



Ethiopian coffee sector and biodiversity: options and scenarios of voluntary commitments in favor of biodiversity by key economic actors in Bale eco-region and Southwest forests

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1. The importance of coffee production in Ethiopia

In Ethiopia, Coffee is mainly produced in Western and Southern part of the country and around 95% of the production is practiced by around 15 million smallholder farmers who possess on average less than 2 hectares in total out of which they produce coffee on less than 1 hectare¹.

Smallholders' yearly earnings from coffee account for about 50% their total agricultural income (Minten et al., 2019).

Coffee is a major agricultural export commodity, which in 1999/2000 provided about 60–70% of annual export values (LMC International Ltd. Oxford, England, 2000²) but now provides about 22–30% (Kufa, 2015³) and 34% of annual commodity export earnings (Central Statistics Agency (CSA), 2017⁴).

According to CSA (2017) the estimated area of land covered by coffee in Ethiopia was about 561,762 ha in 2014, and became 764,863.16 ha in 2016/2017, which is an increase of 36% in three years.

The 2016/17 export earnings reached US\$897 million with the export of about 232,000 tons of coffee. Latest report of the Ministry of Agriculture indicates that in 2021/2022, Ethiopia has got export earnings of US\$1.4 billion with the export of about 280,560 tons of coffee (+21% with respect to 2016/17), which is a record hit in the history of Ethiopia coffee export.

Overall, regardless of increase in land under cultivation, quantity of produce and amount of foreign earning generated from coffee, its export revenue share is reduced due to increased export of other commodities such as gold, oilseed and other commodities.

At national level, Ethiopian coffee is produced under four systems: 1) forest coffee; 2) semi-forest coffee; 3) garden; and 4) plantations.

The first three involve smallholders and account for, respectively, an estimated 10%, 35%, 50% of total annual coffee production (Minten et al., 2019⁵). Under these three first systems, farmers integrate coffee into a mix of food, fodder and cash crops, with the coffee partially produced for their own consumption and partially to earn cash by selling red or dried cherries (BASIC, 2019⁶). Thus, there are very few monoculture coffee smallholders.

In Southwest Forests, it is estimated that, just like at national level, about 50% of the coffee supply is garden coffee, while about 35% comes from semi-forests, 10% is from forests, and 5% is from plantations coffee. So, the Southwest forests are rather representative of the national coffee production systems.

The Southwest region of Ethiopia is home of Ethiopia's remnant natural forest that hosts key biospheres such as Yayu, Kaffa, Sheka and Mejang. In terms of its contribution to national coffee production, the region is believed to be contributor of about half of coffee produced in the country, though explicit data on the precise amount is so scanty. Preserving the biodiversity of these regions while producing coffee is a key challenge and stakeholders in the BIODEV2030 project have decided to work on it.

¹ Coffee Value Chain on the move under Ethiopian Condition: Minten et al. (2019).

² Ethiopia's Coffee Sector: A Bitter or Better Future?: LMC International Ltd. Oxford, England, 2000

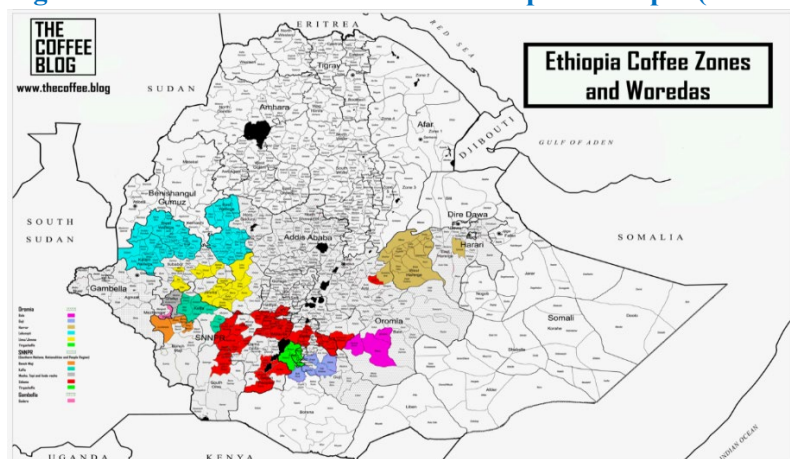
³ Achievements and Prospects of Coffee Research in Ethiopia, Kufa, 2015.

⁴ Ethiopia Coffee Annual Report CSA, 2017

⁵ Trend, instability, and decomposition of coffee production in Ethiopia, Minten et al., 2019.

⁶ Ethiopian Coffee Marketing Reform, BASIC, 2019

Figure 1: Coffee Production Location Map of Ethiopia (Source: TRABOCCA 2018)



2. The impacts of coffee production on biodiversity

In the Southwest forests landscape, coffee production has increased a lot in recent years. For example, in Sheka zone, area under coffee production has increased by about 82% between 2011/12 and 2015/16, while coffee produced during this period doubled (UNIQUE-NABU Consortium, 2017). Recent reports show that increasing both the area of coffee cultivated and production volume in Southwest forest landscape resulted in visible erosion of biodiversity.

