraded lands, conserve forest, and sustain ecosystem services.

Proposed action

The following efforts are expected to increase financial flows from which more targeted products and services can deliver a sustainable food and land use system:

- *Increase market penetration* of formal financial institutions in rural areas.
- *Formalize and strengthen* the rural savings and credit cooperatives sector.
- *Strengthen and expand* mobile banking services.
- *Boost competitiveness and efficiency* of the banking sector specifically and financial sector overall.
- *Support ways to increase loanable funds* in the financial system, with the goal of increasing lending in the agriculture and forest sectors, and rural areas overall.

Envisioned food and land use system innovation

Efforts that close the financing gap for agriculture and increase loanable funds for rural areas are the priority. The envisioned systemic change is to improve financial products and services that support sustainable agriculture immediately and encourage other sustainable rural land uses over the long term.

4.3 Envisioned Results and Potential Benefits

Successful actions for the four strategic areas aim to achieve the following results:

Value chain alliances are advancing commercialization of crop and livestock production that leads to innovations in food production and land use practices. These innovations provide more inclusive economic opportunities, improve health, and reduce food loss while restoring degraded landscapes, expanding tree cover, and protecting ecosystems within agricultural landscapes. Public and private actors are increasing lending to the agriculture and forest sectors and rural areas overall—all aligned with sustainable value chain improvements and long-term natural capital formation.

Potential benefits of these actions are highlighted below (Chapter 3 provides a more detailed explanation and references):

Support sustainable agricultural commercialization of crops

- **Rural incomes and crop productivity increased.** Income of at least 700,000 smallholder farming households increased and crop productivity on more than 350,000 ha boosted over three years in areas prioritized for agricultural commercialization.
- **Additional net benefits** from integrated resources management **realized at farm level** and **within agricultural landscapes**. These include gains resulting from agricultural input efficiency, increased farmers' revenue, and drought and climate resilience.
- **Innovation** and **resources of the private sector leveraged** to establish sustainable value chains.
- **Agricultural expenditures of more than US\$350 million nudged** on a path to a green economy.

Boost yields of animal source foods from sustainably managed landscapes

- **Incidence of poverty reduced considerably for livestock-keeping households**, based on implementing the Livestock Master Plan, an initial investment of US\$388 million over five years.
- **Food and nutrition security increased.** A significant meat production–consumption gap projected for 2030 closed, if dairy and poultry production can be increased and if promotional activities to change consumption preferences can shift the share of chicken in total meat consumption from 5 to 30 percent.
- **Agricultural gross domestic product increased** over five years (e.g., by US\$283 million from improved family dairy commercialization, by US\$59 million from improved family poultry operations), based on implementing the Livestock Master Plan.
- Potential of **new export earnings** from milk and poultry products **realized**.

Measure food loss for agricultural commercialization commodities and reduce loss where economically viable

- **About US\$100 million in expected total revenues** from domestic and export markets **saved** (otherwise lost over three years) or ecosystem conversion for new production on 27,000 hectares avoided for 10 priority crops **in Agricultural Commercialization Clusters**—if estimated farmer loss rates are confirmed in the field and economically viable loss reduction interventions can be implemented.
- **Foreign exchange savings** and **other economic gains** achieved. In 2010, Ethiopia had an estimated total postharvest loss of 2.04 million tons of grain while the country's import requirements stood at 1.16 million tons. Reducing food loss can free up farmer time, labor, and household budgets for other purposes.
- **Food-related health risks reduced.** Aflatoxins, carcinogens associated with pre- and postharvest contamination of food and feed, are a serious health risk and economic burden (including agricultural exports failing to meet international quality standards).
- **Environmental conditions improved** because of reduced pressure to convert

ecosystems, consume fresh water, and purchase fertilizer.

Support lending in the agriculture and forest sectors and rural areas

- **Value of smallholder production increased by up to 60 percent per hectare**, if credit constraints are alleviated.
- **Willingness** by farmers and livestock keepers **increased to experiment with improved technologies to boost agricultural productivity sustainably**.
- **Rural incomes, savings, and number of businesses and jobs increased, and poverty and gender gaps closed**, once greater access to mobile banking achieved.
- **Long-term investments in sustainable resource use more likely**, once financial services reach rural constituencies and **financial innovations** can be introduced (e.g., **crop and livestock insurance, long-term funds to grow trees and restore landscapes, risk-sharing facilities to grow coffee and protect forests**).

4.4 Taking the Next Steps

This *Action Agenda* puts forward a vision for 2030 in which 140 million Ethiopians are living in a productive, inclusive economy that is improving the health and well-being of all citizens, creating jobs, providing food and nutrition security, restoring degraded landscapes, protecting critical ecosystems, and expanding tree cover for future prosperity.

Conversations with more than 70 experts, passionate about their work in respective fields and sectors, helped identify the most promising entry points to achieve this vision. Their research, ideas, and evidence from the available literature, all helped to inform deliberations from which 15 strategic action areas emerged. It is through these action areas that such a new economy can be built. The following four strategic actions areas—all with great economic and political relevance—can demonstrate success in the immediate future:

- Support sustainable agricultural commercialization of crops.

- Boost yields of animal source foods from sustainably managed landscapes.
- Measure food loss for agricultural commercialization commodities and reduce loss where economically viable.
- Support lending in the agriculture and forest sectors and rural areas.

Continuation of this conversation is essential. Decision-makers within government, business, and communities must join efforts and determine the specific interventions needed under each strategic action area. A new dialogue should start now to determine the what, how, where, and who of the most suitable and cost-effective interventions. This dialogue should address the following questions:

- Where and how exactly can value chain alliances advance commercialization of crop and livestock production that leads to innovations in food production and land use practices?
- Which specific innovations could provide more inclusive economic opportunities, improve health, and reduce food loss while restoring degraded landscapes, expanding tree cover, and protecting ecosystems within agricultural landscapes?
- How can public and private actors best increase lending to the agriculture and forest sectors and rural areas overall—all aligned with sustainable value chain improvements and long-term natural capital formation?

Taking these next steps will require leadership from the Prime Minister's Office, the Planning and Development Commission, the Ministry of Finance and Economic Cooperation, and the Ethiopian Investment Commission. It will require technical expertise and engagement platforms from the Ministry of Agriculture; the Agricultural Transformation Agency; the Environment, Forest and Climate Change Commission; the Ministry of Peace; and others. And most importantly, it will require ideas from and direct engagement by companies, financial institutions, civil society, researchers, and communities.

