# Private investment opportunities in jurisdictional climate change mitigation programs in Ethiopia

**Prefeasibility study**

unique land use

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## Prefeasibility study

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# Acronyms

| | |
|---|---|
| AFOLU | Agriculture, Forestry and Other Land Uses |
| AFR100 | African Forest Landscape Restoration Initiative |
| ALM | Agricultural land management |
| ARR | Afforestation / reforestation / revegetation |
| ART | Architecture for REDD+ Transactions |
| CAEP | Committee on Aviation Environmental Protection |
| CAR | Climate Action Reserve |
| CCBS | Climate, Community & Biodiversity Standards |
| CDM | Clean Development Mechanism |
| CERF | Climate Emissions Reduction Facility |
| CO2e | Carbon dioxide equivalents |
| COMACO | Community Markets for Conservation |
| CORSIA | Carbon Offsetting and Reduction Scheme for International Aviation |
| ECCSA | Ethiopian Chamber of Commerce and Sectorial Association |
| EIC | Ethiopia Investment Commission |
| EIH | Ethiopia Investment Holdings |
| ER | Emission reductions |
| ERPA | Emission Reductions Payment Agreements |
| ESG | Environmental, social, and governance |
| FCPF | Forest Carbon Partnership Facility |
| FLR | Forest (and) landscape restoration |
| FPIC | Free, prior, and informed consent |
| GCF | Green Climate Fund |
| GHG | Greenhouse Gases |
| GS | Gold Standard |
| ICAO | International Civil Aviation Organization |
| IFC | International Finance Corporation |
| IFM | Improved forest management |
| IISD | International Institute for Sustainable Development |
| IRR | Internal rate of return |
| ISFL | Initiative for Sustainable Forest Landscapes |
| ITMO | Internationally Transferred Mitigation Outcomes |
| JNR | Jurisdictional and Nested REDD+ |
| LEAF | Lowering Emissions by Accelerating Forest finance |
| MAI | Mean annual increment |

| | |
|---|---|
| MRV | Measurement, Reporting, and Verification |
| NCS | Nature-based Climate Solutions |
| NDC | Nationally Determined Contribution |
| NGO | Non-governmental organization |
| OEFCCA | Oromia Environment, Forest and Climate Change Authority |
| OEPA | Oromia Environmental Protection Authority |
| OFLP | Oromia Forested Landscape Program |
| OFWE | Oromia Forest and Wildlife Enterprise |
| PPP | Public-private partnership |
| REDD+ | Reducing Emissions from Deforestation and Forest Degradation |
| SLM | Sustainable Land Management |
| TREES | The REDD+ Environmental Excellence Standard |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VCM | Voluntary carbon markets |
| VCS | Verified Carbon Standard |

# 1. Executive Summary

1. **The Government of Ethiopia has made significant commitments for forest (and) landscape restoration (FLR) and to reduce land- based greenhouse gas (GHG) emissions. National strategies emphasize the importance of the private sector to achieve climate, land restoration, and economic development targets.** Yet, to date, private sector involvement in sustainable land management (SLM), FLR, and conservation remains limited. SLM and FLR programs are largely implemented by government with support from bi- and multilateral development cooperation partners. Against this background, this report aims to assess how domestic and international private finance could be mobilized for investments in SLM / FLR and generation of emissions reductions (ER) in the framework of jurisdictional government-led climate programs.

2. **The private sector can invest directly in Nature-based Climate Solutions (NCS) that generate ER with the aim to use the carbon credits for insetting, offsetting or trade in the voluntary carbon market and future compliance markets.** At this stage, private investment in jurisdictional programs at program-level in Ethiopia is unlikely, given that there is still limited experience regarding the ER performance of jurisdictional programs. This holds true not only for Ethiopia but globally. On the other hand, private sector investment in ER projects that are embedded (nested) in a jurisdictional program is feasible if the program is operational and offers attractive conditions for the nested projects. This pre-feasibility study focuses on this opportunity, as it currently appears to be the most viable option for leveraging private finance through publicly funded programs in Ethiopia.

3. **Not all NCS activities are equally attractive. Investments that combine revenues from agriculture or forestry with carbon credit generation are more attractive than single-stream approaches.** This applies especially to commodities with strong value chain linkages and high ER potential per hectare (e.g., coffee and timber). Investments in dairy and staple food crops (e.g., grains and pulses) are primarily interesting from the commodity perspective because the ER potential per hectare is relatively small.

4. **Investments in activities that focus only on carbon sequestration, e.g., landscape restoration through revegetation, may be attractive for investors that require large amounts of ER to compensate their emissions, e.g., oil and gas industry or big data processors.** These "carbon-only" activities, that focus on avoiding emissions from land use change, often pose notable carbon accounting challenges and have a high risk of leakage (e.g., avoiding forest degradation and deforestation). Such projects require substantial investment in carbon accounting methodologies and establishment of baselines as well as measuring, reporting and verification (MRV) systems at landscape level, resulting in considerable transaction costs. If these challenges can be addressed, e.g., in the framework of jurisdictional programs, such projects represent an option for public-private investment partnerships.

5. **Smallholder farmers and communities are key actors in land-based carbon projects and need to be involved in corporate and financial private sector investments.** If this

requirement is met, private sector investment is likely to create important co-benefits, e.g., improved livelihoods or enhanced food security.

6. **The general outlook for private sector finance in NCS in Ethiopia is positive, although challenges remain and must be overcome to scale up private investment:**

- **The area potential, i.e., land requiring improved management to increase productivity in a sustainable manner or afforestation/reforestation to provide timber, is significant.** For example, about 6 million ha of croplands need better management practices to halt and ultimately reverse degradation. Over a million ha of woodlots and plantation forests exist but are poorly managed and would benefit from improved forest management (IFM) practices, resulting not only in higher production but also in carbon sequestration. This is a target in line with clearly expressed government priorities: According to MEFCC (2018b), about 300,000 ha of additional, high yielding production forests are required to meet the growing demand for timber products. Better managed forests would contribute to mitigating these deficits.
- **NCS have the highest share in voluntary carbon markets (VCM), and they are growing rapidly.** While NCS still play a lesser role in most compliance markets for ER, new schemes are emerging and place increasing focus on NCS, e.g., linked to the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Ethiopian Airlines is required to offset its emissions with the beginning of phase II of CORSIA in 2027.
- **Carbon project developers and jurisdictional programs can increasingly rely on digital monitoring technologies and new/revised carbon accounting methodologies.** However, the establishment of a coherent accounting system at jurisdictional or national level to manage double accounting risks remains challenging.

7. **Despite the overall positive outlook for private investments in NCS in Ethiopia, actual investments are still low due to structural barriers, including carbon rights, access to land, the legal investment framework, carbon accounting and transaction infrastructure, and a lack of clearly defined rules for nesting of projects in jurisdictional climate programs**.

8. **Ethiopia has not yet determined its approach to nesting of projects in jurisdictional programs, although the available evidence suggests that a centralized approach is favored by the government.** This means that government accounts for and transacts GHG ER and benefits are allocated to projects or participating actors by the government. In this set-up, companies cannot use ER for insetting or sale on the voluntary market. The government should consider allocating a greater level of responsibility (MRV, certification) and rights (to transact carbon) to independent project developers.

9. **The establishment of well-functioning and transparent national and jurisdictional carbon accounting and transaction frameworks are key for bilateral carbon trade agreements in the context of the Paris agreement and for private NCS investors to nest projects.** At the moment, Ethiopia does not have the needed structures and mechanisms in place (baselines and MRV for all land use sectors[1], GHG registry) and has limited capacity to develop and implement such frameworks. The transition of projects into future jurisdictional

[1] Available for forestry (REDD+) and under development for livestock.

programs is not regulated, exposing NCS investors that choose to certify their project to a high uncertainty risk. The Government should evaluate the options for setting up and operationalizing the carbon accounting and transaction framework. Options include, but are not limited to, setting up a dedicated authority equipped with the necessary financial and human resources or outsourcing some of the activities. How independent carbon projects transition into new jurisdictional programs should be at least broadly defined considering the investors perspective (accrued carbon transaction costs, return expectations).

10. **Clearly defined carbon rights are an important determinant for many potential NCS investors, particularly in the context of the recent UNFCCC decisions concerning Article 6 of the Paris Agreement to avoid double counting and double claiming.** Some aspects related to carbon rights are already defined in the Forest Proclamation (2018). A draft forest regulation including carbon rights is currently being considered by the parliament.[2] There is no regulation of carbon rights for NCS project developers outside forestry, creating uncertainty for potential investors. The government of Ethiopia should thus consider:

- Regulate carbon rights for all relevant NCS in land use sector, i.e., also covering other land uses (agriculture, grassland, wetland) and livestock.
- Increasing the scope of carbon rights to include carbon certification and transaction by private project developers.
- Reflecting the potential role of private sector adequately in the benefit sharing plans(s) (or regulation).

11. **The identification of suitable land for large scale commercial forest investments is hindered by the limited availability of land use plans that are based on successful consultations with all key stakeholders (despite the ongoing efforts by government and development partners to improve the situation).** The exception is land clearly demarcated for production forestry that is currently managed by state owned enterprises. Although the enterprises have limited financial and technical capacity to utilize their land efficiently, they could overcome these constraints by partnering with private sector, e.g., by engaging in lease agreements or joint ventures.

12. **The legal investment framework has improved significantly over the last decade. However, the capacity to implement laws and regulations is limited, especially in relation to sector specific incentives, duties, and fees.** Investors' interest for such projects could be increased and their transaction costs reduced by harmonizing the legal framework and making regional and local specifications accessible at national level, e.g., through the Ethiopia Investment Commission.

13. **Ethiopia's public-private investment law is strongly oriented towards the establishment of large-scale infrastructure or public services provision. It has limited applicability for land-based investments like restoration and conservation, which would benefit from public-private partnerships (PPP) as well.** PPPs in the land use sector could be structured following

[2] The regulation was not available for review at the time of writing (November 2022).

the example of the Ugandan Sawlog Production Grant Scheme, i.e., providing investment incentives based on proven compliance with key performance indicators.[3]

14. **As a way forward, there are a number of recommendations that can be implemented in the ongoing programs while result-based policy lending is suggested to ensure the development of an enabling private sector environment over time. The key recommendations are:**

- Prioritization of the development of a carbon legislation that is applicable to all land use sectors and provides clear guidance on carbon ownership, carbon transaction rights, and the right to receive carbon benefits.
- Encouragement and enablement of project level ER investments through design of a clear framework for the transitioning of projects into programs while national and jurisdictional institutions and mechanism are established.
- Further improving the general investment framework, including the harmonization of incentives, fees and duties, providing easy of access to these regulations and rules, and augmenting the scope of the PPP law to include land-based investments.
- Building the capacity of national and regional governments to establish and manage MRV systems, validate/verify jurisdictional NCS approaches, and transact ER to attract private sector investments in both jurisdictional programs themselves and the nested projects under them.
- Investment in building the capacity of relevant regional institutions, building trust between government and private sector actors, and accelerating land use planning - required to enable access to land for commercial forestry and agriculture.

[3] Refer to Jacovelli (2009): Uganda's Sawlog Production Grant Scheme: a success story from Africa and https://spgs.mwe.go.ug/ for details.

**Summary of recommendations**

| Topic | | Expected outcomes |
|---|---|---|
| **Legislation** | Develop the legal framework on carbon rights and benefits across all land use sectors. | The carbon legislation (sector specific or cross-sectoral laws or regulations) is in place and defines at minimum:<br>‣ Carbon ownership for land-based ER activities.<br>‣ Carbon transaction rights.<br>‣ Entitlement to receive carbon benefits and type of benefits that can be shared. |
| | Regulate how existing carbon projects transition into climate programs. | A regulation or directive for transitioning of carbon projects into national or jurisdictional climate programs has been developed and approved. It specifies the:<br>‣ Rights of the carbon project developer after transitioning into the jurisdictional program<br>‣ Minimum transition period<br>‣ General approach to align carbon baselines (if relevant) |
| | Define the mechanisms, modalities, and responsibilities for allocation of carbon credits and/or carbon benefit sharing to entities that have generated ER. | Carbon benefit sharing mechanisms (regulation and/or program specific, e.g., the OFLP) are in place that specify the indicators used for carbon benefit allocation and thresholds to be met to be eligible for benefit sharing. |
| | Improve the general investment framework, including<br>‣ Harmonization incentives, fees, and duties.<br>‣ Providing access to investment relevant information.<br>‣ Augmenting the scope of the PPP law to include land-based investments. | Investment incentives relevant for NCS investors are specified in regulations and directives.<br>All relevant documents and guidance are easily accessible through the Investment Commission and its regional counterparts.<br>The PPP law and regulation have been revised and are applicable to investments in the land use sector and restoration/conservation |

| Topic | | Expected outcomes |
|---|---|---|
| **Carbon accounting and transaction framework** | Development of the carbon accounting and transaction framework at national and regional (jurisdictional program) levels aligned to the carbon rights legislation, including:<br>‣ Establishment of the National GHG registry.<br>‣ Establishment of entities dedicated to MRV and carbon accounting at national and regional levels.<br>‣ Development of sector/ER category specific rules for nesting of projects in jurisdictional (sectoral) climate programs. | The national GHG registry is functional, i.e., transparently reflects the ER from all relevant sectors and different levels of carbon generation, as well as carbon transactions or use of ER towards the NDC (unconditional).<br>MRV system(s) at national and/or regional level:<br>‣ are operating at international standards and<br>‣ are audited in regular intervals by qualified certifiers.<br>The OFLP (other jurisdictional program) has been successful validated against respective third-party standards.<br>The OFLP has been successful verified against respective third-party standards and ER certificates have been issued. |
| **Access to land** | Access to land for commercial production forestry in gazetted forest land:<br>‣ Identification of forest investment opportunities for private NCS investors.<br>‣ Definition of key performance indicators and benchmarks for private sector partners.<br>‣ Identification of qualified and interested private sector investors. | Identification of investment opportunities by the government or state forest enterprises is evidenced by:<br>‣ Longlist of parcels of land for private commercial forestry investments.<br>‣ Assessment of listed areas against key criteria for private investments in NCS (e.g., land tenure, sensitive environments, production capacity) and selection of sites to be tendered.<br>‣ Call for investors ongoing/concluded. |
| | Access to land for agriculture and forestry outside gazetted areas:<br>‣ Accelerate land use planning and entry of land use certificates in an online cadaster<br>‣ Build capacity of regional and local government for the due diligence of land investment projects considering social and environmental safeguards | Minimum requirements and indicators for large sale land-based investments have been defined, including but not limited to land tenure, land cover and use, and co-benefits to be delivered by investors.<br>Relevant regional authorities are able to implement due diligence assessments of potential investments against national law and are familiar with international safeguards standards.<br>National and regional level authorities are able to support interested investors in the identification of investment ready land. |

# 2. Introduction

15. **The Government of Ethiopia has made significant commitments for landscape restoration and to reduce Greenhouse Gas (GHG) emissions that will require extensive funding from both the public and private sector**. The National Forest Sector Development Program (MEFCC, 2018b) indicates that over 10 years an investment of USD 15.6 billion is required to implement the planned activities targeting sustainable forest production, forest conservation and restoration, and improving rural livelihoods in forest landscapes. Roughly 50% of the investment is expected from the private sector, including smallholder farmers. Ethiopia's Nationally Determined Contribution (NDC) is estimated to cost USD 316 billion, 20% of which will be financed by the government of Ethiopia. The remaining 80% require third party sources of finance. In 2019, the Ethiopian Chamber of Commerce and Sectorial Association (ECCSA) issued a white paper on barriers and recommended measures for the commercial forestry and wood processing industry development in Ethiopia.

16. **The Government of Ethiopia has established a number of programs, often with support from development partners, to achieve landscape restoration and climate targets (e.g. AFR100[4]). However, further investments are needed and must also include sources of funding other than public sector finance.** Additional funding sources for scaling-up include investments by the domestic and international private sector in Nature-based Climate Solutions (NCS), as well as other sources, e.g., carbon funds and voluntary carbon markets (VCM).

17. **This study is a prefeasibility assessment of the potential for land-based private sector investments under the umbrella of national or sub-national (jurisdictional) climate programs.** The report:

- Describes the requirements of private sector investors in land-based carbon setting them in context to the existing investment framework in Ethiopia.
- Outlines the potential for private sector investment in Ethiopia that contribute to climate change mitigation.
- Analyses the potential contribution of carbon finance for four possible business cases: production forestry, restoration of degraded land, climate-smart coffee production, and dairy production.
- Provides recommendations how to improve the market environment for private sector investment in carbon generation in Ethiopia.

[4] African Forest Landscape Restoration Initiative: Ethiopia

# 3. Approach

18. **The study was implemented in three steps, (i) assessment of the national and global framework for NCS investments, (ii) identification of key investment criteria for private sector, and (iii) analysis of economic performance and identification of key design parameters for jurisdictional climate programs in Ethiopia**.

i) The foundations for private sector investment in NCS were assessed, including:

- The relevant national policy, legislative, and institutional framework.
- Global carbon markets and crediting mechanisms.
- Approaches to and experience with complementary implementation of climate projects and jurisdictional climate programs.

This assessment was based to a large extent on desk research. The findings were supported by interviews with key stakeholders, including government agencies, development partners, and private sector actors. The results of these preliminary studies are captured in three technical notes annexed to this report, with key aspects embedded in the following chapters.

ii) Analysis of key criteria for domestic and international institutional and private sector investors in Natural Climate Solutions, leading to a broad categorization of NCS investments by key revenue streams and the investor's objective regarding ER generation.

iii) For these investment categories example business cases were identified and their economic performance under different carbon revenue scenarios explored. Key design parameters for jurisdictional climate programs that seek to encourage private sector investment in general as well as specifically per category were identified.