In the Southwest forests, coffee is produced both by smallholder farmers and commercial coffee producers. Smallholder farmers practice garden coffee in their backyards, semi-forest coffee in the buffer zone (area between intact forest and farm fields) of forests and forest coffee in core areas of the dense forests. On the other hand, commercial / large scale producers manage coffee plantations mainly in degraded secondary forest lands and woodland habitats, and to a lesser extent semi-forest coffee production.

Biodiversity impact of garden and semi-forest coffee production is lower in terms of forest clearing as compared to plantation coffee system, however as the number of smallholder farmers engaged with garden and semi-forest coffee production is large, the cumulative effect might exceed the impact posed by plantation coffee production. Plantation coffee is owned by either State farm or private investors and characterized by monoculture practice without mixing any other crop. It is a growing trend in Ethiopia and it uses highly intensified agronomy practice: pruning, mulching and organic fertilizing, stumping, integrated weed and pest management, well-regulated shade and plant density. In such plantations, coffee producers use high-yielder seedlings and disease resistant varieties on large areas that might range from ten hectares to several hundred hectares. Many medium and large farms exist in South Western Ethiopia, especially in Jimma, Bench Maji and Kaffa Zones (EtBuna,2016⁷). This production system often involves expansion of their farm size year after year and inevitably affect biodiversity due to conversion of intact forest to monoculture coffee farming.

⁷ Coffee Production System in Ethiopia, EtBuna,2016

	Coffee production systems in Ethiopia			
	Forest coffee	Semi-forest coffee	Garden	Plantations
Association of coffee with other crops	Coffee mixed with other crops			Coffee mono-culture
Type of producers	Smallholders			Commercial / large scale producers (State-owned or private)
Share in the total annual coffee production both at national and the Southwest forest levels	10%	35%	50%	5%
Biodiversity (forest clearing) impacts of coffee production systems per hectare	+	++	++	+++
Biodiversity (forest clearing) impacts of coffee production systems in total	+	+++	+++	++
Most likely location				
Smallholders coffee producers in the Southwest forests	In core areas of the dense forests of the biosphere reserve	In the buffer zone of the biosphere reserve	In their backyards	n.a.
Commercial / large scale producers in the Southwest forests		To a lesser extent, in semi-forest landscapes		Mostly in degraded secondary forests and woodland habitats, in the transition zone of the biosphere reserve

Table 1 : A synthesis on coffee production systems' impacts and biodiversity in Ethiopia.

Most of the garden and plantation coffee are located in the transition zone of the biosphere reserve with therefore potential impacts on biodiversity due to expansion trend of production to the intact forest. The semi-forest coffee falls in the buffer zone of the reserve, and wild (forest) coffee is in the core zone of the biosphere reserve, where both production systems comprise several practices impacting biodiversity as most of them involve massive tree cutting with an intention of avoiding shrubs, grasses and forest trees except few shades. The plantation coffee production system involves massive conversion of intact forest land to coffee field that inevitably impact biodiversity negatively.

One of the rudimentary practices of smallholder producers in Southwest forests landscape is shade thinning and under growth slashing in the buffer zone of the biospheres, which in their view increase coffee productivity. Nevertheless, these practices not only degrade the natural ecosystem, but also undermine sustainable coffee production, hence sustainable local and national economic development.

The direct and indirect impacts of Coffee production practices on biodiversity in the Southwest forests landscape are mainly associated with management practices undertaken during production stage. The major mechanisms (management practices) through which coffee management practices impact biodiversity in Southwest Ethiopia are summarized in the box 1 below. The most notable impacts reported by the Coffee subsector stakeholders include:

- Forest loss and degradation and the deterioration of ecosystem services provided by the forests, such as CO₂ sequestration,
- Defaunation and their associated ecological values,
- Hindered regeneration of many indigenous tree species,
- Soil erosion.

Box 1. Coffee production practices impacting biodiversity in the Southwest forests (BIODEV2030 sub-sector analysis report)

Initial canopy opening / clearing undergrowth: Coffee yield is highly correlated with the number and size of the branches of coffee trees. This in turn is related to the amount of solar radiation reaching the lower vegetation strata and the presence or absence of small trees and shrubs competing with coffee. Under undisturbed natural forests, coffee plants tend to grow taller in height, with few branches and produce only very few cherries due to high canopy cover and competition with small trees and shrubs in the understory. Hence, farmers practicing semi-forest coffee and plantation coffee management systems usually open up the canopy by thinning shade trees, and clear the understory vegetation to increase coffee yield. During opening up phase, vegetation is completely cleared indiscriminately, regardless of a species is endemic or threatened. The amount of vegetation removed through these practices critically important threat to biodiversity.