Together, Ethiopia can build a new food and land use economy and secure its future.

APPENDIX

Appendix A. Action Agenda for a New Food and Land Use Economy in Ethiopia Relative to the 10 Critical Transitions to Transform Food and Land Use

1. BOOST YIELDS ON EXISTING CROP AND GRAZING LANDS

a. Support sustainable agricultural commercialization of crops

	Productive & Regenerative Agriculture		Healthy Diets
	Stronger Rural Livelihoods		Protecting & Restoring Nature
	Gender & Demography		

b. Boost yields of animal source foods from sustainably managed landscapes

	Productive & Regenerative Agriculture		Diversifying Protein Supply
	Stronger Rural Livelihoods		Gender & Demography
	Healthy Diets		Protecting & Restoring Nature

2. CONSERVE FORESTS AND OTHER NATURAL ECOSYSTEMS

a. Establish coffee as a successful deforestation-free export commodity

	Productive & Regenerative Agriculture		Protecting & Restoring Nature
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b. Advance commercial orientation and markets for sustainable wood and forest products

	Stronger Rural Livelihoods		Protecting & Restoring Nature
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c. Establish incentives for water-related ecosystem services

	Stronger Rural Livelihoods		Protecting & Restoring Nature
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3. RESTORE NATURAL AND PRODUCTIVE ECOSYSTEMS

a. Increase incentives for restoration enterprises

	Stronger Rural Livelihoods		Protecting & Restoring Nature
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4. IMPROVE EFFICIENCIES IN THE FOOD SYSTEM

a. Measure food loss for agricultural commercialization commodities and reduce loss where economically viable

	Reducing Food Loss & Waste		Healthy Diets
	Productive & Regenerative Agriculture		Stronger Rural Livelihoods
	Gender & Demography		Protecting & Restoring Nature



Healthy Diets



Productive & Regenerative Agriculture



Protecting & Restoring Nature





A Healthy & Productive Ocean



Diversifying Protein Supply

Continued on next page

-  Action Agenda for 2020-21 (Multiple critical transitions are pursued under each strategic action area.)
-  Action Agenda beyond 2020-21 (Only two critical transitions are listed.)

LAND USE SYSTEM PILLARS

FOOD SYSTEM PILLARS

CROSSCUTTING FOUNDATIONS

4. IMPROVE EFFICIENCIES IN THE FOOD SYSTEM

b. Measure and report food loss and waste for all agricultural commodities



Reducing Food Loss & Waste



Productive & Regenerative Agriculture

5. IMPROVE DIETS

a. Scale up research-based community solutions to end child malnutrition



Healthy Diets



Stronger Rural Livelihoods

b. Develop guidelines and other mechanisms for healthier diets



Healthy Diets



Diversifying Protein Supply

6. STRENGTHEN PLANNING, MONITORING, AND EVALUATION

a. Identify science-based targets and pathways to achieve the Sustainable Development Goals