**Note:** The economic models are based on the best available information (literature and values from past and ongoing projects implemented by Unique in Ethiopia and the region) and considering an attractive scale for project level investments. Context specific costs and benefits (e.g., distance to markets, or agro-ecological zones) were not considered in the economic models. The timeframe for the land-based business models is 20 years.[5] The economic models do not reflect taxes and are in real prices.

19. In the conclusions and recommendations, we reflect:

- The incentives and barriers to private sector investment in NCS founded in, e.g., policy and legislation, the design of jurisdictional climate programs, and the current global framework for ER transactions.
- The economic viability of private sector investment in NCS in different settings
- Ways forward to improve the investment environment for the private sector in NCS.

[5] The minimum crediting period for AFOLU projects is 20 years. REDD+ and land restoration projects without/with limited utilization of biomass tend to have longer crediting periods of 30 years and more. Other project types, e.g., reducing enteric fermentation in livestock management, do not have minimum crediting periods. (Refer to VCS and GS for details.)

# 4. Business cases for private sector investment in climate change mitigation

20. **Private sector actors have two principal avenues for investments in climate change mitigation, ex-ante or ex-post ER generation, determining the potential use for insetting and offsetting of emissions.** Ex-ante investments target the origination of carbon credits, including carbon project development, implementation of carbon project activities, and measurement, reporting, and verification (MRV). Such investments are often, but not always linked to commercial investments, i.e., the production of agricultural and forest commodities. The resulting carbon credits can be used for in- or offsetting (Box 1) or sold to third parties to improve the economic performance of the overall investment or fund the project activities. Ex-post finance, i.e., the purchase of carbon credits on voluntary or compliance markets, is interesting for organizations that need to offset emissions but do not have the capacity to invest on carbon origination. This chapter focusses on the first investment avenue, i.e., ex-ante investments by private sector institutions in carbon generation.

**Box 1: Carbon insetting and offsetting**

Insetting and offsetting are means that can help an organization in their attempts to become carbon neutral, especially for unavoidable emissions from its direct activities.[6]

**Insetting** refers to activities implemented along an organization's value chain that are designed to generate Greenhouse Gas (GHG) emissions reductions (ER) or carbon removals. They often have multiple benefits for the organization, such as: reducing the carbon footprint, improving climate resilience, introducing supply chain production standards including safeguards, and improving the quality of raw materials.

**Offsetting** refers to the compensation of emissions by claiming the mitigation benefits of external projects that are not related to an organization's value chain – either through purchasing carbon credits or by investing into a carbon generation project and retiring the resulting credits. Offsets can stem from different project types, e.g., energy, manufacturing, transport, as well as NCS.

Regardless of how or by whom ER are generated and claimed, ER should not be used by more than one organization (avoiding double counting / double claiming). Good practice insetting or offsetting entails a transparent verification of ER by an independent third party using a creditable standard and registries where ER are listed and retired. Such platforms exist in the voluntary carbon market, e.g., the Verra or Gold Standard (GS), but can also be established at national level.

The Science Based Targets for Forest, Land and Agriculture and Greenhouse Gas Protocol (expected in 2023) will provide additional guidance on how ER can be claimed in the NDC of the project host country or transferred between countries as stipulated in Article 6 of the Paris Agreement (section 5.1).

Sources: https://www.insettingplatform.com/

[6] GHG emissions of organizations are quantified including the organization's value chains direct and indirect emissions. Direct emissions result from activities under the control of the organization. Indirect emissions include energy and inputs from sources that the organization does not own or control.

21. **To facilitate the analysis, the investment options were categorized according to the possible two key revenue streams, i.e., income from agriculture and forest activities and/or emission reductions.** Each option attracts different types of investors, e.g., those requiring in- or offsetting versus those seeking to improve the return on a value chain investment or a combination thereof. Four investment categories (A-D below) have been identified, of which an overview is provided in Figure 1a and b.

**A: Investing in NCS to offset emissions,** represents climate activities such as land restoration in areas dominated by subsistence farming or earmarked for conservation, i.e., without or with very limited linkages to commodity value chains. These projects require pre-financing by development partners and private sector interested in offsetting emissions.

**B: Investing in commodity production and ER crediting for insetting and trade,** applies to commodities with very strong value chain linkages, such as coffee and timber, and relatively high carbon sequestration per unit. Investments can be financed by value chain actors, optionally in partnership with carbon off-takers.

**C: Investing in commodity production with potential for ER benefit allocation,** similarly to the above, places focus on commodity production implemented by value chain actors. However, due to relatively low ER potential per unit of land and/or relatively complex carbon accounting and monitoring requirements, ER generation at project level is not feasible.

**D**: **Investing in ER generation for the NDC or bilateral trade,** represents NCS investments that have no or only a very weak link to commodity value chains, require landscape level action to mitigate unintended negative effects (especially local displacement of emissions/leakage), and often require methodology development. Examples include avoided deforestation and forest degradation.

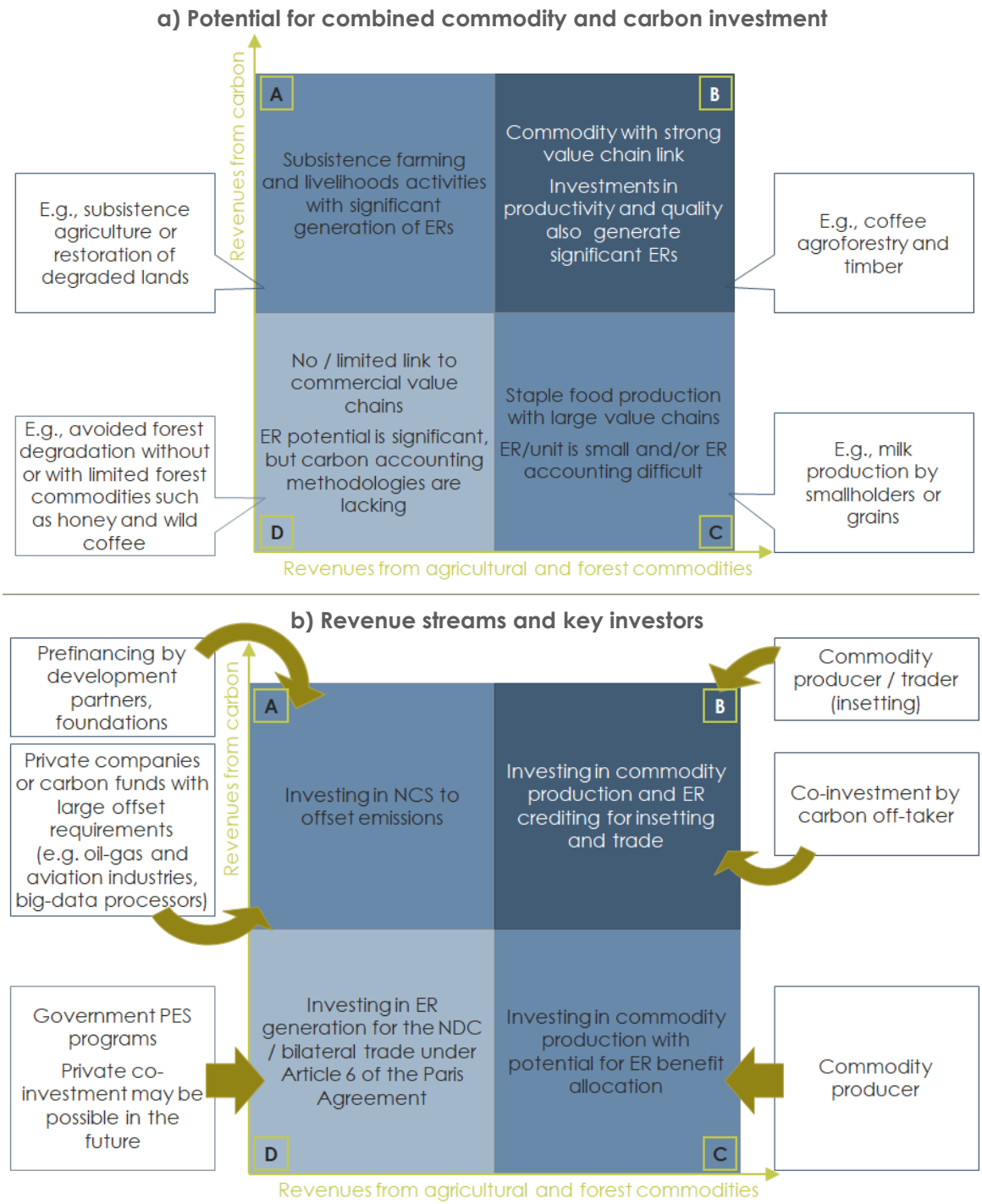



**Figure 1: Suitability of NCS for private sector investors**

22. **In the following sub-sections, the economic viability for the investment categories A, B, and C is presented. The economic analysis focused on the sensitivity of investments to changes in carbon origination costs and revenues.** An example for typical carbon project scales and the related costs and revenues is provided in Box 2. The required and available framework, including carbon accounting methodologies, integration in landscape level (jurisdictional) climate programs, and carbon markets for all four categories is presented

in the following chapter 5. An overview of co-benefits, compliance with safeguards, and investment risks is provided in chapter 6.

**Box 2: Investing in carbon project development**

Carbon project transaction costs include: the initial costs for project development (feasibility, supporting studies, project documentation for certification); the annual monitoring, validation and periodical verifications and the related inventories; and the fees for project registration and issuance of carbon credits.

Typical transaction costs for forestry and agriculture carbon projects with a 20-year crediting timeframe are provided below. Costs vary, depending on the type and size of the project and the available data, e.g., REDD+ projects are in general more costly. Additional costs will be incurred during implementation, e.g., working with communities and other stakeholders.

The investment for a medium-sized project, generating about 100,000 tCO2e is estimated at USD 700,000. A large project, generating at least 1 million tCO2e, is likely to cost USD 1.3 million. The smaller project would struggle to recover costs even at a price of USD 10 per tCO2e. Large projects benefit from economies of scale, making them more attractive for investors, especially those investing only in the carbon component.

| Cost item | | Medium (100,000 tCO2e) | Large (>1 million tCO2e) |
|---|---|---|---|
| Project development | USD | 160,000 | 230,000 |
| Project MRV | USD/year | 10,000 | 20,000 |
| Validation & verification | USD/every 5 years | 70,000 | 130,000 |
| Project registration & credit issuance | USD | 20,000 | 150,000 |
| **Total cost over 20 years** | **USD** | **660,000** | **1,300,000** |
| Revenue* | USD | 800,000 | 8,000,000 |
| **Net-income** | **USD** | **140,000** | **6,700,000** |

*10 USD/tCO2e; deducting 20% of credits as risk buffer

Source: Unique (based on experience with carbon project development, validation, and verification support)

## 4.1. Investing in NCS to offset emissions

23. **Land degradation is a major problem across Ethiopia, resulting in negative economic, ecologic and social impacts.** Thus, investing in the restoration of degraded lands is a key priority of the Ethiopian government – evidenced by land restoration programs implemented with the support from development cooperation partners. Communal lands on hilltops and slopes in particular are often severely degraded and prone to erosion, making them a key target for restoration efforts.

24. **Land restoration through different reforestation, revegetation, and soil management measures can lead to the sequestration of substantial amounts of carbon per unit of land, making carbon project development a potentially attractive investment for organizations**

**that are primarily interested in offsetting emissions.**[7] The economic viability of such "carbon-only" investments is explored in relation to the example of assisted revegetation and regulation of land use by the local population through the establishment of enclosures, a practice that has been implemented successfully across Ethiopia.

### 4.1.1. Economic model for land restoration through assisted revegetation

25. **The example business case focusses on assisted revegetation, implemented on communal land by the communities with support from not-for-profit organizations active in this field.** The economic model:

- Includes the initial scoping and feasibility studies for the project, project implementation, and carbon accounting. An alternative scenario is provided, whereby the project is nested within a jurisdictional climate program. In the latter case, the government would implement the carbon monitoring and accounting and transfer the corresponding ER from the jurisdiction to the project (see chapter 5 for details).
- Communities retain the land use rights, implementing sustainable practices according to the community's bylaws for the area.[8] Uses include, e.g., non-timber forest products and collection of fodder. Depending on the economic results of the project, communities will receive a share of the carbon benefits.
- Initially, substantial capacity development of the participating community organizations is required to establish the institutions required for collective action. Additionally, long-term support is needed to ensure continued good governance of the common resources (Wolde Mekuria et al., 2020)

  The key assumptions of the economic model are listed in Table 1 and Table 2. Values in brackets were used in the sensitivity analysis.

[7] An overview of ER activity categories, ER potential per unit of land, and estimated area that would benefit from interventions, is provided in Annex 2.
[8] Bylaws are the agreements and rules established by users (with the aid of the extension service provider/local government) to structure the management of enclosures.

**Table 1: Land restoration – assumptions project scale and implementation cost**

| Item | Value | Comments |
|---|---|---|
| Project area | 20,000 ha | Distributed across multiple restoration sites with an average area of 10 ha. |
| Cost of restoration activities and extension | USD 37.6 million (± 20 & ± 40%) | Includes the scoping for sites/feasibility study, participatory planning including free, prior, and informed consent (FPIC) processes, alternative livelihood measures, (enrichment) planting using native species, and protective measures. |
| Carbon transaction costs | USD 1.9 million | Certification against widely accepted voluntary standards, such as the VCS (VCS) and Gold Standard (GS). |
| Add on certification against CCBS | USD 0.3 million | Certification against the Climate Community and Biodiversity Standards (CCBS) can be added to VCS. CCBS certified projects have higher market value. |
| Share of costs covered by grant finance | 50% | Covering the development costs and initial years of implementation. Without initial funding, the investment would be negative even with high sequestration rates and carbon prices. |

**Table 2: Land restoration – assumptions for carbon revenues and benefit sharing**

| Item | Carbon project certification | | Jurisdictional carbon accounting* |
|---|---|---|---|
| | VCS | … + CCBS | |
| Carbon sequestered (tCO2e/ha)+ | 60 (40-100) | | |
| Carbon price (USD/tCO2e) | 15 (5-25) | +10% | 15 (5-25) |
| Carbon credits claimed by government to cover costs | N/A | N/A | 20% |
| Benefit sharing with communities | 50% of the net-revenue | | |

*The jurisdiction could apply landscape standards such as VCS JNR or Architecture for REDD+ Transactions - The REDD+ Environmental Excellence Standard (ART-TREES) (see section 5.2.1) or another approach to be developed by the government. Credits are retained to cover GHG related costs (MRV, registry) and can be used to implement government activities.

+Additional carbon stock after 20 years (above and below ground biomass, soil carbon). Depends on the baseline vegetation/level of degradation and agro-ecological zone. A linear increase is assumed, i.e., 3 tCO2e/ha are sequestered every year. 30% of carbon sequestered are deducted to cover additionality, and the risks of leakage and non-permanence (see section 6.2).

26. **The cost/benefit from a private investor perspective was calculated for three models: with project level carbon certification, with and without additional CCBS certification, and without project certification.** In the latter, ER credits are allocated to the project by the government (Table 3). Despite the high amount of grant funding and significant carbon revenues, all models fail to break even in the basic scenarios, i.e., are not attractive for private sector players.

**Table 3: Land restoration – cost & benefit**

| Model | Cost | Grant funding* | Carbon revenues | Cost / benefit with grant funding | Benefit sharing |
|---|---|---|---|---|---|
| | in million USD | | | | |
| Project certification | 39.2 | 18.3 | 11.8 | -9.1 | N/A |
| - including CCBS | 39.4 | 18.4 | 13.0 | -8.0 | N/A |
| Jurisdictional accounting | 37.6 | 17.8 | 9.5 | -10.4 | N/A |

*Covers costs for project development (year 0) and implementation costs until year 9, amounting to 50% of the total cost incurred over 20 years.

27. **The price of carbon credits, sequestration potential, and share of grant finance determine the economic viability of the investment (Table 4).** The "with project certification" models become positive when one of the following criteria is met:

- The price of carbon credits increases by USD 11 to USD 26 per tCO2e.
- Focus is placed on sites with a significantly higher sequestration rate.
- The costs to the private sector partner decrease substantially because of higher share of grant financing or lower implementation cost.

The deduction of 20% of the credits in the "jurisdictional accounting" model cannot be compensated by any of these factors. A carbon price of USD 50/tCO2e would be needed to finance the cost of the initial capacity building (grant funded in the basic model).

**Table 4: Land restoration – cost & benefit scenarios**

| Variable | | | Net-revenue in million USD | | |
|---|---|---|---|---|---|
| | Original value | Adjustment | Project certification+ | Project certification with CCBS+ | Jurisdictional accounting |
| C price (USD/tCO2e) | 15 | +10* | -1.1 | 0.3 | -4.0 |
| C sequestration over 20 years (tCO2e/ha) | 60 | +40 | -1.2 | 0.3 | -4.0 |
| Share of grant finance | 50% | +25% | 1.4 | 0.9 | -0.1 |
| Project cost | See Table 2 | -50% | 0.4 | 0.9 | -0.4 |

* For the "with CCBS" model the price adjustment is USD11/tCO2e.

+ Positive figures indicate the ability to deliver carbon credits slightly below market price. An equal amount would be available for sharing with the participating communities. 1 million USD available for sharing equals USD 50 per ha or USD 2.5 per ha and year.

### 4.1.2. Suitability for private investors

28. **Private sector funding of restoration initiatives implemented by local partners can help to scale community and government efforts.** However, it is unlikely to be the only source of funding owing to the considerable expense for the initial organizational capacity building and provision of extension services over a relatively long time frame.

29. **The direct private sector investment in an existing project managed by an NGO or a government organization would be driven by the investor's requirement for high quality ER that comply with internationally recognized carbon accounting and safeguard standards.** The carbon capital efficiency, i.e., receiving carbon credits of high quality with limited capital expenditure, is another important investment criterion. Clear allocation of carbon rights is essential for this type of investment (see Box 2). Co-benefits of the carbon project, such as improving livelihoods, local socio-economic development, climate change adaptation, and biodiversity can also be quantified, contributing to the corporate social responsibility profile of the investor.