Studies conducted in Yayu and Sheko forests, for example, have shown a 50% decline in the number of plant species in managed coffee forest compared to the undisturbed forest. Similarly, canopy cover of trees in forest where intensive coffee management system (so-called forest-garden coffee) is found to be about 45-60% compared with undisturbed forest (60 and 80% cover in forest where semi-forest coffee production systems is practiced).

Weeding operations: Weeding is one of the regular annual management operations carried out by all farmers. Weeding operations can be 2-4 times per year, but the two major weeding seasons are beginning of the rainy season and beginning of the harvesting season. Through this practice, most herbaceous vegetation, emergent and potentially competing with coffee are cleared. During harvesting, weeding is done to create access to pick coffee cherries from the trees, and also to allow picking of early maturing coffee cherries dropped to the ground. Along with herbaceous vegetation, small

seedlings of trees, climbers and shrubs are all cleared during weeding time. This practice thus has great impact on biodiversity, as it prevents any sapling to grow and develop into big trees or shrubs.

Shade trees management: This management system involves removing (via debarking or cutting trees) some canopy trees within cultivation plots every year whenever the canopy cover increases. Gole's (2003) study in the Yayu forest report 50, 41 and 36 stems of canopy trees in undisturbed forest, new semi-forest coffee (< 5 years), old semi-forest coffee (> 10 years), respectively.

Enrichment planting: The distribution pattern of wild coffee is not regular, and uniform throughout the forest. It is dense in some areas, and very sparse in other areas. In areas where the coffee trees are sparsely distributed, farmers often plant coffee seedlings to fill the gap. This gap filling practice involves clearing any regeneration of small trees/shrub which could have an important impact on species diversity and biodiversity of the area.

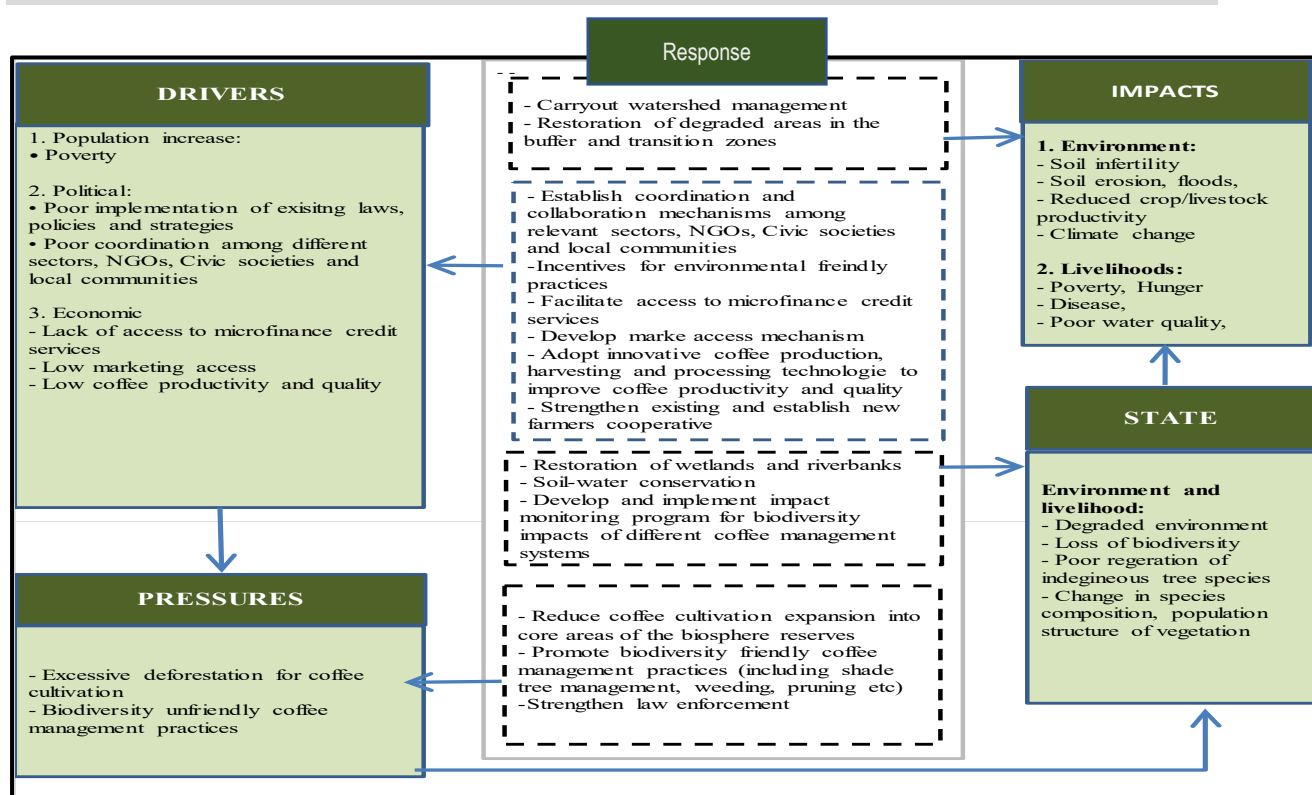


Figure 2. The DPSIR framework for assessing coffee production impacts on biodiversity in Southwest forest landscape (Source: BIODEV2030 report on economic sub-sectors for Ethiopia, 2022⁸).