Harnessing the Digital Revolution



Stronger Rural Livelihoods

b. Establish an enhanced system of land use planning and implementation



Harnessing the Digital Revolution



Local Loops & Linkages

7. IMPROVE GOVERNANCE

a. Improve land governance



Productive & Regenerative Agriculture



Protecting & Restoring Nature

a. Advance gender-responsive budgeting



Gender & Demography



Productive & Regenerative Agriculture

8. INNOVATE FINANCE

a. Support lending in the agriculture and forest sectors and rural areas



Productive & Regenerative Agriculture



Diversifying Protein Supply



Stronger Rural Livelihoods



Protecting & Restoring Nature



Harnessing the Digital Revolution



Healthy Diets



Gender & Demography



Reducing Food
Loss & Waste



Local Loops &
Linkages



Harnessing the
Digital Revolution



Stronger Rural
Livelihoods

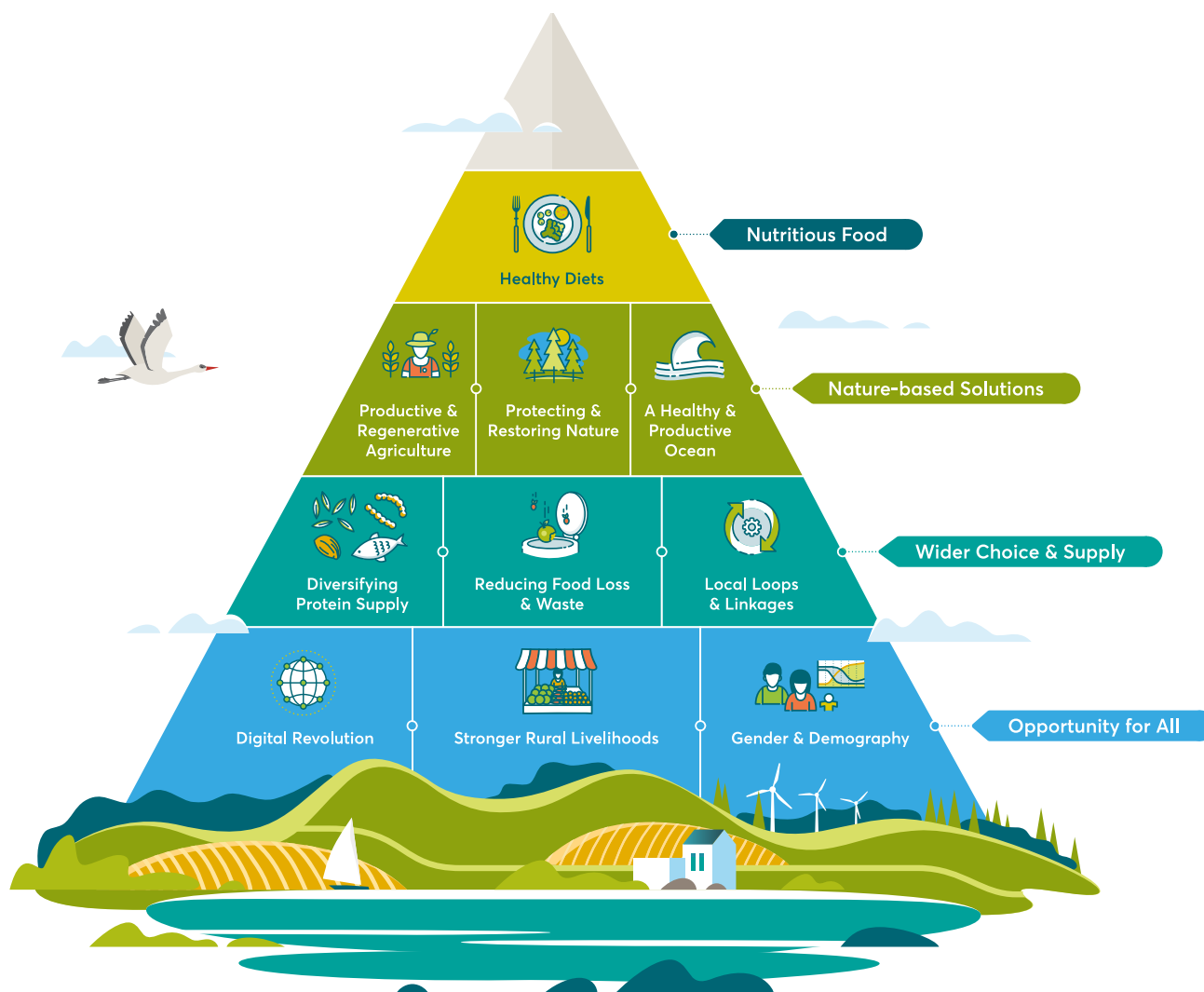


Gender &
Demography

Note: Appendix A continued on next page. Source: Analysis based on priorities in the Action Agenda and Pharo et al. 2019.

Appendix A. Action Agenda for a New Food and Land Use Economy in Ethiopia Relative to the 10 Critical Transitions to Transform Food and Land Use (Cont'd)

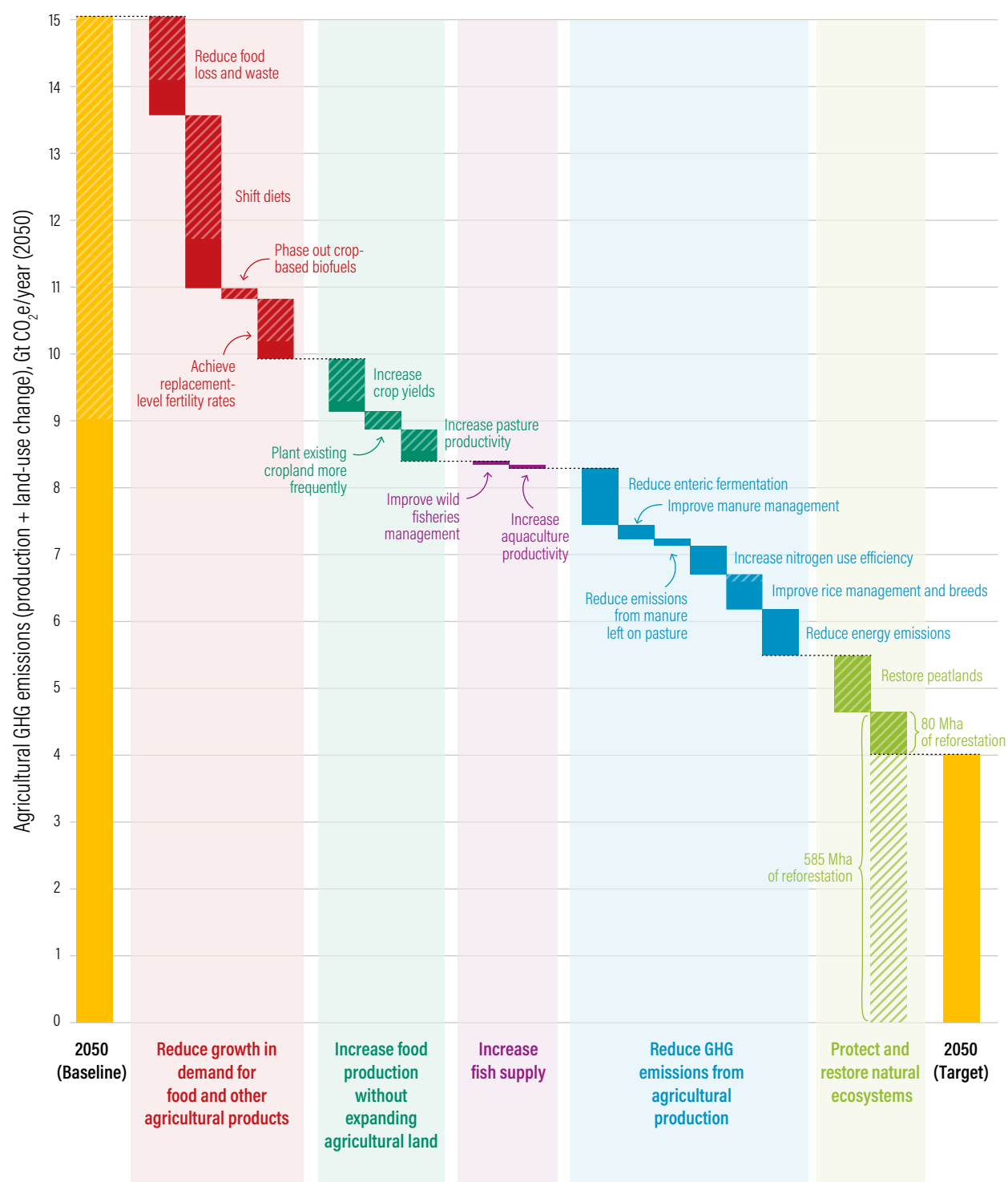
Growing Better: 10 Critical Transitions to Transform Food and Land Use



Source: Pharo et al. 2019.

Appendix B. Action Agenda for a New Food and Land Use Economy in Ethiopia Relative to the Menu for a Sustainable Food Future

Menu for a Sustainable Food Future



Note: Appendix B continued on next page.

Source: Searchinger et al. 2019.