30. **Typical examples for carbon-only investors are international oil and gas companies[9], transport companies (including the aviation industry), and IT companies such as Google, Apple, and Microsoft.** To fulfill their voluntary or compliance ER targets, these investors often prefer to invest in projects delivering large quantities of ER (minimum 80,000-200,000 tCO2e/year depending on the investor). To avoid reputational risks, they also have high expectations regarding compliance with environmental, social, and governance (ESG) standards. National state-owned enterprises, such as Ethiopian Airlines, might also be interested in acquiring the rights to future ER to ensure compliance with CORSIA.[10]

[9] For example, Shell and Total have set up large teams across the globe to identify suitable carbon projects and invest in the generation of carbon credits.
[10] Ethiopian Airlines is required to fully offset its emissions with the beginning of phase II of CORSIA in 2027.

**Box 3: Carbon rights in Ethiopia**

With the commitments made in the NDC, the potential for carbon trade between countries (Article 6 of the Paris Agreement, section 5.1) and growing interest in landscape level action under the umbrella of jurisdictional climate programs (see section 5.2.2), the regulation of carbon rights between those generating carbon (at project or program level) and the state becomes important.

To provide security to project level investors, carbon legislation should assign clear rights to carbon project developers, i.e., the right (or not) to generate and transact carbon credits and/or receive carbon benefits in the case of jurisdictional programs. Regulations, directives or program level documents can provide further details, e.g., sector or activity specific rights and the transitioning of existing projects into new jurisdictional programs.

To date, carbon rights are loosely anchored in the Forest Proclamation No. 1065/2018 where carbon assets are considered an entitlement over forest products that a private company can accrue from an investment. A draft regulation including details for carbon rights related to forestry was developed in 2019 but never ratified. In 2022, a new regulation was developed and is currently under consideration by the parliament.[11]

In the absence of carbon legislation, the carbon benefit sharing mechanism for Ethiopia's only current jurisdictional climate program (Oromia Forested Landscape Program (OFLP), see Annex A 2) provides some insights. The OFLP benefit sharing mechanism clearly prioritizes communities and smaller jurisdictions. The remaining percentage of net-revenues available for sharing (5%) would be allocated to private forest developers based on the forest area established and co-benefits delivered by a private project (not specified).

Sources: Forest, Development, Conservation and Utilization Proclamation No. 1065/2018, OEFCCA, 2019,

## 4.2. Investing in commodity production and ER crediting for insetting and trade

31. **Some agricultural and forest commodities combine high potential return on investments in production with high carbon sequestration potential.** The economic potential for a combined commodity-carbon investment is explored for two examples, sustainable production forestry and investing in climate smart coffee production by smallholders.

### 4.2.1. Investing in sustainable production forestry

32. **Wood is a scarce resource in Ethiopia, causing unsustainable use of natural forests and forest degradation. The rapidly increasing supply gap is partly filled by expensive imported wood products, reflected in higher timber prices then in the neighboring countries.** Small-scale farmers have recognized the economic potential of the forestry sector, leading to the establishment of over half a million hectares of woodlots, largely without government support. Private sector investment in modern wood processing industries is gradually increasing, but the limited supply of industrial timber poses a constraint for sector development.

[11] The draft regulation was not shared with the public at the time of writing this report.

33. **To realize the potential of forestry for the socio-economic development of Ethiopia, additional investments in commercial forestry and processing capacity are needed.** The example economic model described on the following pages focusses on the supply side, i.e., the production of industrial round wood. The economic model integrates three types of land holdings with different starting points:

- Restocking of gazetted forest land leased from a state forest enterprise with high yielding trees compared to the previous coppiced stock.
- Plantation establishment on land not forested (leased from the regional state or state forest enterprise).
- Woodlot establishment on land not forested belonging to smallholder farmers or communities that will become outgrowers to the investor.

34. **Most of the investment (65%) is assumed to be implemented on gazetted production forest land. The remainder is implemented on non-forest land of smallholders participating in the outgrower scheme and other land leased from the state.** About 25% of land is assumed to be of lower quality, e.g., degraded land or land with a lower site index (Table 5). These less productive areas will be dedicated to chip wood production in short rotations. On good sites, saw and veneer logs will be produced. Carbon is sequestered in new plantations and woodlots. The investment includes a sawmill that processes part of the timber produced.

**Table 5: Production forestry model – assumed production targets and carbon stocks**

| Production target | Baseline land use | Carbon baseline° | Carbon project° | Area |
|---|---|---|---|---|
| | | tCO2e/ha | | Ha |
| Chip wood (7-year rotation, MAI 22*) | Not forested - degraded | 0 | 92 | 900 |
| Sawlogs (14-year rotation, MAI 35*) | Not forested | 0 | 276 | 360 |
| | Production forest | 220 | 276 | 2,340 |
| | **Total** | | | **3,600** |

* Mean annual increment (MAI), indicates the productivity of a site.

° Long-term average; includes the above and below ground biomass. The long-term average is reached in year 4 and 7 in short and long rotations, respectively. Carbon stored in the non-forest biomass is considered negligible. For plantations replacing old ones, the difference in the long-term average can be claimed (56 tCO2e/ha).

35. **The cost/benefit for three different models, timber production, timber production with carbon benefit sharing, and timber production with carbon crediting are illustrated in Table 6, Table 7, and Figure 2**.[12]

- The **basic** investment model, i.e., without carbon transaction costs and revenues, requires an investment of almost USD 10 million until the cumulative cashflow becomes positive in year 14. The low internal rate of return (IRR: 6%) is considered realistic considering the early mover costs for privately financed forestry investments in Ethiopia.

[12] Refer to chapter 5 for details on carbon benefit sharing versus carbon crediting approaches.

- In the model with **carbon benefit sharing**, whereby the government pays an assumed USD 400 for each ha afforested or reforested, the IRR increases to 6.6%. The investor also has no carbon transaction costs.
- The revenues from the model with **carbon crediting**, considering related carbon transaction costs and an average sales price of USD 15/tCO2e on the voluntary market, raises the IRR to 7.4%. It is important to note that, in this model, the investor will also generate carbon revenues from land that was previously forested but has a higher long-term average carbon stock owing to the improved management/extended rotation period.[13]

**Table 6: Production forestry model – cost & benefit**

| Scenario | Investment until break even<br>million USD | Cost | Carbon Revenue | Benefit<br>million USD | IRR<br>% |
|---|---|---|---|---|---|
| Timber production | 9.5 | | | | 6.0 |
| … with carbon benefits | 9.0 | | | 0.5 | 6.6 |
| … with carbon crediting* | 9.0 | 1.3 | 2.8 | 1.5 | 7.4 |

*Total investment until payback includes the carbon project development cost. 40% of carbon sequestered is deducted/withheld from the carbon sequestered to reflect additionality, cover the risk of leakage and non-permanence (see section 6.2).

36. **The comparison of the cumulative cashflow for the three economic models shows that the additional income from carbon benefits or carbon crediting occur well before the income from timber production, creating much needed cashflow** (Figure 2). For carbon benefit sharing to be equally attractive as carbon crediting, a benefit payment of about USD 1,000 per hectare of forest would be required (Table 7).

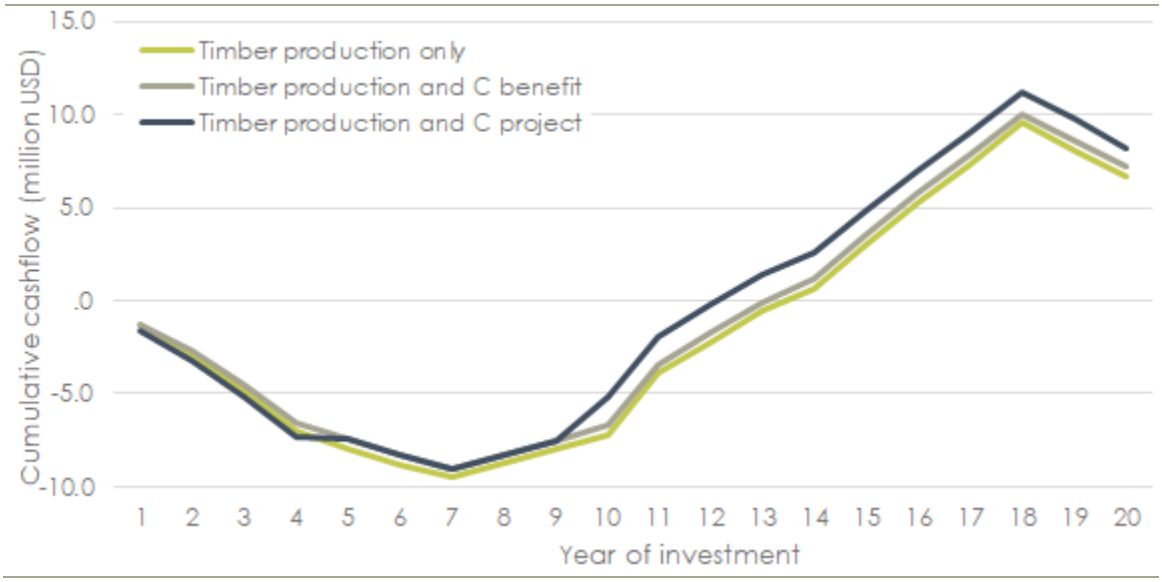



**Figure 2: Production forestry model – cumulative cashflow**

[13] About 40% of total carbon revenue.

**Table 7: Production forestry model – sensitivity to carbon benefit vs carbon crediting**

| Carbon benefit sharing | | Carbon crediting | |
|---|---|---|---|
| **Payment** USD/ha | **IRR** % | **Carbon credit price** USD/tCO2e | **IRR** % |
| 200 | 6.3 | 10 | 6.5 |
| 400 | 6.6 | 15 | 7.4 |
| 600 | 6.9 | 20 | 8.3 |
| 800 | 7.3 | 25 | 9.2 |
| 1,000 | 7.6 | 30 | 10.1 |
| 1,200 | 8.0 | 35 | 11.0 |
| 1,400 | 8.4 | 40 | 11.9 |

### 4.2.2. Investing in climate smart coffee production

37. **Ethiopian coffee is a globally sought-after commodity, an important source of income for an estimated 15 million smallholder farmers in the Ethiopian highlands, and the most important agricultural export commodity for the country (USDA, 2022). However, most producers do not fully realize the economic potential of growing coffee due to:**

- Low prices and poor market linkages (farmers receive only about 60% of the export price).
- Limited access to agricultural extension services.
- Low to lacking farm level investment, e.g., replacement or rejuvenation of old, unproductive coffee plants or establishment of shade trees.

  As a result, average productivity is low, and in many cases declining, and farmers are exposed to risks like adverse weather conditions, pests and diseases.

38. **Stronger linkages of producers and traders/processors with direct access to international markets, as well as increased investment in productivity and quality, are needed to improve the contribution of coffee to smallholder livelihoods and strengthen the role of coffee as major earner of foreign currency.** Privately owned trade/processing companies can improve their supply chain security (i.e., access to consistent quantities of quality coffee) by investing in farmers. Such investments will in many cases contribute to climate change mitigation and adaptation. Farmers would also benefit from better market access (prices) and increased production. Consequently, private sector investment would have multiple objectives: (i) to ensure sustainable supply of quality coffee, and (ii) to generate carbon credits that can be used for insetting and/or to improve the economic performance of the investment through carbon credit sales. The economic model includes the following components:

- Agricultural extension to farmer cooperatives and farmers.
- Provision of loans to finance replacement or rejuvenation of old coffee plants and implement good agricultural practices.
- Payment of above market prices for coffee, incentivizing the adoption of good agricultural practices and sale of coffee to the investor.
- Carbon project development and certification against a voluntary carbon standard.

Key assumptions are listed in Table 8 and Table 9.

**Table 8: Climate smart agriculture – scale and yield assumptions**

| Item | | Value | Comments |
|---|---|---|---|
| Participating farms: | Farmers | 10,000 farmers | Members of primary cooperatives |
| | Area | 2,500 ha | Land stock with coffee trees |
| Coffee renovation & rejuvenation and good agricultural practices | | 65% | Percentage of farmers investing in renovation/rejuvenation and/or good agricultural practices. |
| Good agricultural practices only | | 35% | |
| Yield: | Baseline | 500 kg green beans/ha | |
| | With renovation/ rejuvenation | 900 kg green beans/ha | |
| Carbon stock change with project implementation | | +68 tCO2e/ha | Includes agroforestry (above and below ground biomass) and soil organic carbon. The long-term average (shade trees) is reached after 12 years. |
| Risk buffer for emission reductions | | 20% | To cover risks related to leakage, e.g., using manure from outside the project area. |

**Table 9: Climate smart agriculture – financial assumptions**

| Item | | Value | Comments |
|---|---|---|---|
| Extension cost year 1-7<br>Grant funding year 1-3 | | USD 730,000<br>20% | Capacity building of cooperatives and farmers; Thereafter the cooperatives provide services (extension, lending) to farmers independently. |
| Loans to farmers: | Amount<br>Payout<br>Payback<br>Interest | USD 840 /ha<br>Year 1-2<br>Year 3-6<br>10%/year | To cover the cost of renovation / rejuvenation and income gap. |
| Difference in export to producer price | Baseline | USD 0.5/kg green beans | Farmers in Ethiopia receive about 60% of export price (GCP, 2018). |
| | Project | USD 0.1-0.3/kg green beans | 90% are possible (e.g., in Vietnam (Technoserve, 2013)). |
| Share of coffee production sold to the investor | | 50% | Farmers are not obliged to sell to their cooperatives. The payment of above market prices is a strong incentive. |
| Carbon project cost | | USD 750,000 | Includes studies, project development, monitoring, third party validation and verification, and issuance of credits. |
| Carbon price | | USD 15 or 20 /tCO2e | |

39. **The analysis shows that public co-funding is needed for organizational capacity building of producer organizations.** The investment as outlined above, but without the carbon component and without grant funding, would result in a very low IRR of 4% over 20 years (Table 10). Even with carbon finance (IRR 10%), the project would not be very attractive given the high investment risk associated with the lending component. This illustrates the importance of public funding for organizational capacity building in the framework of projects that work with producer organizations.

40. **The carbon income is a decisive factor in the investment's success as it permits the payment of above market prices to producers.** The payment of above market prices to producers is an important incentive for farmers to invest in rejuvenation or renovation of old coffee plants and the adoption of climate smart agricultural practices. Hence, the investor's ability to market carbon credits to the highest bidder or to use the ER for insetting is important.

**Table 10: Climate smart agriculture – internal rate of return for different scenarios**

| Scenario | | IRR without carbon project | IRR with carbon project | |
|---|---|---|---|---|
| | | | USD 15 /tCO2e | USD 20 /tCO2e |
| Export-producer price difference (with grant funding) | USD 0.1 | 7% | 12% | 15% |
| | USD 0.2 | 16% | 18% | 20% |
| | USD 0.3 | 23% | 23% | 25% |
| Grant funding (price margin of USD 0.1) | with | 7% | 12% | 15% |
| | without | 4% | 10% | 12% |

### 4.2.3. Suitability for private sector investors

41. **Private sector investment targeting productivity and implementation of sustainable, climate smart land use practices at once can be viable in different contexts, i.e., in large scale investments such as plantation forestry or when working with smallholders.** However, in both cases investors will have to overcome barriers: access to land for plantation forestry and the weak producer-investor relationship in the case of smallholder coffee (see Box 4). Companies working with smallholders will have to invest substantial resources to build a strong relationship with the producers, including organizational capacity building of producer organizations and providing direct incentives to producers (e.g., affordable credit, payment of above market price). Improved access to investment ready land for forestry can be achieved through partnerships with state forest enterprises. In the long-term, regional governments may be able to identify additional lands for commercial production through integrated land use planning exercises.

42. **Carbon revenues have a relatively small leverage effect on the economic performance of the investments (especially in forestry) but improve the risk-return profile.** In the case of forestry, carbon revenues would provide much needed cashflow during the investment phase. In the coffee business case, the additional income from carbon can offset risks related to the repayment of credits by farmers and support the payment of above market prices.

43. **Likely investors in large-scale production forestry are international timber investment funds, possibly in joint ventures with domestic, industrial scale wood processing enterprises, and working in partnership with a professional forest asset management company.**[14] The principal investors would likely seek some form of partnership (e.g., joint venture or lease including a revenue share) with a state forest enterprise to access land resources. Timber investment funds consider investments with a ticket size exceeding USD 10 million.

[14] Timber investment funds operating in the tropics are, e.g., Maris, Criterion Africa Partners, Arbaro Fund, and New Forests.

**Box 4: Access to land**

Large land holdings for commercial agriculture and forestry investments can theoretically be allocated to investors by the regional states. However, the identification of investment ready land resources is difficult because of the limited coverage of land use plans and digital land cadaster.

Investors in **commercial forestry** may be able to access land in the large, gazetted production forests located in clusters across the highland regions. These forests are managed by regional state-owned enterprises in form of concessional agreements from the regional government. In theory, the regional states can reallocate concessions to private investors. The Oromia Forest and Wildlife Enterprise (OFWE) recently received the land use certificate for state forest land, i.e., the enterprise can decide whether to lease land to investors or use another form of engagement.

To date, no forest concession has been allocated to private investors. However, the Amhara state forest enterprises has set up various joint ventures with private foreign investors (with shareholder majority) for wood processing and the OFWE has a clear interest in similar arrangements. In the future, with support from national and regional policy makers and development partners, such arrangements could also be applied to forest management.[15]

Investors in **agricultural commodities** will have to engage with smallholders and communities, reflecting the distribution of agricultural land in Ethiopia (90% of crop lands are smallholder farms). Investor-producer arrangements can be structured as joint development, whereby the investor provides finance and/or inputs and the farmer land and labor to jointly develop the land and share the resulting benefits based on prior agreed modalities.