Environmental advocates are advising coffee farmers to practice ecological friendly coffee production practices such as wide scale application of wild coffee production by Nature and Biodiversity Conservation Union (NABA) and other partners in Kaffaa forest reserve. They argue that coffee produced on healthy ecosystem has superior quality and has recognition among product certifiers and thus higher market prices. Coffee quality is therefore becoming a distinctive aspect among product suppliers to the market.

High-quality green coffee beans can be sold at prices several times the average market price. The quality attributes of the green bean partly stem from the soil and plant themselves as well as cherry growing

⁸ Please cite the entire Authors, title of the report.

and picking stage. They however by and large come from the processing stage. Today, there are four coffee quality measurement criteria in Ethiopia: 1) certification (e.g., FairTrade); 2) grade; 3) geographical origin; and 4) post-harvest treatment. In short, higher-quality coffees are certified coffees, washed coffees, coffees graded Q1 or Q2 by the Ethiopia Commodity Exchange (ECX) or the Coffee Liquoring Unit (on a scale of 1 to 5).

To reconcile coffee production and biodiversity in Ethiopia, one option would be to strengthen a certification of coffee relying on eco-friendly production practices. Farmers adopting these techniques would benefit from higher market prices for the coffee beans coming from fields where they strictly adopted more sustainable production practices.

Box 2: The BIODDEV2030 Initiative and its diagnosis on impacts of Coffee subsector on biodiversity in the Southwest forests landscape of Ethiopia

Funded by French Development Agency (AFD), BIODDEV2030 is an initiative currently implemented in 16 pilot countries including Ethiopia. In Ethiopia the initiative has undertaken national biodiversity threat assessment in 2021. The assessment process involved multi-stakeholder interaction and facilitated selection of key economic sectors that are priority for biodiversity and economic development. Accordingly, three economic sectors namely agriculture, livestock and forestry have been identified for further prioritization of sub-sectors (cereal production, coffee, livestock rearing, small scale logging and wood harvesting) to analyse their impact on biodiversity at landscape levels and to scrutinize the situation of these sub-sectors to integrate biodiversity priorities to reduce existing pressures. Guided by the first diagnosis study and consensus of national multi-stakeholders, two key landscapes, namely Bale eco-region and Southwest forests landscape were identified to undertake the second in-depth analysis aiming at identifying ‘Options and Scenarios of biodiversity in the selected five sub-sectors’. Based on the second assessment on sub-sectors, BIODDEV2030 initiative in Ethiopia has prepared this brief coffee sector note and pinpointed critical impacts of coffee production in the southwest forest landscape of Ethiopia.

3. Coffee value chain in Ethiopia: key actors, their current functions and potential role in decreasing impacts on biodiversity

3.1 The key functions in the coffee value chain

At both the national level and the studied landscape, it is common to describe the Coffee Subsector Value Chain as comprising four major functions: A/ input supply, B/ production, C/ processing and D/ marketing and distribution.