Appendix B. Action Agenda for a New Food and Land Use Economy in Ethiopia Relative to the Menu for a Sustainable Food Future (Cont'd)

1. BOOST YIELDS ON EXISTING CROP AND GRAZING LANDS

a. Support sustainable agricultural commercialization of crops

Increase crop yields

Plant existing crop land more frequently

Restore degraded land (15 Mha restoration commitment; it is feasible to increase tree cover within landscapes supporting Agricultural Commercialization Clusters)

b. Boost yields of animal source foods from sustainably managed landscapes

Increase pasture productivity

Shift diets

Reduce enteric fermentation (enhance production and consumption of low-GHG-emitting animals [chicken, sheep, and goats], lower cattle emissions per animal through improvements in feeding, health, genetic and handling)

Improve manure management (possible through improved management)

Restore degraded land (15 Mha restoration commitment; it is feasible to increase tree cover within landscapes supporting Agricultural Commercialization Clusters)

2. CONSERVE FORESTS AND OTHER NATURAL ECOSYSTEMS

a. Establish coffee as a successful deforestation-free export commodity

Increase crop yields

Plant existing crop land more frequently

Restore degraded land (15 Mha restoration commitment; it is feasible to increase tree cover within landscapes supporting Agricultural Commercialization Clusters)

b. Advance commercial orientation and markets for sustainable wood and forest products

Restore degraded land (15 Mha restoration commitment; includes afforestation, which could be managed sustainably over the long term and supply markets)

c. Establish incentives for water-related ecosystem services

Improve wild fisheries management (payments could be linked to fisheries management)

Increase aquaculture productivity (payments could be linked to aquaculture management)

3. RESTORE NATURAL AND PRODUCTIVE ECOSYSTEMS

a. Increase incentives for restoration enterprises

Restore degraded land (15 Mha restoration commitment)

4. IMPROVE EFFICIENCIES IN THE FOOD SYSTEM

a. Measure food loss for agricultural commercialization commodities and reduce loss where economically viable

Reduce food loss (for 10 priority commercialization crops and in cases where loss is significant, and solutions are economically viable)

PROPOSED INTERVENTIONS FROM THE MENU FOR A SUSTAINABLE FOOD FUTURE

- Reduce food loss and waste
- Shift diets
- Phase out crop-based biofuels
- Achieve replacement-level fertility rates

- Increase crop yields
- Plant existing cropland more frequently
- Increase pasture productivity

- Improve wild fisheries management
- Increase aquaculture productivity

Continued on next page

 Action Agenda for 2020-21

 Action Agenda beyond 2020-21

LAND USE SYSTEM PILLARS

FOOD SYSTEM PILLARS

CROSSCUTTING FOUNDATIONS

4. IMPROVE EFFICIENCIES IN THE FOOD SYSTEM

b. Measure and report food loss and waste for all agricultural commodities 


 Reduce food loss and waste

5. IMPROVE DIETS

a. Scale up research-based community solutions to end child malnutrition 

 Increase crop yields *(for crops that can reduce malnutrition)*

 Increase pasture productivity *(to increase supply of animal source foods)*


 Plant existing cropland more frequently *(for crops that can reduce malnutrition)*

b. Develop guidelines and other mechanisms for healthier diets 

 Shift diets

6. STRENGTHEN PLANNING, MONITORING, AND EVALUATION

a. Identify science-based targets and pathways to achieve the Sustainable Development Goals 

 Linked to all menu items via improved planning

b. Establish an enhanced system of land use planning and implementation 

 Plant existing cropland more frequently

 Restore degraded land *(15 Mha restoration commitment)*

 Increase pasture productivity

7. IMPROVE GOVERNANCE

a. Improve land governance 

 Plant existing cropland more frequently

 Restore degraded land *(15 Mha restoration commitment)*


 Increase pasture productivity

b. Advance gender-responsive budgeting 

 Achieve replacement-level fertility rates *(tentative link depending on a complex set of other intervening factors)*

8. INNOVATE FINANCE


a. Support lending in the agriculture and forest sectors and rural areas 

 Increase crop yields *(via credit and other financing)*

 Increase pasture productivity *(via credit and other financing)*

 Plant existing cropland more frequently *(via credit and other financing)*

 Reduce food loss *(via financing of storage and other technologies)*

 Reduce enteric fermentation *(via credit and other financing)*

- Reduce enteric fermentation
- Improve manure management
- Reduce emissions from manure
- Increase nitrogen efficiency from agricultural production
- Improve rice management and breeds
- Reduce energy emissions from agricultural production

- Restore peatlands
- Reforest 80 Mha

Source: Analysis based on priorities in the Action Agenda and Searchinger et al. 2019.

Appendix C. Contributors in Expert Meetings, Interviews, and Reviews of Background Notes and Early Drafts of the Action Agenda

Name	Organization
Abdeta Debella	UNDP (United Nations Development Programme)/EFCCC (Environment, Forest and Climate Change Commission)
Abebe Seifu	EFCCC
Abera Tola	The Synergos Institute
Addis Negash	Agricultural Investment and Land Administrative Agency
Amare Hailelassie	IWMI (International Water Management Institute)
Amdework Berhanu	Dalberg
Assaye Legesse	World Bank
Aynie Habtamu	ATA (Agricultural Transformation Agency)
Azage Tegegne	ILRI (International Livestock Research Institute)
Azene Bekele	HoA-REC&N-AAU (Horn of Africa Regional Environment Centre & Network, Addis Ababa University)
Bart Minten	IFPRI (International Food Policy Research Institute)
Bely Yazew	UNECA (United Nations Economic Commission for Africa)
Ben Aschenaki	P4F (Partnerships for Forests)
Bruk Niazghi	P4F
Carlo Fadda	Bioversity International
Christopher Dickinson	Forest Sector Transformation Unit, EFCCC/UNDP
Craig Hanson	WRI (World Resources Institute)
Dawit Alemu	BENEFIT (Bilateral Ethiopia Netherlands Effort for Food, Income and Trade Partnership)
Demeke Tafesse	MoA (Ethiopia's Ministry of Agriculture)
Dominique Davoux	EU (European Union)
Ed Davey	WRI
Fabrice DeClerck	EAT
Fantahun Mengistu	Sasakawa Africa Association
Florence Landsberg	WRI
Firew Bekele Woldeyes	PSI (Policy Studies Institute)
Getachew Driba	Centre for Dialogue, Research and Cooperation
Getachew Gebru Tegegn	Managing Risk for Improved Livelihoods (MARIL)-Ethiopia
Gete Zeleke	WLRC (Water and Land Resource Centre), Addis Ababa University
Gizaw Desta	Formerly WLRC
Girma Tesfahun	ICARDA (International Center for Agriculture Research in the Dry Areas)