Setting up and implementing such arrangements at scale requires large investments in technical and organizational capacity building. However, businesses focusing on trade or processing of agricultural goods rarely have the necessary expertise and financial resources to implement such capacity building programs at scale, i.e., will require technical and, in many cases, also financial support from relevant not-for-profit organizations and development partners.

Refer to Annex 5.2 for further details and information on the underlying legislation.

44. **Potential investors in coffee are international roasters that seek to secure the supply of high quality, traceable coffee.** Carbon credits would be used for insetting (compensating, e.g., for emissions from transport and processing) or sold on VCM to improve the project economics. The growing domestic coffee industry (processing in Ethiopia for domestic sales and external markets) may be interested in such investments in the future.

45. **Both investment types can be attractive for carbon funds (e.g., Carbon solutions, the Livelihood Funds, or the Land Degradation Neutrality Fund) that provide equity in exchange for future carbon credits, but also domestic institutional investors.** Carbon funds invest in projects that generate upwards of 100,000 carbon credits per year. The Ethiopia Investment Holding (Box 5) might consider investments in the productive assets (e.g., forest plantations) as well as carbon rights attractive. Full carbon rights (ownership, right to transact, refer to Box 3 above) to the investor is key for value chain investors targeting insetting, as well as for carbon funds or other co-investors targeting the carbon credits.

[15] Private investors often avoid joint ventures with state enterprises or require a clear majority in the partnership. Refer to the report "Private Sector Participation in Forest Sector Development, Strategic Business Development Options for Forestry in Oromia by Unique (2021) for the WB.

**Box 5: Domestic institutional investors**

The **Ethiopian Investment Holdings** (EIH), created in 2022, is the strategic investment arm of the government of Ethiopia. Its objectives are to attract foreign investment, and to consolidate and unlock underutilized assets for monetization. The EIH comprises 27 state-owned enterprises in eight sectors, amongst them flagship enterprises such as the Ethiopian Airlines Group. The holdings' combined annual revenue is about USD 14 billion. The EIH can invest in any business and investment opportunity it deems profitable. Commercial farming, including reforestation/carbon trading, is one of the priority sectors for investment.

Another potentially important group of institutional investors are **pension funds** (Civil Service Pension Fund, Military and Policy Service Pension Fund, Private Organization Employees' Pension Fund), which are managed by the Public Servants Social Security Administration and the Private Organization Employees Social Security Fund Administration. After restructuring in 2022, the administrations can now invest in any "profitable and reliable investment" directly, while previously investments were limited to treasury bills. For example, in 2022 the Civil Service Pension Fund invested in bonds of the Development Bank of Ethiopia as well as shares from five commercial banks. If, and to what extent the fund administrations will invest in companies engaged in forestry and agriculture, or carbon generation, remains to be seen.

Sources: Ethiopia Investment Holdings (accessed 08.12.2022); Pension funds: Proclamations 1267/2022 and 1268/2022; The Reporter Ethiopia (accessed 08.12.2022)

## 4.3. Investing in commodity production with potential for ER benefit allocation

46. **Investments in the sustainable production of other agricultural and livestock commodities will in many cases contribute to climate change mitigation even if the ER per unit of management is much lower than in the business case presented above.** However, such investments would have to be implemented at very large scale (going beyond the requirements of an individual commodity processor or trader) to justify the investment in carbon crediting. Examples of project types are the adoption of more sustainable agricultural land management practices in the production of cereals (e.g., reducing tillage and use of fertilizers, use of cover crops) or improved livestock management (e.g., livestock breeds, herd structure, and feed) to reduce the emissions per unit of animal protein produced. The following example business case focusses on investing in increased milk productivity in peri-urban areas by a domestic dairy processing company.

### 4.3.1. Investing in sustainable dairy production

47. **The demand for dairy products in Ethiopia is increasing rapidly, driven by the growing population, a growing urban middle class, and the increased awareness of households regarding healthy nutrition (government campaigns). However, investments in dairy productivity are low.** Over 70% of milk is produced on small farms in mixed-crop-livestock systems (Shapiro et al., 2015), most commonly in the highland regions. Productivity per animal is usually low, only about 25% of the productivity achieved in Kenya (TRAIDE, 2021). Causes are the high share of indigenous breeds (>90% of cattle) with lower milk outputs,

limited use of/access to good-quality feed, and lack of access to support services. Post-harvesting losses at farm level, related to insufficient hygiene and product adulteration, are also common.

48. **Producers in peri-urban and urban settings are the most attractive group for processing businesses seeking to improve their supply chain. These producers already mostly use stall-feeding, have better access to inputs and veterinary services, and focus on commercial production of milk.** These farms benefit from the growing demand for milk, i.e., often can sell milk daily at the farm gate. However, milk collection is dominated by middlemen, i.e., there is rarely any direct interaction between farmers and commercial processors. This is reflected in the low utilization (30% on average) of installed capacity of commercial dairy processors located in urban centers across the highlands (TRAIDE). The objective of the private sector investment is to increase the supply of quality milk for processing, applying a three-fold strategy:

- Provision of extension services including use of a feed app.
- Improving access to feed and support services.
- Establishing a professional milk collection system.

49. **With the investment, milk production and quality increase without an increase in the herd size, participating farmers have guaranteed market access, and the emissions per liter of milk produced are reduced (Table 11). Investment would enable the implementation of best-practice strategies in the following:**

- Herd structure – culling of unproductive animals, replacing indigenous breeds with cross- or exotic breeds, increasing the share of dairy cows from about 40% to about 65% per household[16].
- Feed composition – increasing the share of feed components with a higher digestibility and adjustment of feed composition according to the lactation stage and feed availability.
- Post-harvesting losses – training and implementation of quality control measures at the collection point.

[16] Other animals are adult/growing males (none with project), calves, and growing females.

**Table 11: Dairy production – scale and yield assumptions**

| Item | | Value | | Comments |
|---|---|---|---|---|
| Processors milk intake per year | Baseline<br>Project | 4.5 million l milk<br>15.0 million l milk | | About 30% of installed capacity of a medium sized processor (TRAIDE, 2021) |
| Participating farms | Farms | 1,100 | | Peri-urban farmers with an average of 10 cattle<br>Farms are recruited over a timeframe of 5 years |
| Herd structure | | Cattle* | Cows* | |
| | Baseline | 10 | 4 | Cross breeds |
| | Project | 8-9 | 5-6 | Cross/exotic breeds |
| Feed digestibility | Baseline<br>Project | 60%<br>68% | | Reducing the share of roughage, increased share of improved feed and concentrates |
| Milk yield per year | Baseline<br>Project | 4,750 l/cow<br>5,700 l/cow | | |
| Post-harvesting losses | Baseline<br>Project | 20%<br>5% | | Improving hygiene, stopping dilution and contamination |
| Reduced emissions | Farm<br>Project | 23 tCO2e<br>25,300 tCO2e | | Includes emission reductions from improved feed, herd structure, and manure management. |
| Leakage | | 0% | | A displacement of activities is not expected. |

*'Cattle' refers to the total number of livestock per farmer, of which 'cows' refers to those actively producing milk.

50. **Key investment items are the provision of technical extension services to participating farmers, lending to farms to cover the additional costs for feed, installations, and veterinary services, and the carbon project development for investors interested in generating ER directly.** Unlike the NCS business cases described above, this type of project does not have a minimum crediting period and ER are realized within a year of the investment. As a result, the crediting period is only as long as the investment period (5 + 1 year). The economic model covers only these six years.

**Table 12: Dairy production – financial assumptions**

| Item | | Value* | | Comments |
|---|---|---|---|---|
| Extension cost | Year 1<br>Year 2-6 | USD 100/farm<br>USD 25 (50)/farm | | Capacity building of farmers and collection agents working for the processor. |
| Collection infrastructure | | USD 180,000 | | Equipment for testing, collecting, and transporting milk to the processor. |
| On-farm investment | | USD 10,000 | | Additional costs for feed, hygiene, veterinary services (insemination with sexed semen). |
| Share of on-farm costs financed with loans from the investor | | 50% (70%) | | The processor finances lending to farmers with a bank loan from the Ethiopian Development Bank. Loans to farmers are offered at similar conditions as by micro-finance institutions.[17] |
| Loan conditions | | Processor | Farmers | |
| | Duration | 1 year | | |
| | Interest rate | 10% | 17% | |
| | Defaults | | 5% | |
| Milk price at farm gate | | USD 1.0 (1.1) /l milk | | |
| Share of milk produced sold to the investor | | 50% (90%) | | Reflects home consumption, sales to neighbors, and other commercial buyers. |
| Carbon project cost over 6 years | | USD 750,000 | | Includes studies, project development, monitoring, third party validation and verification, and issuance of credits. |
| Carbon price | | USD 15 /tCO2e | | |

*Values in brackets are used in the sensitivity analysis.

51. **Investments in milk productivity are attractive for farm households and investors alike.** Farmers could increase their net-milk income by 50% within a year or two. The investor could achieve full utilization of the installed processing capacity within a few years, depending on the number of farmers recruited into the investment per year and share of milk production sold to the investor. The resulting IRR of the investment as described above is 22%.

52. **Given the competitive market environment in peri-urban areas, long-term exclusive relationships between the investors and farmers are unlikely unless there is another tangible incentive for farmers (e.g., receiving above market prices).** Payment of an additional USD 0.10, resulting in 90% of production sold to the investor would reduce the IRR slightly, but also shorten the investment period. Against this background, investments in on-farm productivity (loans, extension) financed by the private sector are risky as other buyers would potentially profit as well. Ideally, much of the on-farm investment can be covered with loans from micro-finance organizations. Increasing the access to commercial loans through, e.g., micro-finance institutions would lower the risk for private sector investors.

[17] Lack of access to credits is one of the constraints dairy farmers face as they have no, or not sufficient collateral (Belay Duguma (2022), TRAIDE (2021)).

53. **The example project can achieve ER of 25,000 tCO2e over the entire project duration, which is too small for an independent carbon project as the carbon revenue would not be high enough to cover the project development and management costs (e.g., project specific MRV). However, such investments could be implemented if nested in a jurisdictional climate program.** At this scale, a carbon price of USD 37/tCO2e would be needed to offset the costs for carbon crediting. Therefore, the mostly small to medium scale processors of Ethiopia's dairy sector would benefit from a jurisdictional program that is responsible for carbon monitoring and accounting, and that allocates a moderate carbon benefit to the investors in exchange for supporting the on-farm investments. For example, a payment of USD 2 per ER credit would increase the investment IRR to 23%, helping to offset the financial risk. Despite the relatively small scale of individual projects, the overall climate mitigation potential is substantial. For example, if the currently existing processing industry with a total annual intake capacity of 400 million liters of milk (TRAIDE, 2021) were to invest in productivity in a similar setting working with about 27,000 small dairy farms, a total of 600,000 tCO2e could be avoided.

54. **Additional scale can be achieved if investments take place outside the peri-urban production systems.** However, the investment required would be higher, including the establishment of collection and storage facilities, and transport infrastructure. Also, inputs and services (e.g., veterinary) are often not available in the required quantities in rural areas, a situation that cannot be resolved by the processing industry.

**Table 13: Dairy production – internal rate of return for different scenarios**

| Item | Scenario 1 | Scenario 2 | IRR with carbon° | IRR without carbon | |
|---|---|---|---|---|---|
| | | | Scenario 1 | Scenario 1 | Scenario 2* |
| Farm gate price & share of milk produced sold to the investor | USD 1.0/ liter milk 50% | USD 1.1/ liter milk 90% | Crediting: 15% Benefit sharing: 23% | 22% | 21% |
| Share of on-farm cost covered with loans from the investor | 50% | 70% | | | 17% |
| Long-term extension cost | USD 25 /year | USD 50 /year | | | 21% |

°Crediting: carbon project development and monitoring costs are carried by the investor. The carbon revenue is assumed to be USD 15/tCO2e. Benefit sharing: no carbon related costs, benefit of USD 2/tCO2e.

*Only the corresponding set of parameters is changed.

### 4.3.2. Suitability for private sector investors

55. **Investments by processors or traders in the productivity of smallholder suppliers are one option to ensure the growth of the investor's business. However, similarly to the coffee business model, investors face substantial risks related to the weak relationship between producers and processors.** The relatively low amount of ER per producer in combination with the limited scale applicable to individual domestic companies prohibit project level carbon crediting (see Box 1). However, a jurisdictional climate program for livestock emissions could capture the ER across the sector and distribute benefits to investors enabling the ER, helping to mitigate the investors' risk to some extent. The ER from the jurisdictional program can be used to comply with the NDC or sold to organizations or countries with offset requirements using the market mechanisms described in Chapter 5. In the future, such a jurisdictional program may also attract investors primarily interested in carbon credits, similar to the investments described in section4.2.

# 5. Carbon accounting and markets - framework for private sector financing of climate action

56. **Climate projects and jurisdictional programs must comply with and operate within the international frameworks for carbon accounting and trade.** The underlying mechanisms (e.g., for trade of ER certificates), and approaches and methodologies for carbon accounting are developed and applied by different actors in the global climate community, such as the United Nations Framework Convention on Climate Change (UNFCCC) and voluntary carbon standards, but also by industry-specific international agencies such as the International Civil Aviation Organization (ICAO). The international framework permits countries to determine specific aspects, e.g., related to the selected approach for carbon accounting, allocation of carbon rights, and use of ER. In the following chapter, sections 5.1 and 5.2 provide an overview of global carbon markets and the evolving approaches to landscape level or jurisdictional ER accounting before discussing the implications of these frameworks for private sector investments in climate change mitigation in Ethiopia in section 5.3.

## 5.1. Carbon markets and bilateral trade

57. **The exponential growth of carbon markets in recent years (Figure 3) provides a significant opportunity to channel additional incentives for sustainable land management both at project and jurisdictional scale.** However, over the past two decades global carbon markets have declined and recovered – in terms of both supply and demand, volumes and prices – and are notoriously hard to predict. Nonetheless, the recent resurgence of demand and increase in prices in the compliance and voluntary markets is cause for optimism.

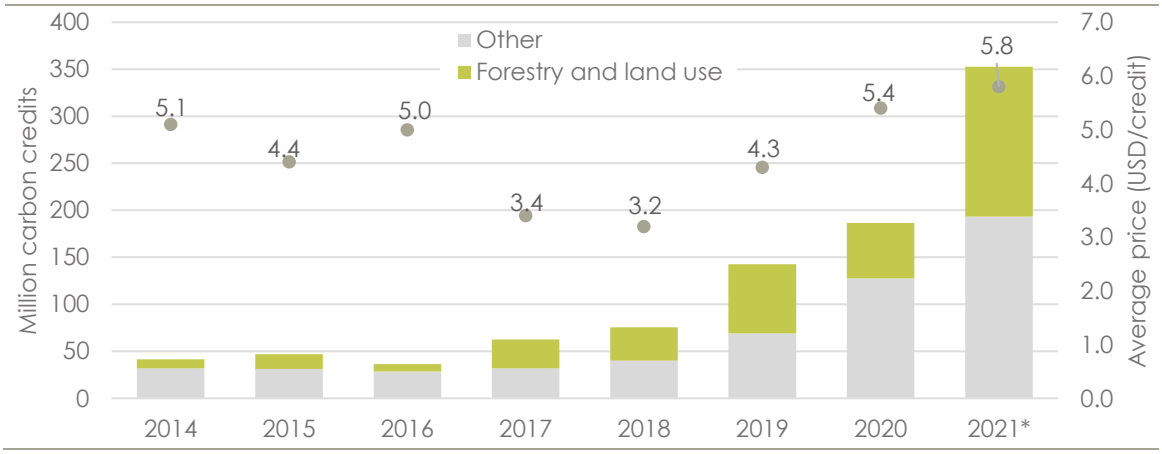



**Figure 3: Issuance of carbon credits and prices from the forestry and land use sector**

Source: Climate Focus (2022) and Ecosystem Marketplace (2018-2022)

58. **The discussion around and ambition towards developing landscape level carbon programs have a long history, dating back more than a decade. Landscape programs have several perceived benefits related to the larger scale in comparison to project level activities**, resulting in:

- The potential to deliver substantial ER volumes consistently over a long timeframe owing to their large scale and wider breadth of ER activities.
- Higher environmental integrity and reduced exposure to leakage, as well as a broader set of environmental and social benefits related to the holistic approach that incorporate a diverse set of development targets,
- Economies of scale in MRV, carbon accounting and transactions lead to reduced carbon transaction costs.

59. **Accordingly, much attention has been placed on the development of landscape level programs over the last decade. However, to date only few of these programs have been fully developed and fewer still have managed to access carbon markets at true scale.** This is due to a range of issues, including but not limited to:

- A lack of established standards for landscape level programs. Current landscape standards are limited to REDD+. (see box 8 below).
- The complexity of operationalizing landscape programs given the diverse set of actors, production systems, land titles, levels of governance at play, and need for government leadership.
- Limited access to compliance markets due to concerns around permanence risk.
- Low demand in the VCM until recently.

60. **Market dynamics are rapidly shifting due to increasing demand in the VCM, the emergence of new compliance markets, and emerging partnerships to implement ER transactions under Article 6 of the Paris Agreement. This presents interesting opportunities for landscape programs and traditional carbon projects alike:**

- Historically, most landscape programs, have received - or expect to receive - results-based finance from international development cooperation funds such as the Forest Carbon Partnership Facility (FCPF), the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) or the Green Climate Fund (GCF), among others (Hamrick et al., 2021). The Oromia Forested Landscape Program (OFLP) is an example of an ISFL program.

  The World Bank's new Climate Emissions Reduction Facility (CERF) will provide operational liquidity at scale for the development of low-carbon projects. The facility will disburse results-based climate finance over a 10-year period, helping developing countries shape low-carbon development pathways and encouraging donors to increase funding to achieve scale (WB, 2020).
- Landscape programs have not had a strong history of serving or indeed being accepted in compliance carbon markets. However, the emergence of the Carbon Offsetting Scheme for International Aviation (CORSIA, Box 6) changed the picture by

accepting ER generated under various crediting mechanisms including the VCS Jurisdictional and Nested REDD+ (VCS JNR) Framework and The REDD+ Environmental Excellence Standard (TREES) (section 5.2.1). ER generated under the FCPF and ISFL have so far not been accepted under CORSIA, but applications are understood to be ongoing at least for the FCPF.