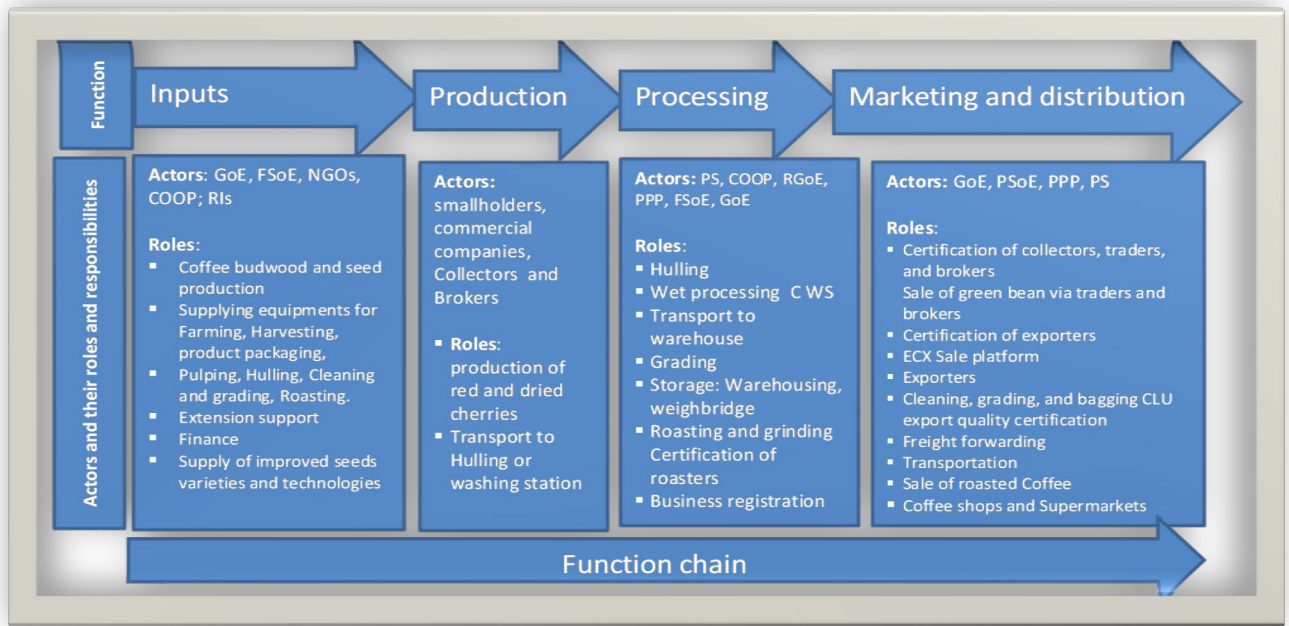


Figure 3- Ethiopia's coffee value chain (Ethiopian Coffee and Tea Authority, 2017)⁹

3.2 Major actors of the coffee value chain

Main actors throughout the value chain include input suppliers, smallholder farmers, cooperatives (primary cooperative societies and cooperative unions), traders (local traders, collectors/aggregators and large business operators), Ethiopia Commodity Exchange (ECX, a national multi-commodity exchange market place where buyers and sellers come together to trade), the government and extension services providers.

a) Input suppliers

Input supply is a key value chain activity in the coffee sub-sector in Ethiopia. Supply of seed, tools and pesticides is mainly practiced by research centres, extension units, private vendors, community seed banks and cooperative unions.

To reduce coffee production's impacts on biodiversity, input suppliers could play a role, for example by preserving ecologically adaptive seed varieties and regulating excessive use of chemicals in intact biodiversity hotspots.

b) Smallholder coffee producers

The smallholder farmers supply their coffee beans either to cooperative unions where most of them are members or to private traders who offer them flexible prices to attract the farmers and compete on coffee markets. Farmers supply produced coffee to local traders either in the form of red cherry or sundried coffee in primary market.

⁹ Major Value Chain Functions of Ethiopian Coffee, Ethiopia Coffee and Tea Authority, 2017.



Figure 4: A woman harvesting coffee. Photo credit : Oromia Coffee Farmers' Union, Ethiopia.

To reduce coffee production impacts on biodiversity, smallholder farmers could play a role, for example by modifying land use practices in a way that their production can be intensified on existing farm fields rather than tending to convert intact forest and other ecosystem of high preservation priority to coffee farm. Other area of voluntary commitment for reducing pressure on biodiversity could be the application of agro-forestry principles to coffee production. This would imply maintaining existing tree shades and planting new coffee seedling as an enrichment plantation practice.

Associations of smallholder coffee farmers have been united into unions in the southwest forests landscape, which can be regarded as a strong grassroot institutions to mobilize coffee producers massively to attain biodiversity conservation and economic development outcomes. For example, cooperative unions such as Kaffa, Sheka and Yayu are established and became operational since the last few years in Kafa, Sheka and Yayu biosphere reserves in southwest forests landscape of Ethiopia.

b) Coffee Farmers' Cooperatives Unions

In Ethiopia, cooperatives are important vehicles for linking smallholder farmers to markets and for rural development more generally. Coffee cooperatives unions have become more market-oriented and are now becoming key players in the coffee value chain. They are also democratic and member-owned business operating under the principles of the International Cooperative Alliance and Fair trade. The Unions play a central role in the Ethiopian coffee marketing chain. The farmers members of cooperatives unions grow, process, and supply organic Arabica coffee for export. Primary cooperative associations are mostly responsible for gathering coffee beans from individual member farmers, then supply the aggregated produce to cooperative unions. The unions either export itself or sell to the exporters.