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Appendix C. Contributors in Expert Meetings, Interviews, and Reviews of Background Notes and Early Drafts of the Action Agenda (Cont'd)

Name	Organization
Haimanot Amare	Trade Development Bank
Han Ulac Demirag	IFAD (International Fund for Agricultural Development)
Helen Teshome	IFAD
Kaleab Baye	AAU
Khalid Bomba	ATA
Kitty van der Heijden	Formerly WRI
Kristie Drucza	CIMMYT (International Maize and Wheat Improvement Center)
Laketch Mikael	Formerly ATA
Laura Villegas Ortiz	WRI
Lulu Likassa	Royal Norwegian Embassy, Addis Ababa
Marine Formentini	UN SDSN (United Nations Sustainable Development Solutions Network)
Megerssa Mirssa	Kifiya Financial Technology
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Meskerem Mulatu	World Bank
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Ribka Teklu	ATA
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Shewakena Aytenfisu Abab	World Bank
Sofia Ahmed	WRI
Solomon Desta	MARIL-Ethiopia
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Tefera Belay	EFCCC/UNDP
Teferi Mequaninte	ATA

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Appendix C. Contributors in Expert Meetings, Interviews, and Reviews of Background Notes and Early Drafts of the Action Agenda (Cont'd)

Name	Organization
Tena Alameraw	WLRC
Tilaye Nigussie	Forest Sector Transformation Unit, EFCCC/UNDP
Tesfaye Woldemariam	WRI
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Zablon Adane	WRI
Zemen Addis	USAID
Zerfu Hailu	MoA
Zerihun Woldu	AAU

Endnotes

1. Employment in agriculture (% of total employment) based on modeled estimates by the International Labor Organization.
2. The area cultivated with crops varies by season and year and in 2017–18 covered 14.7 million ha. Smallholder farmers in rural Ethiopia (except three zones of Afar and six zones of Somali regions with pastoral production systems) used another 3.2 million hectares classified as grazing land, woodland, fallow land, and other land for agricultural purposes (Government of Ethiopia 2018a).
3. To determine the share of land used for livestock production requires determining the feed resources available for the mixed crop–livestock production systems (mostly in the highlands) and pastoral production systems (mostly in the lowlands). One estimate suggests that about 78 percent of the livestock feed is coming from natural pasture, with about 43.2 million hectares in the lowlands and 22.3 million hectares in the highlands (Shapiro et al. 2015).
4. These are the officially tracked shares for the subsectors, as reported by the Planning and Development Commission, 2019 (Government of Ethiopia 2019b). More detailed economic analysis for the livestock and forest subsectors highlight much higher contributions to the economy.
5. Personal communication of the World Resources Institute's Solomon Tsehay in December 2019. Personal communication, based on background documents for Ethiopia's upcoming 10-year Perspective Development Plan, 2020–2030.
6. Personal communication of the World Resources Institute's Solomon Tsehay in December 2019. Personal communication, based on background documents for Ethiopia's upcoming 10-year Perspective Development Plan, 2020–2030.
7. Thirty-five experts provided detailed comments and suggestions in individual meetings or at small, expert workshops organized for selected pillars of the framework for a sustainable food and land use system. An additional 35 experts provided review comments and other guidance to various background documents and drafts of the Action Agenda.
8. The Agricultural Transformation Agenda was initiated during the first Growth and Transformation Plan and considerably revised in the next five-year plan (Government of Ethiopia 2016b).
9. Personal communication of the World Resources Institute's Solomon Tsehay in December 2019. Personal communication, based on background documents for Ethiopia's upcoming 10-year Perspective Development Plan, 2020–2030.
10. The average holding sizes per household and per holder were 1.14 hectare and 1.10 hectare, respectively during the survey year (Government of Ethiopia 2016d). The average holding size in all cropped area per household and per holder were 0.95 hectare and 0.92 hectare, respectively. For trend data see (Dorosh and Minten 2019).
11. Personal communication of the World Resources Institute's Solomon Tsehay in December 2019. Personal communication, based on background documents for Ethiopia's upcoming 10-year Perspective Development Plan, 2020–2030.
12. The initial 2017 target for the Agricultural Commercialization Clusters was to reach more than 800,000 beneficiary farmers and generate total revenues of 43.9 billion Ethiopian Birr (about US\$1.4 billion) from domestic and export markets over three years (based on 12 commodities). Using the same underlying data and economic analysis, this translates into reaching more than 700,000 beneficiary farmers and affecting 350,000 hectares of cultivated land over three years for the 10 commodities prioritized in 2019 (wheat, maize, teff, malt barley, sesame, avocado,