More recently, as a result of the Paris Agreement international compliance mechanisms are emerging and offer additional opportunities to unlock climate finance, including for landscape programs, through cooperative market approaches between countries, specifically under Article 6.2 (Box 7). A few countries, including Switzerland, have been at the forefront of exploring Article 6 transactions with partner countries.

While traditional carbon projects have dominated transaction volumes in the voluntary carbon market to date, in principle landscape programs are well-suited to serve the VCM. This is illustrated by the momentum generated by the Lowering Emissions by Accelerating Forest finance (LEAF) Coalition[18] that saw large corporations pledge over USD 1 billion for the purchase of ER generated under ART-TREES for apparently purely voluntary purposes. Voluntary carbon standards are developing approaches and methodologies for the development and evaluation of projects at the jurisdictional level (Box 8). However, thus far few mechanisms have a comprehensive scheme or standard for all activities that can be included in a jurisdictional landscape restoration program.

[18] The Lowering Emissions by Accelerating Forest finance (LEAF) Coalition: https://leafcoalition.org/

**Box 6: Compliance markets: CORSIA**

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) aims to stabilize net GHG emissions from international aviation at 2019 levels using carbon credits. This mechanism will run through three phases:

i) A pilot phase from 2021 to 2023.

ii) A voluntary first phase from 2024 to 2026.

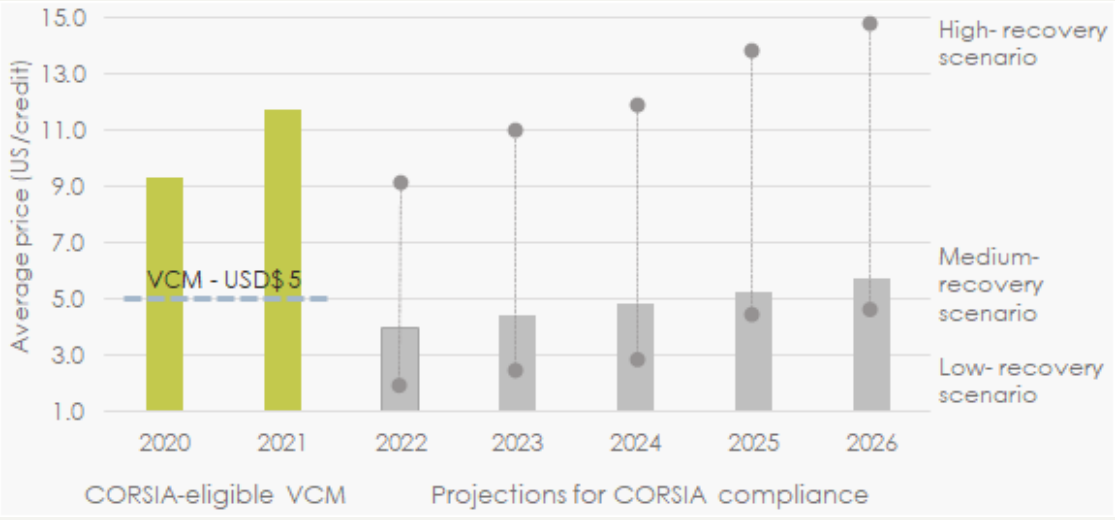
iii) A second phase from 2027 to 2035 that will be mandatory for the International Civil Aviation Organization (ICAO) member states, including Ethiopia.

The ICAO Council has approved eight carbon accounting standards. Eligible mitigation activities of these standards are mostly at the project level, with the exception of the Architecture for REDD+ Transactions and the Verra VCS Jurisdictional and Nested REDD+ (JNR) Framework, which allow ER from jurisdictional programs.

Recent analyses provide several scenarios of how demand and prices may evolve:

- According to the International Institute for Sustainable Development (IISD), the decision of setting 2019 as the base year increased the baseline by approximately 30% and will likely delay the demand for carbon credits by three to five years (Gordon, 2020).
- The Committee on Aviation Environmental Protection (CAEP) suggests that under an intermediate COVID-recovery scenario, the emissions from air travel would exceed the 2019 baseline by 2024, under a high recovery scenario (Lithgow, 2021). The CAEP predicts a range between USD 1.45 to USD 15 per ton CO2e by 2026, depending on a fast or slow scenario of air travel recovery.
- Under a medium COVID-19 recovery scenario, keeping 2019 as the base year or return to an average of 2019 and 2020 would represent a difference in compensation requirements between 1 billion to 2.5 billion metric tons CO2e (ICAO, 2021).

These scenarios make the future demand volumes highly uncertain. Nevertheless, the medium to long-term demand outlook for CORSIA remains promising.




Source: Refer to Annex 5.1 for further details.

**Box 7: Article 6.2 of the Paris Agreement – a new mechanism for ER transactions**

Article 6.2 can become a suitable mechanism for channeling carbon finance to landscape programs through cooperative approaches. The article provides great level of flexibility in terms of scope and choice of methodologies. However, the transfer of Internationally Transferred Mitigation Outcomes (ITMO) should be clear, transparent, and of high integrity, ensure sustainable development, and avoid double counting.

Ethiopia would not be bound by the requirements and limitations of frameworks such as VCS JNR or ART TREES but could develop customized landscape programs of broad scope – including, e.g., agricultural land management, livestock, and grassland management using traditional carbon standard project methodologies or structuring sectoral programs. Such flexibility, however, also implies a greater complexity in terms of choosing and implementing appropriate methods (see section 5.2.2) and would require substantial assistance from development partners.

Article 6.2. permits credits to be sold in both voluntary and emerging national and international compliance markets, as well as to be used to comply with:

- Voluntary corporate commitments.
- The CORSIA.
- NDCs and transferring credits between countries.

For example, the cooperation framework applied by Switzerland for Article 6 transactions is structured into a bilateral agreement with the respective host country government and commercial agreements with project owners for the transaction of ER.

Source: Refer to Annex 5.1 for further details.

61. **In terms of crediting mechanisms, all options will in theory allow Ethiopia to access or prepare for compliance and voluntary markets (Figure 4).** The interactions and overlaps between both markets are changing and evolving. While there is no specific mechanism for landscape programs, Ethiopia can use different avenues to complement its objectives.

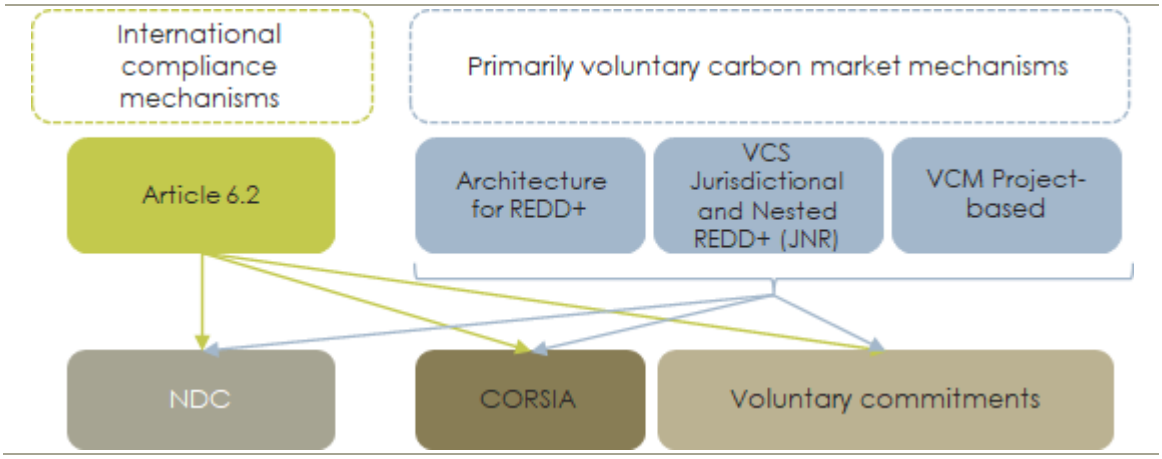



**Figure 4: Crediting mechanisms**

Source: elaborated by Climate Focus

## 5.2. Approaches to ER accounting and integration of project and jurisdictional level climate initiatives

### 5.2.1. Emission reduction accounting

**Despite growing interest in landscape level programs over the past decade globally, none of the leading carbon standards have so far created a comprehensive carbon accounting framework for landscape level/jurisdictional programs.** Landscape frameworks such as VCS JNR and ART TREES are generally limited to forests, significantly reducing their attractiveness for landscape programs that include major agricultural and livestock components (Box 8). As such, the choice of carbon accounting framework depends on the desired scope and creditable activities of the landscape program.

62. **At project level, a vast menu of methodologies exist for the full range of land use activities and such methodologies have been used by project developers to create large, grouped projects** (e.g., Community Markets for Conservation (COMACO), Zambia, see Annex 3.1). Article 6.2, described above, opens a new chapter in this regard and allows countries almost limitless opportunities to develop customized carbon accounting including through VCS methodologies or other trustworthy standards such as the GS.

63. **If Ethiopia were to pursue largely forest based landscape programs, VCS JNR or ART TREES may provide workable solutions, while Article 6.2 provides the most flexible and scalable option for the development of comprehensive climate programs**. These could be complemented with project level accounting for activities such as agricultural land management and livestock which remain outside the scope of VCS JNR and ART TREES. If the landscape program places focus on agricultural land management, livestock, and grassland management, landscape or sectoral programs under Article 6.2 or traditional grouped projects under the VCS would provide the necessary flexibility. In terms of long-term compatibility with the Paris Agreement, streamlined access to compliance markets, and a continued option to access the VCM, Article 6.2 provides the most flexible and scalable option. Nevertheless, it would require the heaviest lift in terms of setting up related infrastructure and building capacity.

64. **In terms of short development timeframes, quick access to VCM, and broad investor appeal, project level mechanisms such as traditional VCS or GS projects - including grouped projects that could deliver scale – would be the obvious choice. However, these would likely face more significant constraints in terms of accessing compliance markets.**

**Box 8: Methodologies and independent crediting mechanisms for NCS**

**Project level**

Methodologies covering the most important emission reduction activities are available for the Clean Development Mechanism (CDM), the Climate Action Reserve (CAR) the Verified Carbon Standard (VCS, and the Gold Standard (GS). The Climate, Community & Biodiversity (CCB) Standards can be used as an add on to VCS Agriculture, Forestry and Other Land Uses (AFOLU) projects.[19]

The VCS has methodologies for forestry, agriculture, grasslands, livestock, and wetlands. The CDM methodologies are still eligible under the VCS but are currently being phased out and replaced with new methodologies for different types of afforestation / reforestation / revegetation (ARR) projects. The GS has its own methodologies for afforestation/reforestation and agriculture. It specifically excludes REDD. CAR methodologies are only applicable in specific countries and cannot be applied in Ethiopia.

Carbon project developers can use the available VCS and GS methodologies for the certification of emission reductions to be traded on voluntary markets or for their own use (insetting). Evolving regulated carbon markets, such as the CORSIA, also allow the use of accredited voluntary carbon market standards.

Under the VCS, project developers can propose new methodologies, although the process of methodology validation through the standard is lengthy (2-3 years) and increases carbon project development costs. Given the substantial delays, some stakeholders, e.g., Acorn-Rabobank developed their own standard for agroforestry projects to speed up carbon project development in the land use sector.

**Landscape level**

At landscape level two carbon accounting methodologies exist, the VCS Jurisdictional and Nested REDD+ (JNR) by Verra and The REDD+ Environmental Excellence Standard (TREES) by Architecture for REDD+ Transactions (ART). At the moment, both are limited to forestry (A/R and REDD), i.e., do not permit the accounting of ER from agriculture, livestock, or other ecosystems such as wetlands. The Oromia Forested Landscape Program (OFLP), currently applying the BioCF/ISFL approach, is considering using ART TREES to validate and verify the program independently.

Add-on standards exist to monitor impact going beyond climate change mitigation, these include the Verra LandScale and the Gold Standard Sustainable Development Verified Impact Standard (SD VISta).

[19] CAR, VCS and CCB are managed by Verra. CAR is probably of limited importance for developers in Africa as most of its protocols are country specific and the more general CAR AFOLU protocols cannot be used for projects registered with VCS.

### 5.2.3. Nesting projects in jurisdictional programs

65. **Climate projects and jurisdictional climate programs increasingly overlap but often use different emission baselines and carbon accounting methodologies. Their co-existence may lead to double counting if ER are not harmonized and captured in one system**.[20] The discussion on nesting of ER projects in jurisdictional programs and the development of related guidance have evolved around REDD+. The available guidance reflects the challenges of aligning project and large-scale jurisdictional schemes for REDD+: the alignment of forest emission reference levels (baselines) and the MRV systems. Jurisdictional or sectoral programs for agriculture and livestock that rely on project-based interventions will face similar challenges.

**Box 9: Nesting**

Nesting can refer to (i) embedding project level activities within jurisdictional or sectoral climate programs, or (ii) the integration of sub-national or landscape level schemes into a national system. It can be understood in relatively narrow terms as aligning the MRV of the embedded projects or sub-national jurisdictions with the larger or national system.

More broadly, nesting is seen as a harmonization of ER activities across multiple levels of governance and geographical scales – including transparent carbon rights and resolving conflicting carbon claims.

Source: WB (2021)

66. **If and to what degree projects are integrated in jurisdictional programs, as well as how (many) ER (benefits) are allocated to projects, influences their attractiveness for project level investments.** Furthermore, the ability of the jurisdiction to share ER benefits with nested projects is influenced by the overall carbon performance of the jurisdiction – which may be lower across the jurisdiction (average value per ha of land) than that of a specific project nested within the jurisdiction.[21] The Ethiopian government has a range of options to harmonize project and jurisdictional implementation and accounting of ER activities. The government can implement bottom up or hybrid approaches that permit direct carbon crediting by projects or ER allocation to the project by the jurisdiction.[22] Mitigation activities that are (almost) exclusively driven by policy, legislation, and incentives provided by government (e.g., tax exemptions) do not require nesting, but may be complementary to hybrid jurisdictional programs. Regardless of the selected approach, an enabling policy and legal framework, as well as operational guidance, must be provided for project developers.

67. **Hybrid jurisdictional programs can take into account the circumstance of specific sub-sectors and/or mitigations activity groups (e.g., availability of carbon accounting methodology, common scale of projects, risk of leakage).** For example, a hybrid

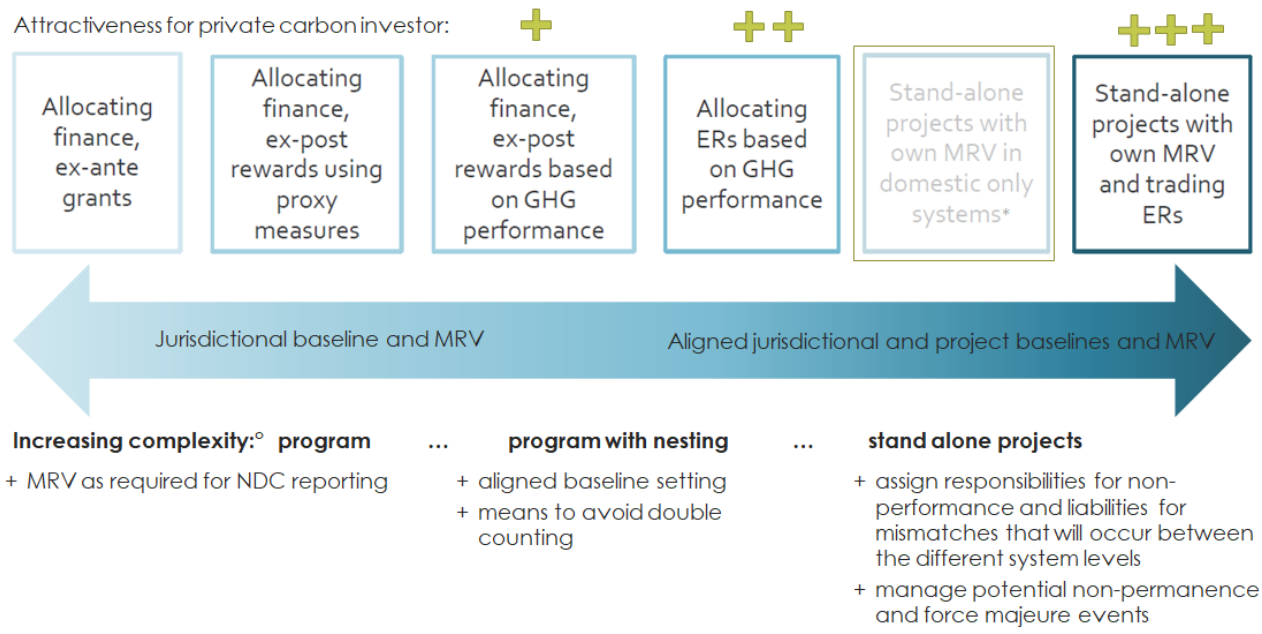
[20] Both project and jurisdiction claim the same carbon removal or emission reduction.
[21] Lower average performance of a jurisdictional program can be caused by additional emissions that occur within the jurisdiction (only the net ER can be transacted) and nested program activities that generate lower ER per unit of land than the nested project(s).
[22] Refer to A 5.3. for details on approaches to nesting projects in jurisdictional climate programs.

approach that reflects the sub-sector specific conditions and private sector requirements should consider the following aspects:

- Agricultural land management requires detailed, project specific baselines and a combination of methodologies, making it more suitable for project level carbon accounting and transaction.[23]
- Large-scale carbon projects (e.g., in combination with production forestry or coffee) are particularly interesting to private sector actors seeking to develop projects for offsetting and insetting. This requires the allocation of the corresponding credits to the investor or permitting the direct generation of carbon credits by the investor.
- For small forestry, agriculture, and livestock projects, project-based carbon accounting and transaction may not be viable owing to the relatively high fixed cost for carbon project development and validation/verifications.[24] In this case, the jurisdiction can allocate results-based ER benefits to the project developer.
- Areas or topics that are not attractive for private carbon project developers[25], or only become attractive with up-front public investment (e.g., land restoration), require direct implementation by government, e.g., incentivizing farmers to change management by providing improved animal breeds, seed, or setting up and building capacity of grassroot organizations.