To reduce coffee production's impacts on biodiversity, cooperative unions could play a role, for example by raising awareness of their members on the vital roles of biodiversity for local and national economy, environmental health as well as societal welling. Furthermore, cooperative unions have roles to play to modify land use behaviours in favour of biodiversity by implementing transformative

marketing tools such as product certification, setting premium prices and securing land tenure rights for its members through bottom up advocacy.

c) The Ethiopian Coffee and Tea Development and Marketing Authority (ECTA)

The Ethiopian Coffee and Tea Development and Marketing Authority, re-established in 2015, has a mission of identifying and addressing challenges in the development and marketing of coffee. Its mandate is to control and regulate the national market, from issuing and revoking trading licenses to carrying out quality inspection in accordance with the coffee market control and regulation as well as overseeing implementation of decrees relevant to coffee sub-sector. It also has the mandate to provide an extension support program at the regional level and promote Ethiopian coffee and tea within the country and in the international market.

To reduce coffee production's impacts on biodiversity, ECTA could play a role, for example by enacting directives and guidelines that balance economic development and biodiversity preservation.

d) The Ethiopian Commodity Exchange (ECX)

ECX was established in 2008 as a partnership between the government of Ethiopia and private investors and regulated by the Ethiopian Commodity Exchange Authority (ECEA). Its role is to facilitate coffee auction between suppliers and buyers.

ECX receives green bean into storage and grades the coffee when it is received. Warehouse receipts are issued, which facilitates access to credit by product suppliers, including coffee farmers who engage in marketing. ECX provides information on the coffee market. The immediate trading information is accessible only to members and traders.

To reduce coffee production's impacts on biodiversity, ECX could play a role, for example by putting in place certification mechanism to regulate biodiversity unfriendly production and marketing practices and to incentivize farmers to adopt eco-friendly production practices. A potential voluntary commitment by EXC could be example the facilitation of low interest credit facility to coffee business operators which practice eco-friendly business practices.

e) The Ethiopian Grain Trade Enterprise (EGTE)

The EGTE was initially established in 1949 to stabilize the price of grains but was unsuccessful in achieving this objective. It was reorganized in 1999 for the purpose of purchasing grain, oilseeds, and pulses both for local wholesale and export. Since 2009, the EGTE has diversified its business to include coffee export. This is done through 10 branch offices and 91 trade centres throughout the country.

The EGTE has an in-house logistics component with warehouses having capacity of 820,000 metric tons of grain and coffee. In addition, it has its own fleet of heavy and light trucks to facilitate its export and domestic operation. Specifically, for coffee, the EGTE has modern coffee cleaning machines that can polish, sort, clean, and bag 90 metric tons of coffee per day.

To reduce coffee production's impacts on biodiversity, EGTE could play a role, for example by offering lower price for coffee freight transportation service and provision of warehouse service priority for business operators that apply biodiversity conscious practices.

4. Policy and strategy relevant to the coffee sub-sector

There are already a number of legal, policies and strategic development plans relevant to environmental-friendly agricultural production practices in the country. The following policy /strategies have important orientations for both coffee production and biodiversity.

Rural Land Administration and Use Proclamation (No. 456/2005): it provides for a new system of administration for rural land management use and for sustainable rural land use planning based on the different agro-ecological zones of the country necessary for the conservation and development of natural resources. Therefore, implementation and enforcement of this policy law contribute significantly to enabling condition for the implementation of voluntary commitments for biodiversity.

Agricultural Development-Led Industrialisation (ADLI) strategy (2014): ADLI promoted small-scale agricultural sector development. Under ADLI, agricultural sector development and rural areas were placed at the heart of the national development agenda, which also functioned as the main guiding framework for subsequent national development strategies (SDPRP¹⁰, PASDEP¹¹, GTP¹² I and GTP II). However, it inclined more to economic development and only thinly emphasized issues of biodiversity.

Proclamation on Biosafety (No. 655/2009): it provides rules for the handling and use of Genetically Modified Organisms so as to protect human and animal health, biological diversity and in general, the environment and life and livelihood of local communities. Like other policy/strategies of the country, implementation of this proclamation is constrained by lack of implementation capacity, especially constraints related to lack of technology, expertise and law enforcement. If implemented at fullest capacity it would have important provisions favouring biodiversity.

Nagoya Protocol on Access to Genetic Resources: Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (No. 482/2006) and Regulation (169/2009)- The proclamations have provisions on access to genetic resources and community knowledge, and community rights (Proclamation No.482/2006) which create a win-win situation and increase motivation for those who involve in preservation of biodiversity and largely recognize communities indigenous knowledge for preservation, conservation and equitable sharing of benefits that arise there-off from the management.

Plant Breeders Right (Proclamation No. 481/2006): Development Conservation and Utilization of Wildlife (Proclamation No. 541/2007/Regulation); Proclamation 481/2006, which has the force of Law, provides for the protection of rights of breeders in respect new plant varieties, nevertheless it might implicate on farmers' landraces and issue of adaptability to local ecological conditions. Therefore, there is a room for modifying the proclamation to accommodate more the role of community participation biodiversity conservation. Proclamation 541/2007 makes provision with respect to the development, conservation and sustainable utilization of wildlife resources in Ethiopia, including wild animals found in Ethiopia and including those species migrating from country to country and temporarily staying in Ethiopia. Therefore, it has wide dimension of provision to enhance conservation efforts and has significant space for promoting voluntary commitment for biodiversity.