- mango, banana, tomato, and onion). In addition to these direct economic benefits, the clusters are envisioned to become a driver of future economic transformation. Increased output, income, and employment in the cluster woredas is expected to result in growing demand for goods and services. This can have positive effects, including increased income and employment from agro-processing, new tax revenues, and foreign exchange earnings or savings. Within the context of Ethiopia's five-year planning, the broader GTP II goal was to increase the income of more than five million smallholder farming households and boost crop productivity on more than 2.5 million hectares (Government of Ethiopia 2017c). More recent priorities in the Agricultural Commercialization Clusters target 2.9 million smallholder farmers who are involved in at least one of 10 focus value chains (Government of Ethiopia 2019e). In addition, a specific intervention for five commodities (i.e. Farmer Production Clusters) expects to reach 2.5 million farmers on 2.5 million hectares of land planted within five years (Government of Ethiopia 2019f).
13. Research in the Ethiopian highlands has demonstrated that productivity and income in smallholder crop–livestock farming systems can be increased through integrated management of resources at the farm level (See for example, Africa RISING website <https://africa-rising.net/> and more specifically “early win” projects at <https://africa-rising.net/early-win-projects/>). It is clear from case studies that there are benefits from economies of scope and scale, if land and water users in a landscape share their skills and assets and encourage more integrated production practices (OECD 2013). Moreover, there can be positive linkages between agricultural productivity and sustainable land management, but the direction of the effects and the magnitude of net benefits depend on the biophysical characteristics of the chosen geographic areas, and the scale and time horizon of the analysis.
 14. The Ethiopian government's deliverables under the Agricultural Transformation Agenda have been operationalized through the Agricultural Commercialization Clusters. Their current multiyear resource envelope is US\$352 million, which can serve as a portal to transition to a green economy and advance a sustainable food and land use system (Government of Ethiopia 2018h).
 15. The Ethiopia Livestock Sector Analysis states that an annual 4.5 percent gain in livestock productivity, as proposed under the Livestock Investment Plan under the CRGE strategy, is biologically unrealistic. Based on that observation, this means that the 2030 CRGE GHG emission target could only be achieved with a smaller national cattle herd. This in turn would result in lower achievements for other national development objectives in 2030, such as the supply of animal source foods, poverty reduction benefits, and export earnings (Shapiro et al. 2017).
 16. The Livestock Master Plan projected livestock productivity gains over five years that would be equivalent of moving 2.4 million livestock-keeping households above the poverty line. More detailed poverty analysis explored the potential effects for the two mixed crop–livestock production systems in the highlands (rainfall-deficient and rainfall-sufficient system), depending on the dominant livelihood activities of different households. The analysis showed a considerable decline in the incidence (eight percentage points) and the depth of poverty for the households in the rainfall-sufficient highland system, but negligible effects for the rainfall-deficient highland system. The authors expected that the investments under the five-year plan would reach 3.7 million households in all three livestock production zones. Their analysis assumed a poverty rate of 27 percent for the rainfall-sufficient highland system and of 35 percent for the rainfall-deficient highland system. No detailed analysis was carried out for the lowland grazing production system (pastoral and agropastoral) (Shapiro et al. 2017).
 17. The Livestock Masterplan projects a five-year increase in GDP of ETB8.9 billion (about US\$283 million—from ETB1.1 billion to ETB10.0 billion) for improved family dairy interventions and of ETB1,843 million (about US\$59 million—from ETB741 million to ETB2,584 million) for improved family poultry interventions (Shapiro et al. 2015).
 18. See, for example, Africa RISING website at <https://africa-rising.net/>.
 19. The New York Declaration on Forests, a legally non-binding political declaration of the Climate Summit 2014, commits countries to cut natural forest loss in half by 2020 and end it by 2030. The Bonn Challenge, a 2011 global effort, aims to restore 150 million hectares of the world's deforested and degraded land by 2020.
 20. See How Coffee can Save Ethiopia's Forests at <https://partnershipsforforests.com/2019/01/29/how-coffee-can-save-ethiopias-forests/> and Ethiopia Forest Coffee: Frequently Asked Questions at <https://partnershipsforforests.com/what-we-do/ethiopia-forest-coffee-frequently-asked-questions/>.
 21. See Ethiopian Forest Coffee at <https://partnershipsforforests.com/partnerships-projects/ethiopian-forest-coffee/>.
 22. A draft version of the land use policy was discussed in February 2019 at a technical workshop. Personal communication of USAID's Zemen Hadis in March 2019.
 23. Ethiopian coffee is cultivated in four distinct production systems. Forest coffee is self-sown and grows naturally under full forest cover, mainly in southwestern Ethiopia (about 10 percent of total production). Semi-forest coffee, also grown under forest canopy in the same region, has limited human intervention (about 30 percent of total production). Garden coffee (more than 50 percent of total production) is grown by smallholder farmers and intercropped with cereals, fruits, and vegetables, mainly in the southern and eastern regions. Finally, plantation coffee is grown on large state-owned or commercial farms (about five percent of production) (Chemonics 2010).
 24. The level of “management” can determine the level of forest degradation. Generally, forests without coffee production have a higher deforestation risk than forests with coffee production; forests with coffee production have lower biodiversity value than natural, undisturbed forest; and biodiversity decreases with increasing intensification, from forest coffee, through semi-forest coffee to forest garden coffee, but with coffee productivity increasing (Chemonics 2010).
 25. Such a committee has been proposed in the PES Strategic Plan (UNDP et al. 2018b).