68. **The Ethiopian government should carefully evaluate the complexity of the possible approaches (and the related need to build and maintain capacity) and their attractiveness to private investors (Figure 5).** A central system is less complex regarding MRV and accounting but unlikely to attract private investment in NCS. On the extreme side, standalone projects are attractive to private sector, but may be challenging to reflect in the jurisdictional or national ER accounting as they may use different baselines and methodologies. Additionally, depending on the standard applied, independent projects may be deficient in regard to leakage and non-permanence.[26]

[23] ALM projects often incorporate combinations of activities. Baselines vary depending on location, crops and cropping system, level of degradation etc.
[24] Refer to box 2 in chapter 4.
[25] For example, remote areas with limited infrastructure, activities that require substantial investments in methodology development (e.g., forest degradation), or very low ER potential per unit of land (but potentially large implementation area).
[26] Depending on the standard applied by the project. Standards like VCS and GS are exigent in regard to additionality, leakage, and non-permanence (see Box 10, section 6.2).




*Does not apply to Ethiopia. Only few countries (e.g., Australia) have established national accounting systems that account for carbon from stand-alone projects as well.
°Additional requirements that increase the complexity from program-only to integration of projects in jurisdictional programs are marked with '+'.

**Figure 5: Private carbon investor attractiveness versus MRV effort and complexity**
Source: adapted from Lee et al., 2018

69. **Other important factors to consider when designing jurisdictional climate programs are the available technical and financial capacity of government. The complexity of the program should be aligned to the existing (foreseen) capacities.**

- The existing (expected) capacities of government institutions for baseline development, MRV, and carbon accounting.
- The need to, and potential of, mobilizing non-governmental finance and private sector project developers for the achievement of climate change mitigation targets.
- The degree of flexibility offered by the different approaches, e.g., the ability to incorporate different sources of finance or adjustment of carbon accounting and transaction over time.

70. **Factors that may incentivize private sector investment at project level are:**

- Private sector-oriented regulations for ER projects and nesting (i.e., clarity on carbon rights and/or benefits).
- Clear rules for the transition of early projects into jurisdictional programs that may be established later.
- Provision of standardized carbon accounting methodologies and guidance.
- Definition of consistent reference emission levels and respective baselines that reflect circumstances of projects or small jurisdictions well.

## 5.3. Designing a conducive framework for private sector investment in NCS

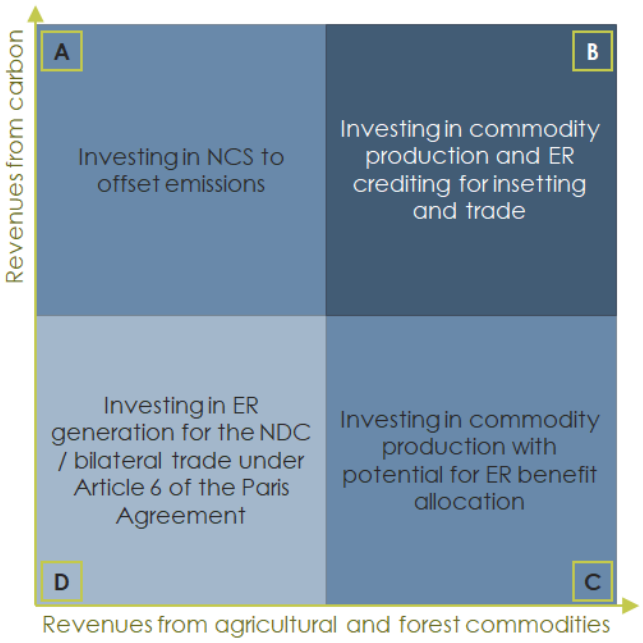
71. **At the moment project level investments, which may be nested in a jurisdictional program, are the most likely entry point for private sector investors in Ethiopia.** At project level, investors can quantify and mitigate risks, there is a direct link between the investment and ER generation, and often other revenue streams exist (agricultural and forest commodities). Globally, jurisdictional programs still have limited access to voluntary markets and the ability of a jurisdiction to deliver ER as foreseen is often unknown, making program level investments relatively unattractive for the private sector. In the future, as jurisdictional programs evolve and provide proof of concept by delivering ER reliably and transparently (e.g., validated by independent carbon accounting standards) their attractiveness for private sector investors is likely to increase. In the meantime, the Ethiopian government should place focus on encouraging project level action where it is feasible, i.e., when all, or at least some of the following apply:

- The minimum required carbon project scale aligns well with investments in commodity production.
- Carbon accounting methodologies are available.
- ER risk factors (leakage, non-permanence) are minor or can be managed well at project level.

An overview for these criteria is provided in Table 14 for each of the four NCS investment categories described in chapter 4 and summarized below.

72. **"Carbon-only" investments (A and D)**

- Categories A and D, face significant leakage and non-permanence risks that require substantial efforts in organizational capacity building and long-term technical assistance, which go well beyond the financial and technical capacities of private investors.
- Category D also faces additional challenges in the absence of carbon accounting methodologies, baselines, and emission factors, and requires very large scale.




- NCS projects falling in category A that apply project or landscape methodologies of voluntary carbon market standards, and that permit a transfer of carbon credits to investors, may be able to incorporate private funding once projects are fully set-up and running.

73. **Combined commodity and carbon investments (B and C)**

- Investments in categories B and C focus on commodity production but also generate ER. Investment in agricultural and livestock productivity can be considered low risk regarding leakage and non-permanence. For forestry projects, these risks can be managed by applying the risk management tools of voluntary carbon standards, and the corresponding adjustments of ER to be claimed by the project.
- The economic viability of the carbon component of commodity investments depends on the ER generated per hectare or intervention unit (e.g., farm) and scale of the investment. Smaller investments, e.g., by domestic dairy processors in milk productivity (category C), but also small-scale forestry on private land (woodlots), would not be able to access carbon markets on their own as the carbon crediting and marketing costs would exceed ER revenues. Such investments would benefit from carbon benefit sharing by a jurisdictional climate program, which can implement MRV and access carbon markets more efficiently.
- Large, i.e., industrial scale, investments combined with medium to high ER/ha (category C) benefit from economies of scale, making carbon crediting and transaction at project level feasible. In these projects, the value chain investors require access to the credits for insetting or to improve project performance.

74. **A sound approach that encourages the private sector to participate in jurisdictional land-based climate change mitigation will be decisive for scaling up climate action.** This includes explicitly the national and sub-national approaches to carbon accounting, carbon rights, and carbon transactions. To successfully engage the private sector, the following aspects should be taken into account:

- Greater autonomy at project level relates to a more attractive environment for private sector project developers and enables upscaling of effective and efficient projects, i.e., contributes meaningful impacts in line with respective NDCs and global goals (e.g., UNFCCC Glasgow Forest Declaration of 2021). For example, with greater autonomy, delays in the implementation of the jurisdictional framework are less likely to impact project activities.
- Clear recognition of carbon rights by the government is important, i.e., project developers should ideally be able to generate and transact ERs directly. Project developers who have the carbon rights can decide on the use of carbon credits for sale on voluntary markets, off- or insetting.
- The provision of baselines and emission factors by the jurisdictional program decreases the level of effort for project developers. However, baselines and emission factors must reflect project specific circumstances well to be effective, i.e., to avoid over/under estimation of ER. Large jurisdictions may need different baselines and emission factors for sub-units with distinctive characteristics.[27]

[27] The development of more detailed baselines (e.g., forest emission reference level) is often a question of data availability. Different reference levels may lead to leakage if not well coordinated. Reference levels have to fully cover the jurisdiction and should not overlap. None of the existing national REDD+ programs have disaggregated reference levels for geographic sub-units.

- Jurisdictions can consider applying a central approach to MRV and accounting in combination with carbon benefit sharing to incentivize private sector investments that are too small for project-based carbon crediting, or for activities that require a greater level of control to mitigate leakage and non-permanence risks. Carbon benefit sharing with investors can take different formats, including the provision of monetary (e.g., tax) and non-monetary (e.g., services) incentives, as well as allocation of carbon credits to the investor. Wherever possible, benefit sharing should be based on the actual ER achieved by an investment project, rather than proxy indicators.
- To ensure transparency, a national GHG registry is required. The registry must reflect all ER generated; be able to resolve any potential ER claim conflicts (e.g., if a project and jurisdiction claim ER of the same intervention); and show the use of ER by the government (for the NDC or bilateral transactions), trade on voluntary markets, or direct retirement by the project investor for offsetting or insetting.

**Table 14: Potential for project-based carbon crediting for investment categories**

| Investment category & Example business case | | Activity type and ER per unit<br>Risk of leakage and non-permanence | Scale required for project-based carbon crediting | Availability of methodologies from voluntary carbon standards | |
|---|---|---|---|---|---|
| | | | | Project | Landscape/jurisdiction |
| A) Investing in NCS to offset emissions | Land restoration | Revegetation<br>> 50 tCO2e/ha<br>Risk: medium to high for both risk | Large: several thousand ha | Yes<br>Application of group or landscape methodologies | JNR & TREES |
| B) Investing in commodity production and ER crediting for insetting and trade | Commercial forestry | Afforestation / reforestation (AR): > 100 tCO2e/ha<br>Improved forest management (IFM): ≤ 60 t CO2e/ha<br>Risk: non-permanence low-medium, leakage low | Medium to large: > 1,000ha | Yes<br>Under development | JNR & TREES |
| | Coffee production | Combination of agricultural land management and AR (agroforestry): > 50 tCO2e/ha<br>Risk: low for both | Large: > 1,000ha | Yes | Only the AR component is covered by JNR & TREES |
| C) Investing in commodity production with potential for ER benefit allocation | Dairy production in peri-urban areas | Avoiding emissions from enteric fermentation: about 20 tCO2e/farm household<br>Risk: not applicable | Large: several thousand small dairy farms<br>Not viable for project-based crediting | Yes<br>Context specific emission factors are available for Ethiopia | Not available<br>Context specific emission factors are available for Ethiopia |
| D) Investing in ER generation for the NDC or bilateral trade | (without business case) | Avoiding land cover degradation and conversions (wetland, shrub/grassland, forest):<br>ER/ha highly variable depending on ecosystem and baseline (for degradation)<br>Risk: leakage high, non-permanence medium-high | e.g., avoided deforestation: > 50,000ha (ER accountable reflect only the fraction of the project area that would be affected by conversion/degradation in the baseline) | For deforestation and avoided shrub/grassland conversions<br>Limited for wetlands (highly project specific) | JNR & TREES only for REDD+<br>For forest degradation emission factors are difficult to establish and not yet available |

# 6. Co-benefits, safeguards, and risk mitigation in NCS investments

## 6.1. Co-benefits

75. **Carbon projects can have numerous additional benefits. They can contribute to climate change adaptation, socio-economic development, and the conservation of biodiversity.** The investments described above would contribute to the Ethiopian socio-economic targets, e.g., industrial development, strengthening domestic supply of commodities, and reducing the trade deficit (Table 15). Certification of investments against voluntary carbon standards contributes to the implementation and monitoring of international safeguards related to land and resource tenure, community participation, and avoiding of negative environmental impacts.

**Table 15: Co-benefits of the private sector NCS investments**

| Investing in | Climate change adaptation | Improving smallholder livelihoods | Protection of natural resources | Economic development |
|---|---|---|---|---|
| Production forestry in plantations and woodlots | ‣ Introduction or development of tree species/varieties that perform well under climate change scenarios | ‣ Diversified income<br>‣ Reduced market risk | ‣ Reduced soil erosion<br>‣ Green corridors | ‣ Creating the basis for industry investments<br>‣ Closing the wood product supply gap<br>‣ Enabling low-carbon wood construction |
| Restoration of degraded land | ‣ Increased ecosystem resilience | ‣ Variable* | ‣ Soil<br>‣ Water<br>‣ Biodiversity (green corridors) | ‣ Rural employment related to the sustainable use of restored areas |
| Smallholder coffee production | ‣ Increased resilience of farming system<br>‣ Increased household resilience (higher & diversified income) | ‣ Higher income (productivity)<br>‣ Reduced risk (market, losses due to pest/diseases) | ‣ Soil fertility<br>‣ Biodiversity | ‣ Increased production of export commodity and generation of foreign currency |
| Smallholder dairy production | ‣ Increased household resilience (higher income) | ‣ Higher income (productivity, reliable market)<br>‣ Reduced seasonality of income | ‣ Water quality (reducing pollution from manure) | ‣ Increased domestic supply and quality of milk products<br>‣ Improved nutrition |

*Depending on the potential for alternative livelihood creation and use of the restored areas. Payment of carbon benefits applies but would likely be very small.

## 6.2. Safeguards

76. **All four of the investment categories identified rely to some extent on public support in order to be economically viable. As a result, investors must pay special attention to international safeguard standards (e.g., IFC Performance Standards).** Key safeguards, e.g., related to land tenure, community participation and benefits, and protection of natural ecosystems, are mandatory for climate projects certified against voluntary carbon standards (see example in Box 10). However, the requirements of the carbon standards may not cover all safeguards. In the case of jurisdictional carbon programs, the jurisdiction must ensure the compliance of investors with the safeguard standard used by the program. Additionally, investors in commodity production can also seek certification against internationally recognized management and sustainability standards such as the Forest Stewardship Council, Fair Trade, Rainforest Alliance, and many others, to prove adherence to environmental and social safeguards. Global commodity markets increasingly require certification against these standards.

**Box 10: Reflection of safeguards in the new VCS ARR methodology**

ARR projects seeking certification against a voluntary carbon standard must prove additionality, rate the risk of displacing activities that may lead to loss of carbon stocks elsewhere (leakage), and assess the risk of losing project carbon stock during or after the project (non-permanence). The assessment of these underlying factors coincides with international social and environmental safeguards. Projects with a high-risk rating and lower additionality will have to deduct more ER to compensate. As a result, project developers are likely to implement the mitigation actions (or safeguards) to improve the performance of the carbon project.

For example, ARR projects seeking certification against the VCS (Verra) must reflect the following parameters in project design and implementation:

- The **additionality** of a project is established by comparing project re/afforestation against the likely rate of re/afforestation without the project in the control area (performance benchmark). The performance benchmark is deducted from the project's ER.
  - ➔ This favors projects in regions with zero or low rates of ARR in the performance benchmark scenario.
- The **leakage** risk assessment is based on:
  - The relative productivity of the pre-project land use (agriculture, livestock) in the project area that would potentially be displaced.
    - ➔ This favors ARR implementation in areas with limited agricultural potential (e.g., degraded land).
  - A comparison of the project's carbon stock (long-term average) with average carbon stock in the country's forests.
    - ➔ This favors projects that combine good growth conditions and no harvesting or long rotations, resulting in high to very high long-term average carbon stock.
  - Project duration (crediting period).
    - ➔ This favors long crediting periods.

  The discount for potential leakage can range between 5% and 50%.
- The **non-permanence** risk rating is influenced by:
  - External risks, including land and resource tenure/use rights and related disputes, community engagement, and impacts on communities.
    - ➔ This favors land tenure by the project proponent and implementation of activities to resolve conflicting claims.
    - ➔ Risk is reduced by participation of communities in and surrounding the project area in project design and implementation.
    - ➔ Projects with net-positive impacts for communities have reduced risk.
  - The political risk, based on the governance score of the country and its' participation in REDD+ readiness.
  - Natural risks, including potential exposure and damage by fire, pests and diseases, and extreme weather.

  Between 10% (minimum) and 60% of credits must be placed in the AFOLU risk buffer.

Sources: Verra 2019, Verra 2021a, Verra 2021b

## 6.3. Risk and risk mitigation

### Political host country risk

77. **Investors (especially international) face substantial political risks:**

- Legislation regulating investments and finance advanced greatly in the past years. Nonetheless, regulations for implementation are at times missing and subject to revision.[28]
- The institutional set up and responsibilities for forestry, environment, and climate change have changed quite frequently at the federal level in the past. Such changes increase the transaction costs for investors.
- At times violent, politically motivated conflicts affect many areas of the country. In the past, such conflicts have let to the destruction of private property and access to conflict zones is often restricted. Investments in large immovable assets in rural areas are particularly exposed to the impacts of local conflicts (e.g., forestry plantations, agricultural/timber processing installations).
- At the moment, there is no legislation for carbon trade in Ethiopia.[29] Ethiopia can decide to restrict access of private carbon projects to voluntary carbon markets in order to fulfill its own NDC commitments and/or only permit the transfer of carbon credits to third party countries/the VCM through a domestic carbon market. In both cases, individual carbon projects cannot sell ER to the VCM, i.e., project-level carbon income will be dependent on benefits allocated by the government and projects would not have access to foreign currency that otherwise could be generated by direct carbon credit sales.

### Project risks

78. **Investor risks related to the production and marketing of agricultural and forestry commodities can be mitigated quite well by sound planning and implementation of best practices, while carbon project development risks can be reduced by well-designed jurisdictional climate programs that permit different degrees of autonomy for projects, e.g., based on sub-sector or project type.** Private investment in ER requires the clear attribution of carbon rights and benefits, as well as conducive rules for projects that are required to transition into jurisdictional programs at a later stage.

[28] Refer to Annex 5.2 for details.
[29] At the time of writing, the forest regulation (including carbon aspects) was under development. The draft was not available to the authors.