¹⁰ SDPRP: Sustainable Development and Poverty Reduction Policy, 2002-2005.

¹¹ PASDEP: A Plan for Accelerated and Sustained Development to End Poverty, 2005/06-2009/10

¹² GTP II: The second Growth and Transformation plan, 2016-2020

Environmental Policy (1997), Environmental Impact Assessment Proclamation (No. 299/2002), and International agreements signed by the country: most important one is CBD: These policies have important provisions pertinent for balancing economic development, environmental protection and preservation of biodiversity. The provisions also cover issues such as environmental pollution control, solid waste management, and environmental impact assessment (EIA), effluent emission standards and conservation and sustainable utilization of biodiversity, and are important frameworks for integrating biodiversity priorities.

Other key strategies relevant to harmonize crop coffee sub-sector and biodiversity conservation, and supporting voluntary commitments of key actors are: Ethiopia's National Development Plan (Ethiopia agenda 2030); "Growth and Transformation Plan (GTP) I (2010) and II (2015/16) ; Climate Resilient Green Economy (CRGE; 2011) Strategy; and National Biodiversity Strategy and Action Plan (2015–2020), which have proposed core strategic pillars and actions dedicated for biodiversity. These policy provisions can be taken as important milestones and baselines to track changes on biodiversity.

5. Best practices and existing commitments to strengthen

5.1 Good practices observed in the Kaffa Biosphere reserve

Examples of best practices in environment friendly coffee production include Projects in the Kaffa biosphere reserve. These projects help to support a wide range of sustainable development and conservation goals¹³. The Nature and Biodiversity Conservation Union (NABU), in cooperation with the Ethiopian Government and other partners, has been implementing various projects in Kaffa Biosphere Reserve. Projects compiled useful best practices that can be summarized below:

- "Biodiversity under Climate Change: This is a Community-based Conservation, Management and Development Concepts for the Wild Coffee Forests implemented between 2014-2017
- Climate Protection and Preservation of Primary Forests project: This is an initiative practiced wild coffee management implemented between 2009-2013, whose model is managing coffee production in primary forest without any further human disturbance. The central aim of this project was the conservation of forests in order to protect the biodiversity and maintain ecosystem services for the local people as well as to combat climate change, as forests are crucial carbon sinks.
- Buffering sensitive forest ecosystems: Across all the biospheres in the Southwest forests landscape, zonation of natural forest corridors are being categorized into transition, buffer and core zones. Practices adopted in the three zones are categorized as follows:
 - mixed lands use for crop production, garden coffee production and livestock rearing in the transition zone,
 - semi-forest coffee production in the buffer zone and,
 - wild coffee harvest in the core zone

These best practices in the Southwest forests landscape all together have shaped coffee production practices and promoted the following adaptive actions:

- Rehabilitation, Restoration and management of ecosystems
- Aligning local and regional development and sustainable use of natural resources
- Knowledge Communication and environmental education

¹³ <https://en.nabu.de/topics/biodiversity/kafa-biodiversity/forest-management.html>

- Application of agroforestry where communities are supported to plant also fast-growing tree species to satisfy society wood demand and reduction of pressure on the natural forest
- Establishing and functioning of Participatory Forest Management (PFM) where livelihood options are also presented to the communities
- Provision of energy efficient stoves and introduction of biomass energy by NABU and other partners
- Promotion of community based eco-tourism by Kaffa Biosphere Reserve
- Implementation of Public Private Partnership in Kaffa biosphere reserve by local government, NGOs and private sectors
- Introduction of product certification (mainly coffee and honey) under the market motto of ‘wild collection’ and ‘fair for life’.

5.2 Current best practices by the government as voluntary commitments

As Ethiopian coffee continues to flourish in the global markets, the government is now putting in place new reformed policy to create more opportunities for farmers, suppliers and exporters in the industry, so that they can benefit from direct market chain. The new policy involves important concepts such as application of product certification, including Fair Trade and Rain Forest Alliance certification, which obviously can serve as a tool to modify existing practices that harm biodiversity.