26. For example, in the second Growth and Transformation Plan, the five-year targets were: land area rehabilitated through area closure at 11.7 million ha (part of watershed and land restoration targets), which is a total increase of 108 percent over five years; area of watersheds supported with physical soil and water conservation structures at 19.1 million ha, which is a total increase of 235 percent; and new land with community-based watershed development at 29.2 million ha, which is a total increase of 240 percent (Government of Ethiopia 2016b).
27. In Schmidt and Tadesse 2019, the authors cite estimates of losses resulting from land degradation at 2–5 percent of agricultural GDP per year including: Sonneveld 2002; Yesuf et al. 2005, who cites estimates reported by FAO (1986) of land degradation impact on agricultural gross domestic product; and World Bank 2019c.
28. Gete Zeleke, personal communication, January 2019. A recent study located conservation structures on approximately 18 percent of all cropland in the highlands. The same study also suggested that more than half of all cropland in Ethiopia still required soil and water conservation investments, especially since 77 percent of these croplands had steep slopes of greater than eight percent (about 12 million hectares) (Hurni et al. 2015).
29. This could be pursued in close collaboration with a state forest enterprise in Ethiopia. The international reference point would be a forestry company planting and harvesting trees through a smallholder-owned outgrower scheme (ideally with some certification of its sustainability practices). See, for example, the overview of Komaza in Kenya (Climate Finance Lab 2019a) and additional information on the financing approach in Kenya (Climate Finance Lab 2019b).
30. The reference point would be a company that has experience with growing bamboo on degraded land and has certified its bamboo sourcing area or value chain. There are considerable challenges to certify the sustainability of bamboo operations (Buckingham and Jepson 2014).
31. There is also existing project-based restoration experience with coffee landscapes in Ethiopia. The international reference point here is a sustainable land use fund, built around an impact investor. See for example URAPI, which is supporting sustainable agroforestry in Latin America. The fund is financing and providing technical support to cooperatives of small-scale farmers in the Café Silva Norte Project in northern Peru (Café Silva Norte n.d.).
32. The reference would be the One Acre Fund, a nonprofit social enterprise that has experience in developing scalable models to provide seeds, fertilizer, and trees in Kenya and Rwanda. The Fund has been testing a more limited portfolio focused solely on tree-planting in Amhara, a result of government parameters given to the Fund under which it could operate. The One Acre Fund model was discussed as a possible innovative public-private partnership included in the proposal for Ethiopia's National Forest Investment Plan (Government of Ethiopia 2017d).
33. The international reference would be restoration concessions being developed, for example, in Indonesia. The case study would learn from these efforts: how they applied new forest management strategies, supported livelihoods and new value chains and market development, developed sustainable business models, linked restoration companies to investors and new financing sources, and developed fair benefit-sharing mechanism between companies, local communities, and other stakeholders. See, for example, Partnership for Forests' work in Indonesia at <https://partnershipsforforests.com/partnerships-projects/ecosystem-restoration-concessions/>.
34. See, for example, investment tool and economic valuation of reforestation with native trees species in Brazil (Batista et al. 2017).
35. This national dialogue was followed by four regional public private dialogues in Amhara, Oromia, SNNPR, and Tigray during 2018 and 2019, with workshop proceedings and recommendations forthcoming.
36. This will require considering the biophysical and industrial characteristics of the landscape, including existing land uses, forest conservation areas, land tenure arrangements, and the suitability of the terrain and current land uses to benefit from different restoration and forestry technologies and practices.
37. In 2018, the Land Accelerator received 245 applications from Africa with the final selection including 12 entrepreneurs from seven African countries. Two Ethiopian companies providing drought-tolerant tree and grass seeds and manufacturing bamboo participated in the Land Accelerator event, where they received training and mentorship support and pitched their ideas directly to prospective investors (WRI 2018). The program's second African meeting was organized in Nairobi in September 2019. Fourteen startups were chosen from 335 applicants representing eight African countries. See more information at the Land Accelerator website at <http://thelandaccelerator.com/>.
38. Ethiopia is developing a new Forest Challenge Fund. Personal communication of Tilaye Nigussie, Forest Sector Transformation Unit, Environment, Forest and Climate Change Commission, in June 2019.
39. Increase forest cover from 15 to 20 percent in five years and to 30 percent in 10 years (Government of Ethiopia 2018c).
40. Evidence from a study examining the restoration potential for the region of Amhara suggests that restoration is economically viable. Internal rates of return for different restoration activities ranged from 13–45 percent, with investment costs between US\$87–US\$1,445 per ha. The study estimated the per hectare costs and benefits to a land manager (e.g., farmer, community, business) and looked at activities such as afforestation and reforestation of deforested or degraded marginal land not suitable for agriculture, establishment of woodlots on agricultural land, and sustainable woodland management combined with value chain investments. The economic calculus would have been even more favorable by including broader benefits such as reduced erosion and increased water infiltration (UNIQUE 2015; UNIQUE 2016).
41. The cost of action to reduce land degradation is about 4.4 times lower than the cost of inaction in Ethiopia. The cost of actions to rehabilitate lands degraded during 2001–09 as a result of land use and cover change is equal to approximately US\$54 billion over a 30-year horizon in Ethiopia. A scenario of inaction would result in estimated losses of almost US\$228 billion during the same period (World Bank and Ethiopian Development Research Institute 2018).

42. An international economic analysis showed that every US\$1 invested in restoring degraded forest and agricultural land can generate an economic return of US\$7–US\$30 through increased yields, water benefits, and other benefits. The study examined land restoration benefits and costs in Africa, Latin America, and the Caribbean and showed that restoring 150 million ha of degraded agricultural land could generate US\$85 billion in net benefits to national and local economies, provide US\$30–US\$40 billion a year in extra income for smallholder farmers, and additional food for almost 200 million people. In a scenario of policy inaction, forest and land degradation is estimated to cost the world more than US\$6.3 trillion a year—equivalent to 8.3 percent of global GDP in 2016—jeopardizing the livelihoods of half a billion people who depend on forests and land resources (Global Commission on the Economy and Climate 2014).
43. The range of estimates varies from the scientific to gray literature and whether the modern or traditional retail sector is examined. In addition, definitions to measure the scope of loss may vary across the literature. Most recent estimates, based on large-scale household datasets, find much lower postharvest loss numbers than previously reported. A recent study found that the postharvest loss in the emerging modern retail sector in Ethiopia is about half the level reported for the traditional retail sector. In that study, the authors use a value chain approach where they asked different value chain actors about losses. Postharvest loss for the most prevalent rural–urban value chain for teff and milk was between 2.2 and 3.3 percent and 2.1 and 4.3 percent of total produced quantities, respectively (Minten et al. 2019b). A second study (Bachewe et al. 2017) found self-reported storage losses for cereals on farms—based on large agricultural household surveys—at an average of 4 percent of all grain stored and 2 percent of the total harvest. Finally, average cereal loss in a third study was 2.4 percent for the responding households. Here 10 percent of the households reported average weight grain loss of 24 percent including barley, maize, sorghum, teff, and wheat (Hengsdijk and de Boer 2017).
44. For example, a postharvest loss assessment in Jimma zone, using a local data set, reported postharvest loss for mango (35.5 percent), banana (40.0 percent), and cabbage (58.9 percent) (Banjaw 2017). Other estimates by the World Food Program and USAID, ranging between 20–40 percent, have not published information about the underlying method and may not be based on primary surveys (Personal communication of Bart Minten, a senior research fellow at the International Food Policy Research Institute, in December 2019).
45. This is a generalization, and the actual effects depend on location and commodity (FAO 2019b).
46. The 2017 baseline for the Agricultural Commercialization Clusters assumed the following farmer loss rates (before commercialization): wheat (14 percent), maize (19 percent), teff (25 percent) malt barley (15 percent), sesame (12 percent), avocado (15 percent), mango (15 percent), banana (15 percent), tomato (30 percent), and onion (20 percent). The clusters established targets to reduce farmers' loss by 30–50 percent for these crops over three years (Government of Ethiopia 2017c).
47. Authors' calculation based on the data and economic analysis from the initial planning for the Agricultural Commercialization Clusters (see endnote 12 and Government of Ethiopia 2017c). Achieving the loss rate targets for the 10 priority commodities over three years is equivalent to safeguarding US\$100 million in total revenues from domestic and export markets for these commodities and equivalent to 27,000 ha of land (i.e., 8 percent of expected total revenue or new land area cultivated).
48. See the FLW Protocol (Food Loss + Waste Protocol) website for more information: <http://flwprotocol.org/>.
49. This is a back of the envelope estimate, applying an average land saving rates of 8 percent from the Agricultural Commercialization Clusters (based on the calculation in endnote 47 and Government of Ethiopia 2017c) to the 12.7 million ha cropped in 2017/18 (2010 E.C.), Meher (summer) season.
50. The Office of the Prime Minister's A New Horizon of Hope has prioritized a prevention-oriented national health plan.
51. Other key targets for 2030 under the Seqota Declaration include: zero food insecurity, transformed smallholder production, and zero postharvest loss (Government of Ethiopia 2016c).
52. See recent field visit from stakeholders summarized at (Kahsay 2019).
53. Community Labs are independent entities created to test different community-based solutions to improve childhood nutrition applying a holistic multi-sectoral approach (Government of Ethiopia 2016c).
54. Agricultural Innovation and Technology Centers are government-owned 20-hectare demonstration farms that serve as training and education centers. They aim to improve agricultural production through modern irrigation systems, crop varieties, and agronomic practices. They also seek to demonstrate good practices to conserve soil and water resources, improve postharvest processing, manage natural resources sustainably, and improve nutrition and education (Government of Ethiopia 2016c).
55. Slightly more than half of the funds for the innovation phase of the Seqota Declaration Implementation Plan have been secured (Government of Ethiopia 2016c).
56. Personal communication of Addis Ababa University's Prof. Kaleab Baye in May 2019.
57. This includes key government sectors: Ministry of Health, Ministry of Education, Ministry of Agriculture, Ministry of Industry, Ministry of Water Irrigation and Electricity, Ministry of Trade, Ministry of Finance and Economic Cooperation, Ministry of Labor and Social Affairs, Ministry of Women and Children Affairs, Ministry of Youth and Sports, Government Communication Affairs Office as well as the National Disaster Risk Management Coordination Commission.
58. The triple burden of malnutrition is the coexistence of undernutrition, overnutrition, and micronutrient deficiency.
59. Ethiopia plans to release the country's first food-based dietary guidelines by 2020 (Covic 2019). For methodology on dietary guidelines and the healthy eating index see (Bekele et al. 2019).
60. See IHME Measuring What Matters website at <http://www.healthdata.org/ethiopia>. Original source: Financing Global Health 2016: Development Assistance, Public and Private Health Spending for the Pursuit of Universal Health Coverage. University of Washington.