- **Technical and market risks** related to the production and trade of agricultural and forestry commodities, include:
  - Uncertainty regarding capacity of partnering organizations (esp. at producer level) and need to invest in their capacity.
  - Changing markets, i.e., prices (esp. for internationally traded commodities like coffee), buyer preferences, and demand.
  - Uncertainties regarding production, i.e., lower than expected yield linked to site characteristics, the availability of inputs, pest and disease outbreaks, fire, etc.

  Experienced companies can estimate and manage market and production risks relatively well, e.g., by using global price indexes to determine fair producer prices, or matching species/varieties to local conditions and market preferences. However, building the organizational capacity of local partners tends to be a lengthy, and often costly, process that often requires external technical and financial assistance.

- **Carbon project development related risks** include:
  - Economic viability – Carbon projects become economically viable with scale, i.e., require a large area/many participants and/or large ER potential per unit. Accessing large land resources directly through, e.g., long-term lease agreements, is difficult for projects in general, as well as in the Ethiopian context. Access to, and aggregation of, smallholder farmers require capable grassroots level partners (e.g., cooperatives), which often must be established or at least capacitated first, increasing the cost of projects.
  - External factors - Carbon generation depends on many factors, some of which the project developers have influence over but others that are outside of their control (e.g., the performance benchmark and leakage; see Box 10).
  - Carbon markets – While demand for AFOLU credits currently shows a positive trend, resulting in high prices for carbon credits, carbon markets have been volatile in the past. Carbon markets are heavily influenced by global climate policy and regulation, but also the economic performance of large buyers.

79. **Embedding NCS investments in jurisdictional climate programs can reduce the project level carbon risks, depending on how projects are integrated. However, embedment comes with uncertainties related to the overall performance of the jurisdiction (ER generated) and the attribution of ER or carbon benefits to individual investment projects**.[30] Early projects, i.e., established before the jurisdictional climate program becomes operational, face the additional risk of not knowing how the jurisdictional program will affect the project's carbon income. To foster private investment, jurisdictional programs should consider integrated approaches that:

- Reduce risks like leakage and non-permanence through program level baselines and MRV.

[30] Refer to the Annex 5.3 for details on nesting options and associated risks for participating projects.

- Clearly reward project level action by either permitting project level accounting and marketing or attribution of ER based on ER generated by a project or well-designed proxy indicators and taking into consideration the project development costs.
- Provide a clear framework for early projects to transition into the program, including adequate compensation for project developers (e.g., permitting continued project level accounting and marketing or allocation of ER based on project level monitoring for trade project during the transition period).

# 7. Conclusions and recommendations

## 7.1. Conclusions

80. **In general terms, the long term outlook for private sector finance in Natural Climate Solutions in Ethiopia is positive.**

- A large share of Ethiopia's productive land (i.e., used for agriculture, livestock, and forestry) is degraded. Restoration efforts often contribute to sustainable land use intensification, resilience of the ecosystem and local population, and climate change mitigation. Commercially oriented NCS investments can contribute to and benefit from carbon generation.
- Demand for carbon credits from the land use sector is increasing (section 5.1), creating favorable market conditions for carbon project developers. Recent initiatives, like the compliance CORSIA and voluntary commitments by the private sector, are expected to further strengthen the demand for carbon credits in the future.
- Article 6 of the Paris Agreement permits countries to design landscape level approaches that fit the national context. For carbon trade under Article 6, Ethiopia can combine different approaches to integrate (private) project level activities into national or jurisdictional climate programs.
- Global voluntary carbon market standards provide a ready-to-use framework of approaches and methodologies for NCS.

81. **To realize that potential, investment conditions and incentives must be improved. Carbon finance can increase the attraction of commodity production as a private sector investment. Larger projects would benefit from carbon crediting at project level. For smaller projects, carbon benefit sharing approaches can be a viable alternative.** Although the economic leverage of carbon in the combined investment is still relatively low (at current carbon prices), carbon income provides early cashflow in long-term investments, such as production forestry, and contributes to mitigating economic risks, especially in settings that require investment in smallholder production systems. However, the carbon transaction costs for project level certification are substantial, requiring relatively large-scale investments in terms of area/smallholders covered by a carbon project. Benefit sharing (i.e., allocation of ER or monetary/other carbon performance-based rewards by the jurisdiction) reduces carbon transaction cost at investor level. At the same time, the carbon benefits received are likely to be much lower as program-level costs are deducted and carbon benefits may be allocated to a wider range of beneficiaries. The dependency on public sector MRV services and benefit sharing is a high risk for any private investor.

82. **Co-financing of public restoration and conservation activities by private investors in exchange for carbon credits would introduce a paradigm change and enable upscaling of activities that currently rely to a very large extent on public finance.** Carbon only investments (e.g., land restoration) would require a very high carbon price to cover the carbon transaction and project implementation costs. However, private sector with large ER

compensation requirements may be willing to invest in public projects that have proven their ability to deliver large amounts of carbon credits consistently over a longer time-frame.

83. **Private sector investment in NCS is driven by different objectives. Investors may require carbon credits for in- or offsetting or need the additional income from sale of carbon credits/benefit sharing to make the project investable.** Insetting, the compensation of emissions within a company's value chain, applies to investors in agricultural or forestry commodity production. Investments that generate carbon credits outside a company's value chain are of particular relevance for domestic enterprises such as Ethiopian Airlines and international corporations with large offset requirements (e.g., oil and gas, transport sectors, data warehousing). Additional income from carbon transactions or carbon benefit sharing is of interest to any commodity investor. Private sector carbon funds are a special group of investors that may partner with commodity investments and carbon only projects to acquire carbon credits for sale to third parties or investors (credit-return funds).

84. **At the moment, Ethiopia does not have a legislation on carbon rights, which constitutes a risk for any NCS investment that targets the direct generation and use of carbon credits by the investor(s).** Carbon rights of forest owners are mentioned in the national forest law but lack the detailed regulation needed for interpretation of carbon ownership and the right to transact carbon certificates or receive carbon benefits.[31] There is no law or regulation regarding the ownership of emission reductions from land-based investments outside forestry (e.g., agriculture, livestock/grasslands, wetlands).

85. **Key structures and mechanisms for carbon accounting and transactions, e.g., baselines and MRV for all land use sectors, and GHG registry, are not yet in place**.[32] Recent notable progress is recognized in the livestock sector. The establishment of MRV systems for all land use sectors and a carbon registry requires additional human and financial resources. To avoid delays in climate action, carbon project implementation by private sector should be encouraged while these structures are established and refined. Apart from the contribution to climate change mitigation, carbon project implementation by the private sector will contribute to capacity development of the local partners as well as helping to mitigate investment risks.

86. **Jurisdictional carbon accounting and transaction can ensure a harmonized approach at landscape level and reduce the risk of leakage, while project level carbon accounting and transaction enables direct control of carbon costs and income by the project developer.** Investments in sustainable agriculture or forestry that is fully nested in a well-designed jurisdictional program would be rewarded for ER without the carbon transaction costs that apply to independent carbon projects. Small investments could then benefit as much per unit of land as large ones. However, the national and regional governments do not yet have the sufficient technical capacity for baseline development and MRV for all ER categories, nor the market exposure to maximize returns from carbon transactions. ER

[31] A draft regulation including details on carbon rights is currently considered by the parliament. It was not available for the public at the time of writing this report.
[32] Baseline and MRV available for forestry: for changing land use from/to forest but not for forest remaining forest; agriculture: livestock under development.

generated at project level can be used for insetting or sold in VCM, and risks related to low performance at jurisdictional level are avoided. On the other hand, larger deductions may apply at the project level for additionality and to compensate for leakage and non-permanence risks. Economies of scale apply, i.e., carbon project development is not feasible for investments where the total amount of carbon sequestered is relatively low or if carbon accounting methodologies have to be developed from scratch.

87. **The design of the national and sub-national climate programs should seek to balance the pros and cons of jurisdictional and project level carbon project development.** Ideally, jurisdictional programs permit independent carbon project development and transaction, while offering benefit sharing to projects and investments that are not able or choose not to certify independently. In mixed approaches, the Ethiopian government can set baselines and other requirements, such as environmental and social safeguards, that must be applied by all projects. Clear rules are needed for the transition of existing projects into new jurisdictional programs. The transition of carbon projects will likely be more acceptable to investors if they retain the carbon rights.

88. **The modalities of ER quantification and benefit sharing will be decisive factors for private sector participation in the framework of jurisdictional climate programs.** The quantity of carbon benefits available for distribution to nested projects depends on the overall performance of the program. The limited experience to date, both globally and in Ethiopia, regarding the delivery of carbon credits by jurisdictional programs introduces considerable uncertainty as to if benefits can be shared and in what quantity. The allocation of carbon benefits to different actors is laid down in a program's benefit sharing mechanism/plan. In the existing jurisdictional program in Ethiopia, the OFLP, clear priority is given to communities and smaller jurisdictions, while private NCS investor are not considered as a key partner. Other key parameters that should be covered by a benefit sharing mechanism (or legislation), to inspire confidence in potential investors under the program, are the format of benefit sharing (e.g., carbon credits, financial incentives, services) and the results-based parameters used to determine the allocation of benefits.

89. **Access to land is a key barrier for private sector investment in sustainable land use and emission reductions.** NCS investments require implementation at scale. Large land holdings for commercial agriculture and forestry investments are in theory available from the Ethiopian government. However, the identification of investment ready land resources is difficult because of the limited coverage of land use plans and digital land cadaster. Investors in forestry, may be able to access land in gazetted production forests through partnerships with state forest enterprises. Reflecting the land use rights in Ethiopia (with most land belonging to smallholder and communities),investors in agricultural production will often have to work with smallholder farmers. This requires large investments in technical and organizational capacity building, for which businesses rarely have the necessary expertise and financial resources. Public co-funding, e.g., through PPP arrangements, may be required.

90. **The policy and legal framework for private sector investment has improved over the past decade in Ethiopia, but implementation capacity is lacking and gaps exist.**

- Access to finance and foreign currency is an investment barrier, especially for domestic investors. The Development Bank in Ethiopia is currently giving priority to industrialization related investments. It is therefore difficult to access long-term loans for land-based investments unless the majority of the investment is dedicated to industry investments. Similarly, access to foreign exchange, e.g., to import machinery, inputs, repatriation of profits, is heavily regulated and unpredictable.
- The investment law (2020) and regulation (2020), and the forest law (2018) stipulate investment incentives, such as exemption from duties, tax holidays, and access to finance and land. These incentives are to be specified in regulations and directives. While some of them are clearly regulated at national or regional level, for others (e.g., forestry) detailed regulation is lacking or left to the local level, increasing uncertainty and transaction costs for investors. Similar gaps exist for the applicability and amount of sector specific duties and fees (e.g., timber transport).
- Public-private partnerships could be a useful tool in large scale land restoration projects but also in commercial investments in forestry and agriculture. Public components would be, e.g., the provision of land or the organizational development of grassroots/producer organizations. However, the Public Private Partnership law (2018) is strongly oriented towards the establishment of large-scale infrastructure or services provision (energy, telecommunication), i.e., does not reflect the circumstances of land-based investments like restoration, conservation, and sustainable land management.

## 7.2. Recommendations

91. **Recommended action points to overcome the barriers listed above included the development of carbon legislation, expanding and strengthening of GHG MRV and accounting systems and the related capacities, facilitating access to land, and improving the investment environment.** The recommendations are summarized at the end of this section in Table 16.

### 7.2.1. Improving the Ethiopian legislation for carbon rights and benefits, and general investment framework

92. **Clear carbon rights and transparent investment framework will be an important basis for investment decisions of private sector actors,** not just for investors in commodity production but also for those interested in co-financing public restoration and conservation projects in exchange for carbon credits.

93. **The development of a carbon legislation that is applicable to all land use sectors should be prioritized, providing clear guidance on carbon ownership, carbon transaction rights, and right to receive carbon benefits**. All relevant land use sectors, i.e., forestry, agriculture, grassland, livestock, and ecosystem restoration and conservation should be covered by the legislation. These sectors can be treated independently, i.e., in sectoral laws and regulations, or in a crosscutting law/regulation. Details such as allocation of benefits,

indicators and parameters used, and contribution of project to MRV, may be specified in the benefit sharing mechanism of jurisdictional programs.

94. **Project level ER investments should be encouraged and enabled by designing a clear framework for the transitioning of projects into programs while national and jurisdictional institutions and mechanism are established.** The design and development of new jurisdictional climate programs and the necessary framework, including the national GHG registry and benefit sharing mechanisms will take time. In the meantime, government should specify how carbon projects will be integrated in jurisdictional programs later on, including:

- The transition period, i.e., the time from the establishment of the jurisdictional program until the project is integrated and has to stop generating carbon revenues (responsibility transferred to the jurisdiction)[33], as well as if and how project actors will be compensated for the loss of carbon transaction rights.
- The process for aligning the project baseline and jurisdictional baseline in cases where projects will continue to account and transact carbon.[34]

95. **The general investment framework should be further improved, including the harmonization of incentives, fees and duties, and ease of access to these regulations and rules, and augmenting the scope of the PPP law to include land-based investments.** The Ethiopia Investment Commission already provides a range of services to foreign investors seeking to invest in Ethiopia and is well placed to compile and communicate all relevant national and regional policies, legislation, and directives. PPP in the land use sector could be structured following, e.g., the example of the Ugandan Sawlog Production Grant Scheme initiated with support from the EU and Norway and now supported by the World Bank. The program reimburses investors after proven compliance with key performance indicators.35 Another option could be investments developed in partnership with the EIH. The EIH reinvests the earnings of national state-owned enterprises and is interested in strategic partnerships with private sector partners, providing technical know-how and expertise as well as finance.

[33] For example, the Bale Mountains Ecoregion REDD+ project, established in 2012 (see Annex 2 and Annex 5.3) was recently integrated in the OFLP and the carbon transaction rights transferred to the program level.
[34] For example, if the baseline rate of deforestation in the jurisdiction is lower than the baseline deforestation in the project region, the project would generate less emission reductions because the difference between baseline and with project deforestation (avoided deforestation) is smaller.
[35] Details of the Ugandan Sawlog Production Grant Scheme are available on the program's website: https://spgs.mwe.go.ug/

### 7.2.2. Investing in Ethiopia's carbon accounting and transaction framework

96. **The capacity of the national and regional governments to establish and manage MRV systems, prepare for third party validation/verification of jurisdictional NCS approaches, and oversee ER transaction, must be built to attract private sector investments in nested projects and jurisdictional programs.** Sound MRV and accounting is also a precondition for the World Bank to implement payment for results programs. Options to strengthening the MRV system or to change the institutional set up of the MRV entity towards operating under private sector terms should be explored. Concrete tasks are the establishment/development of:

- The national GHG registry.
- The mechanism for corresponding adjustments.
- Entities dedicated to MRV and carbon accounting.
- Program specific rules for the nesting of projects in jurisdictional or sectoral climate programs (aligning to the carbon legislation)

### 7.2.3. Facilitating access to land for forestry and agriculture investments

97. **Enabling access to land for commercial forestry and agriculture requires investments in building the capacity of the relevant regional institutions, building trust between government and private sector actors, and accelerated land use planning.**

- Part of the state managed gazetted forest land (only production forest land) could be managed in joint venture with, or leased to, qualified private investors and professional forest property managers. The state forest enterprises are increasingly open to partnerships with private sector investors, although such engagements are currently limited to investments in wood processing. One reason for the limited engagement with the private sector is the lack of capacity in regional government and state enterprises to structure and manage partnerships with the private sector. To overcome this barrier, concrete forest investment opportunities should be identified and structured, suitable private partners identified, and trust built between private investors and regional governments/state forest enterprise. A clear commitment by the regional government, including targets to engage private investors, could be combined with result-based policy lending instruments.
- Agricultural investments that require larger tracts of land (e.g., in combination with outgrowers) cannot rely on existing state-owned investments. The identification of suitable land requires detailed land use plans, including knowledge of land use rights. Hence, land use planning and cadaster development should be accelerated. Lands identified as potential investment areas must undergo careful due diligence by the government and investors to ensure compliance with social and environmental safeguards, in particular related to existing land use rights and protection of native ecosystems.