5.3 Suggested strategies to further reduce impacts of coffee production on biodiversity

The major coffee management practices impacting biodiversity are canopy opening, clearing undergrowth/weeding, shade trees management and scientifically uninformed enrichment planting. In order to achieve sustainable coffee production, it is necessary to mitigate the impacts on biodiversity of these practices. One possible way to do so is to increase land productivity and increase revenue generated by farmers adopting environmentally-friendly coffee production techniques. The following key strategies are suggested for voluntary commitments:

1. Enhance coffee production and productivity by applying modern technologies and scientifically-based information

Proposed actions:

- Improve research on coffee agronomy, disease control and drought resilience.
- Improve small holder access to technology, finance and extension service
- Develop basic infrastructure facilities
- Coffee stakeholders’ capacity building in areas such as coffee handling
- Enhance incentives for coffee farmers and recognition for sustainable coffee farmers champions through certification of sustainably produced coffee.

2. Increase revenue without affecting biodiversity

Proposed actions:

- Monitor systematically the production and marketing systems in all coffee growing areas of the country for easing research, policy planning /decision making
- Commercialization of smallholder agriculture through market-led production, and marketing
- Create conducive marketing environment including institutional/policy reform and infrastructure improvement
- Improve tenure security

- Strengthen capacities of institutions mandated for coffee production and marketing
- Improve extension service for coffee agronomy, with a focus on adaptive coffee variety
- Dis-incentive/discourage agronomic practices that affect biodiversity
- Develop certification of sustainably produced coffee and ensure higher prices are paid to farmers selling certified coffee.

3. Regulate expansion of coffee production into intact biodiversity and rehabilitate degraded habitats

Proposed Actions:

- Carry out EIA for coffee investment project
- Avoid coffee planting and harvesting within core zones of the biosphere reserves
- Strengthen community led participatory forest management (PFM) groups in the buffer and transition zones
- Capacity building for PFM groups and regular monitoring of their performance
- Enhance cross-sectorial collaboration towards biodiversity conservation
- Encourage restoration and rehabilitation of previously degraded habitats, especially areas degraded due to long years of intensively managed semi-forest and garden coffee
- Monitor, evaluate and share scientific-based information on the effectiveness of voluntary commitment measures taken in favour of biodiversity conservation, using key biodiversity conditions (e.g., threatened, rare, endemic species; forest cover status) as indicators of effectiveness
- Develop monitoring guideline for coffee production impact on biodiversity.

6. Recommendations for public, private and civil society partners

Stakeholder	Proposed actions that could compose voluntary commitments by private actors, supported by public sector
6.1 Federal government	<ul style="list-style-type: none"> • Put in place standard strategy for coffee agronomic management and monitoring system • Improve Enforcement of Ethiopia forestry law to deliver outcomes and targets set at national and local levels • Finalize national land use plan and enact directives to implement land use planning • Strengthen inter-sectoral coordination at national level and roll out similar mechanism at regional and local levels • Improve private sector engagement system for coffee production and marketing and mainstreaming of biodiversity priorities in the same • Strengthen land resource monitoring and biodiversity change tracking system for better decision making • Put in place transparent benefit sharing and incentive mechanism for local people • Sustain BIODIV2030 multi-stakeholder dialogue to mobilize sectoral voluntary commitment for biodiversity • Regulate expansion of coffee production into intact biodiversity
6.2 Regional and local government	<ul style="list-style-type: none"> • Put in place standard guideline for coffee agronomic management and monitoring • Promote and expand Garden coffee intensification • Promote coffee-based agroforestry • Promote systematic enrichment plantation in areas affected by commercial coffee plantation • Promote and enhance home yard wood lot to reduce pressure on natural forest

	<ul style="list-style-type: none"> • Improve supply of technologies relevant to enhance production and productivity by strengthening research-extension linkage • Improve market and finance access to small holder farmers engaged with sustainable production techniques • Sustain BIODDEV2030 multi-stakeholder dialogue to mobilize sectoral voluntary commitment for biodiversity • Regulate expansion of coffee production into intact biodiversity • Promote and widely implement certification of nature friendly coffee production
6.3 Private sector actors	<ul style="list-style-type: none"> • Actively participate in national biodiversity policy making process, implementation and learning • Mainstream biodiversity priorities into their business operation • Implement guideline for grading and labelling nature friendly coffee produce and expedite mechanism for offering premium prices for nature positive farmers
6.4 Civil Society Organizations	<ul style="list-style-type: none"> • Awareness raising on sustainable production practices • Demonstration of innovative sustainable production methods and compiling best practices for upscaling in wider areas of regions • Facilitate stakeholder platform for exchange of knowledge

Table 2: Synthesis of proposed key actions per stakeholder to undertake in favour of biodiversity in the Ethiopian coffee sub-sector.

About BIODDEV2030

BIODEV2030 focuses on mainstreaming biodiversity through sector-based commitments emerging from multi-stakeholder dialogue in pilot countries. Funded by the French Development Agency (AFD) the project is being implemented by IUCN, The World-Wide Fund for Nature – France (WWF-France) and Expertise France. IUCN is implementing the project in Benin, Burkina Faso, Ethiopia, Fiji, Guinea Conakry, Kenya, Mozambique and Senegal.

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