61. Plans for the NILUPP are summarized in Ethiopia Roadmap for National Integrated Land Use Planning in Ethiopia. The roadmap envisions: (i) one national integrated land use plan, nine regional integrated land use plans, and 91 zonal level plans; and (ii) various plans for urban areas (i.e., strategic land use plans of 17 cities and metropolis Addis Ababa, structural land use plans of 25 large towns, and basic land use plans of 98 medium towns) (Bekele-Tesemma 2017).
62. Personal communication of Azene Bekele-Tesemma in January 2019.
63. Personal communication of the World Bank's Shewakena Aytenfisu in January 2019. This is funded by the CRGE Facility/Ministry of Finance and Economic Cooperation.
64. Different federal governmental institutions manage state-owned lands, defined as public lands. For rural areas these institutions include: Ethiopian Wildlife Conservation Authority, managing protected areas; Environment, Forest and Climate Change Commission, managing state-owned forests and forest areas to market forest products; Ethiopian Sugar Industries Development Corporation, managing sugar cane plantations (The plantation sites are in the pastoral areas where the government claims that the land is publicly owned.); and Ministry of Mines and Energy, managing a few sites. In urban areas, the Ministry of Urban Development, Housing and Construction is responsible for public lands. There are also public lands in cities and towns managed by public institutions (Hailu 2016).
65. Article 3 of the Environmental Impact Assessment Proclamation 292/2002 stipulates that no person can commence any project that requires an environmental impact assessment and should receive authorization from the environmental protection agencies of the federal government or the regional states. The same applies to issuing an investment permit or a trade or an operating license (Hailu 2016).
66. When Kenyan household milk production became more profitable, it was taken over by men to the detriment of household nutrition (European Commission 2019).
67. Personal communication of the International Fund for Agricultural Development's Helen Teshome in October 2018.
68. The International Finance Corporation partnered with Ethiopia's Nib International Bank S.C. and developed a risk-sharing facility worth up to US\$10 million to increase lending to 70 coffee farmer cooperatives. This was part of an eight-year project launched in 2008, the East Africa Coffee Initiative covering Ethiopia, Kenya, Rwanda, and Tanzania, which helped coffee farmers to improve their livelihoods, increase coffee production and processing, improve resource use efficiency, and boost job creation and export revenues. See (IFC n.d.) and (IFC 2012).

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BUILDING SUPPORT FOR OUR IDEAS AND FINDINGS

Through the Action Agenda, Food and Land Use (FOLU) Coalition partners are engaging directly with various food and land use stakeholders to build a shared narrative for action and implement change on the ground. These stakeholders include policymakers, international organizations, businesses, investors, members of civil society, research institutes, grassroots organizations, and farmers' representatives.

A group of goodwill ambassadors with extensive national and international experience in the field, drawn from government, business, civil society, finance, and science, support these efforts in their individual capacity.

The following leaders serve as ambassadors for a more sustainable food and land use system in Ethiopia specifically:

- **Dr. Assefa Admassie**, director of the Ethiopian Economic Policy Research Institute, professor of economics at Addis Ababa University
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Formally launched in Addis Ababa in May 2018, the Food and Land Use Coalition in Ethiopia brings together the Policy Studies Institute (PSI) under the Planning and Development Commission, the Synergos Institute, the Water and Land Resource Centre at Addis Ababa University (WLRC), and the World Resources Institute (WRI).

The FOLU Coalition in Ethiopia is connected to the wider FOLU network, member organizations of which are active in more than 20 countries.

For additional information on the Food and Land Use Coalition effort in Ethiopia, please contact Sofia Ahmed, country coordinator of the Food and Land Use Coalition at WRI, sofia.ahmed@wri.org.



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