**Table 16: Recommendations**

| Topic | | Outcomes | Actors involved | Time frame |
|---|---|---|---|---|
| **Legislation** | Develop the legal framework on carbon rights:<br>‣ for all land use sectors (forestry, agriculture, grassland, livestock, conservation)<br>‣ including carbon ownership and related rights (to transact carbon or receive benefits)<br>‣ transition of existing carbon projects into jurisdictional programs<br>Define the mechanisms, modalities, and responsibilities for allocation of carbon credits and/or carbon benefit sharing to entities that have generated ER | The carbon legislation (sector specific or cross-sectoral laws or regulations) is in place and defines at minimum:<br>‣ Carbon ownership for land-based ER activities<br>‣ Carbon transaction rights<br>‣ Entitlement to receive carbon benefits and type of benefits that can be shared.<br>A regulation or directive for transitioning of carbon projects into national or jurisdictional climate programs has been developed and approved. It specifies the:<br>‣ Rights of the carbon project developer after transitioning into the jurisdictional program<br>‣ Minimum transition period<br>‣ General approach to align carbon baselines (if relevant)<br>Carbon benefit sharing mechanisms (regulation and/or program specific) are in place that specify the indicators used for carbon benefit allocation and thresholds to be met to be eligible for benefit sharing.<br>The OFLP (and possibly additional jurisdictional programs) have revised (defined) rules for nesting of projects (project crediting, allocation of ER/benefit sharing, use of common baseline, etc.).<br>The carbon legislation or benefit sharing mechanisms may also define contributions of projects to monitoring, reporting, and verification of ER. | National and corresponding regional institutions, including:<br>Ministry of Agriculture and subordinate institutions (especially forestry, livestock, land administration)<br>Ministry of Finance and Economic Cooperation<br>Regional authorities for environment, forest and climate change, e.g., Oromia Environmental Protection Authority (OEPA) | Carbon legislation for forestry: 2023<br>Across all land use sectors: 2024<br>Benefit sharing and integration of existing projects in the jurisdictional program:<br>OFLP 2023<br>New jurisdictional programs as applicable |
| | Improving the general investment framework, including:<br>A harmonization of sector specific incentives, fees, and duties applied at national, regional, and local level | Investment incentives relevant for NCS investors are specified in regulations and directives. All relevant documents and guidance are easily accessible through the Investment Commission and its regional counterparts.<br>The PPP law and regulation have been revised and are applicable to investments in the land use sector and restoration/conservation | National and regional institutions involved in land management, Ministry of Finance and Economic Cooperation | Relevant documents available at the EIC: 2023, constantly updated thereafter |

| Topic | | Outcomes | Actors involved | Time frame |
|---|---|---|---|---|
| | Improving the access to investment relevant information, especially for foreign investors<br>Augmenting the scope of the PPP law to include land-based investments | | Ethiopia Investment Commission (EIC) | PPP law: draft in 2023, approval in 2024 |
| **Carbon accounting and transaction framework** | Development of the carbon accounting and transaction framework at national and regional (jurisdictional program) levels aligned to the carbon rights legislation, including:<br>‣ Establishment of the National GHG registry<br>‣ Establishment of entities dedicated to MRV and carbon accounting at national and regional levels<br>‣ Development of sector/ER category specific rules for nesting of projects in jurisdictional (sectoral) climate programs<br>‣ Development of rules for transitioning of land-based carbon projects into national or jurisdictional climate programs | The national GHG registry is functional, i.e., transparently reflects the ER from all relevant sectors and different levels of carbon generation, as well as carbon transactions or use of ER towards the NDC (unconditional)<br>MRV system(s) at national and/or regional level:<br>‣ are operating at international standards (interim milestone: MRV system is established, service contract awarded to national service provider, MRV system established)<br>‣ are audited in regular intervals by qualified certifier<br>The OFLP (other jurisdictional program, including nested projects if applicable) has been successful validated against respective third-party standards[36]<br>The OFLP has been successful verified against respective third-party standards and ER certificates have been issued[36] | Ministry of Agriculture, esp. Ethiopia Forest Department (EFD), and Environmental Protection Authority (EPA)<br>OEPA for the OFLP<br>Supported by development partners engaged in climate relevant programs in Ethiopia | GHG registry: by 2025<br>Fully functional MRV OFLP (incl. all sectors / GHG categories specified in the program document: 2027<br>OFLP validated against a third-party standard: latest at the end of the Emission Reductions Payment Agreements (ERPA) with the WB BioCF |

[36] Currently third-party standards are available only for forestry (REDD+).

| Topic | | Outcomes | Actors involved | Time frame |
|---|---|---|---|---|
| **Access to land** | Access to land for commercial production forestry in gazetted forest land:<br>‣ Identification of forest investment opportunities for private NCS investors<br>‣ Definition of key performance indicators and benchmarks for private sector partners<br>‣ Identification of qualified and interested private sector investors | Identification of investment opportunities by the government or state forest enterprises evidenced by:<br>‣ Longlist of parcels of land for commercial forestry investments by private sector identified<br>‣ Assessment of areas against key criteria for private investments in NCS (e.g., land tenure, sensitive environments, production capacity) and selection of sites to be tendered<br>Call for investors:<br>‣ Tendering process developed (steps, responsibilities, duration, etc.)<br>‣ Tender documents developed, including key performance indicators for private sector partners<br>‣ Tender conducted and areas assigned to investors | Amhara and Oromia Regional Governments<br>Amhara Forest Enterprise<br>Oromia Forest Enterprise<br>Supported by development partners engaged in the forest sector in Ethiopia | Investment opportunity long list: 2023<br>Call for investors: 2024-2025 |
| | Access to land for agriculture and forestry outside gazetted areas:<br>‣ Accelerate land use planning and entry of land use certificates in an online cadaster to facilitate identification of land suitable for investments<br>‣ Build capacity of regional and local government for the due diligence of land investment projects considering social and environmental safeguards | Minimum requirements and indicators for large sale land-based investments have been defined, including but not limited to:<br>‣ Land tenure<br>‣ Land cover and use<br>‣ Co-benefits (socio-economic development, environmental) to be delivered by investors<br>Relevant regional authorities are able to implement due diligence assessments of potential investments against national law and are familiar with international safeguards standards<br>National and regional level authorities are able to support interested investors in the identification of investment ready land | Regional governments, esp. Bureau of Agriculture and Land administration<br>Supported by development partners engaged in sustainable land management and land certification | Indicators for land-based investment: 2025 |

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# A 1. Glossary

| | |
|---|---|
| Additionality | Emission reductions or removals from a climate change mitigation activity are additional if the mitigation activity would not have taken place in the absence of the project. |
| Carbon benefit sharing | Transfer of monetary and nonmonetary incentives to stakeholders that implemented activities that contributed to the generation of ER funded with the revenues from ER transactions. |
| Carbon credit | Tradeable certificate equivalent to one ton of carbon dioxide (CO2) or the equivalent in other GHG. |
| Carbon (ER) generation or crediting | Is the real and verified amount of GHG emissions reduced or removed from the atmosphere by an entity. Carbon generation involves not just the implementation of activities that lead to reduction or removal, but also the documentation and verification thereof. |
| Contribution claim | Emission reduction or removals resulting from an investment in a carbon project but where the investor does not claim the resulting credits for in-/offsetting or sale to third parties. |
| Corresponding adjustment | Corresponding adjustments are a tool designed to promote the integrity of emissions accounting under the Paris Agreement. The intent is to prevent countries from counting emission reduction more than once towards NDC, i.e., ER sold to other countries must be removed from the countries GHG account.<br>Following this logic, carbon credits traded by projects on the voluntary market cannot be claimed by sub-national or national programs and should be removed from the national GHG account.<br>A discussion of the merit of corresponding adjustments for credits traded on the voluntary market is available here. |
| Emission factor | Coefficient that describes the rate at which a given activity releases (or removes) GHG into the atmosphere. In the land use sector, the emission factor is determined by the ecosystem and past and existing land use (e.g., level of degradation before conversion). |
| Forest reference (emission) level | The Forest Reference Level (FRL) is a benchmark for emissions from deforestation and forest degradation and removals from sustainable management of forests and enhancement of forest carbon stocks (all REDD+ activities).<br>The Forest Reference Emission Level (FREL) is a benchmark for emissions exclusively from deforestation and forest degradation (REDD+ only).<br>FRL/FREL are based on an extrapolation of the historic emissions in the project reference region. |
| GHG registry | Database for collecting, verifying, and tracking emissions, emission reductions, and emission removals, as well as transactions of net-emission removals/reductions. |
| Insetting | Reducing the emissions of an organization by avoiding or reducing emissions or sequestering carbon within its own value chain. |
| Leakage | Displacement of economic activities that directly or indirectly cause GHG emissions to be displaced from the project area or |

| | |
|---|---|
| Additionality | Emission reductions or removals from a climate change mitigation activity are additional if the mitigation activity would not have taken place in the absence of the project. |
| | jurisdiction with GHG constraints to another area with no or less GHG constraints. |
| Natural Climate Solutions | Conservation, restoration, and improved land management actions that increase carbon storage or avoid GHG emissions. |
| Non-permanence risk | Risk that carbon removed by ARR projects is released into the atmosphere during or after the carbon project (i.e., biomass is temporarily or permanently removed). Projects certified against the VCS have to assess the risk for a period of 100 years starting at the time of verification. |
| Offsetting | Compensation of emissions by investing in carbon projects outside the organizations value chain or purchasing carbon credits from third parties. |
| Performance buffer | System implemented by jurisdictional climate programs, whereby part of the annual carbon revenue is not shared amongst the participants but placed in a buffer account. The finance in the buffer account can be used to reward well-performing participants in years of none-performance at jurisdictional level. |

# A 2. Land-based carbon projects and programs in Ethiopia

## Forest carbon projects

To date, three Ethiopian land-based climate projects have issued and sold carbon credits applying two of the most common standards in the land use sector, the Verified Carbon Standard (VCS) and the Gold Standard (GS). These projects illustrate the potential for carbon project development in Ethiopia's land use sector. At the same time, the low number of projects validated to date, indicates that substantial barriers exist for carbon project developers in Ethiopia. Other, promising projects exist, e.g., "Restoration and Conservation of Dry Afromontane Forest in the Highlands of Eastern Tigray", targeting the restoration and conservation of 30,000 hectares of degraded and deforested lands (not yet validated).

Carbon projects in the agricultural domain do not yet exist.

**ER generation in Ethiopia's land use sector**

| Project | Project developer | Carbon standard | Carbon credits | |
|---|---|---|---|---|
| | | | issued | retired |
| Bale Mountains Eco-region REDD+ Project° | OFWE and Farm Africa Ethiopia | Verified Carbon Standard (VCS)<br>Climate, Community & Biodiversity Standards (CCBS) | 9,141,291 | 45% |
| Humbo Assisted Natural Regeneration Project* | World Vision Ethiopia | Gold Standard (GS) | 104,067 | 92% |
| Sodo Forestry Project* | World Vision Australia | Gold Standard | 108,103 | 95% |

°Over 50% of credits were issued in late 2021 only. Credits not yet sold will be covered by the Emission Reduction Purchase Agreement with the WB BioCarbon Fund expected to be signed by the end of 2022.

*The projects were first certified against the Clean Development Mechanism and Carbon Fix Standard respectively. The number of credits listed here correspond to the GS registry. The total amount of credits issued may be higher.

Sources: https://registry.goldstandard.org/, https://registry.verra.org/

## Oromia Forested Landscape Program

Of the regional programs developed as part of Ethiopia's national REDD+ strategy, the Oromia Forested Landscape Program (OFLP) is the most advanced one.[37] OFLP design started in 2014. The program is managed by the Oromia Environmental Protection Authority (OEPA) with financial support from the BioCarbon Fund ISFL.

The GHG ER activities accounted for at landscape level since the beginning of the program are avoided deforestation and reforestation (WB, 2017). Recently ER from livestock was added to the program. ERs from other emission activities (e.g., agricultural land management, avoided forest degradation) can be accounted for at project level in the meantime.[38]

Three land-based carbon projects are located within the jurisdiction, the Bale Mountains Eco-region REDD+ Project, developed by the OFWE (see above), the Jama-Urji Farmers Managed Forestry Project, developed by Horn of Africa Regional Environment Center and Network[39], and REDD+ Joint Forest Management in Ilu Abba Bora Zone by OFWE. The first two projects are registered with Verra VCS.

The OFLP uses a centralized approach to nesting (see Annex 5.3). The Government of Ethiopia is planning to enter into an ERPA with the WB BioCF that covers all land-based emission reductions for a eight-year period (WB, 2019). In the ER program document two different project types are identified: those that would like to account for and sell carbon credits (including the ones listed above), and those that contribute to REDD+ but do not account for carbon independently (national programs such as the Sustainable Land Management Program, National Improved Cook Stoves Program, and Rural Electrification Program). Other programs, e.g., the Resilience Landscapes and Livelihoods Project do quantify net GHG emissions.

Once the ERPA is in place, ER transactions will be carried out at the level of the OFLP (WB, 2019), i.e., individual carbon projects can account for ERs but are not permitted to transact them. Carbon benefits will be shared according to the Benefit Sharing Plan for Disbursing Result Based Payments (OEFCCA, 2019). The benefits sharing plan does not contain provisions for alignment of the carbon accounting of the verified project located within the program area, the Bale Mountains Eco-region REDD+. The project will transition into the OFLP, i.e., is subject to the overall benefit sharing agreement and depends on the overall performance of the OFLP.

[37] Jurisdictional REDD+ programs are under development by the regional states Amhara, Benishangul Gumuz, and Gambella.
[38] Forest degradation, improved forest management, revegetation, and Soil Organic Carbon (e.g., changes from crop or grassland to other land uses) may be added to the jurisdictional and national scope later on. This is in line with the BioCF ISFL goal to account for emission reductions from all AFOLU related sources and sinks (WB, 2017).
[39] The Jama-Urji Farmers Managed Forestry Project is part of the East African Afforestation, Reforestation and Revegetation Program (EARRP). It is registered with VCS, but not validated. (https://registry.verra.org/)

**OFLP benefit sharing plan**

The cost of managing the benefit sharing plan (MRV, safeguards, grievance mechanism, and audits) and a buffer of 3% will be withheld from the total carbon revenues. The remaining net revenues are to be shared, with government receiving 20%, communities 75%, and private forest developers 5%. All beneficiaries depend to a large extent on the overall performance of the program. Carbon benefits are not-for-profit, i.e., can only be used to cover project development costs, for scaling up ER activities, and for social projects.

The benefits to be allocated to private forest developers are calculated based on the forest area established. New private sector carbon projects may have to provide additional benefits to be eligible for benefit sharing (e.g., job creation and contribution to local livelihoods, participation of women and youth).

Benefits that go to communities are allocated taking into account performance at zonal level. NGOs working with communities are not entitled to receive benefits. Benefits will be directly allocated to the communities, which can use the funding for collective activities only.

The buffer funds can be used to payout at least some benefits to well performing projects or zones in case of non-performance at jurisdictional level.

Source: OEFCCA, 2019

# A 3. Case studies – approaches to jurisdictional climate programs

## A 3.1. COMACO Landscape Management Project – a bottom-up approach to reducing emissions from diverse land-use activities

COMACO Landscape Management Project (CLMP) was a pilot project created to apply a results-based, climate-smart landscape management approach for addressing drivers of deforestation and poor farming practices. The project uses a grouped approach that permits the expansion of the project over time as well as scope of activities. While it is not a nested project, it provides an example and lessons learnt for scale to a jurisdictional program such as the Zambia Integrated Forest Landscape program in the Eastern Province.

The project's scope of activities is quite comprehensive. It includes agricultural land management (incl. agroforestry, alley cropping, reduce tillage, residue management) and REDD+ (Forest conservation and sustainable non-extractive forest use). These activities are certified using project level VCS methodologies.

COMACO, a non-profit company, is the project proponent. Grouping is done at the level of chiefdoms. The chiefdoms play an important role in community mobilization, project governance, and enforcement of bylaws, and development of governance structures at community level. According to project documentation available at Verra, the project implements agricultural activities on 45,000 ha and REDD+ on 160,000 ha, with the potential to scale up to 160,000 ha and 575,000 ha respectively.

The COMACO project was designed to be incentivized by a results-based finance model with the aim of becoming sustainable on its own over time through traditional carbon markets. The World Bank provided technical support to the setting up of the GHG ER monitoring system, methodological knowhow, and data management. The WB, through the Biocarbon Fund, committed to purchase the initial ERs (0.27 million tCO2e) worth USD1 million thereby providing a clear financial incentive to project participants. After the delivery of the agreed ERs to the World Bank, the project started selling the additional ERs in the VCM. To date, the project has issued 1.6 million tCO2e.

The project has established a coordination platform (Chipata Roundtable) for policy and strategic guidance that includes stakeholders from national and local government, private sector, and nongovernmental organizations (NGOs)

Carbon benefits are shared according to the benefit sharing plan. COMACO receives 40% and the chief's office/communities 60% of carbon payments. The benefit-sharing agreement includes clear roles and responsibilities that were agreed with all relevant actors before receiving ER payments. Revenues are distributed differently for forest conservation and sustainable agriculture.

**Benefit sharing in the CMLP**

| Forest conservation | Sustainable agriculture |
|---|---|
| ‣ 20% to the local chief's office for services, including support of conservation areas, oversight, and implementation<br>‣ 40% to communities living in the project area (managed and disbursed by COMACO)<br>‣ 40% to COMACO to cover project development costs | ‣ 5% to the chief's office<br>‣ 55% to the local multipurpose farmer cooperative for the support to and implementation of the project<br>‣ 40% to COMACO to cover project development costs |

Source: WB BioCF, 2020

The CLMP provides a good example for an alternative landscape level approach to scaling up AFOLU action that could be applied in Ethiopia, especially in situations where a broad mix of activities is required. The CLMP is accepted by local stakeholders due to its bottom-up approach, can be scaled to include additional areas and ER activities, and is not restricted by the (still) limited scope of the available methodologies for jurisdictional programs.

## A 3.2. Brazil Amazon Fund - a top-down approach to raising and deploying results-based finance for the conservation of forests

The Amazon Fund, covering the entire Amazon biome, was created in 2009 to raise donations that are distributed to the participating states based on results. The fund is currently financed largely by Norway (93.8%). Other funders are Germany (4.7%), and the Brasilian company Petrobras (<0.5%) (Lee et al., 2018).

The program initially provided ex-ante finance to projects and programs that prevent, monitor, and combat deforestation, and to encourage the promotion of conservation and the sustainable use of the Brazilian Amazon. In 2017, the program transitioned to ex-post financing scheme (Lee et al., 2018).

Donors set targets on the reduction of deforestation, with results reported in tCO2. The ERs are not verified against an independent standard as the program does not issue and sell carbon credits. Nor do donors receive carbon credits for their own use. In this sense, the Amazon Fund is an example for results-based finance outside of traditional voluntary or compliance carbon markets. The program does not restrict the development of standalone forest carbon projects in the Amazon.

Forty percent of the ER are allocated to the national government, justified by the efforts it makes to reduce deforestation emissions, measure and monitor emissions, and capitalize on and continue the operation of the Amazon Fund. The remaining 60% of ER are allocated to the nine states that comprise the legal Amazon based on a combination of remaining forest area and reduced deforestation. Using the ERs allocated, each state can collect payments for results from different potential sources of funding. While part of the

funding is used to implement sustainable agriculture or livestock management activities, any ERs resulting from these activities are not reflected in the allocation of ERs.

The Amazon Fund provides a useful model for how the Ethiopian government might raise funds at the national level to fund sub-national programs for the protection and restoration of forests, or more broadly, implementation of sustainable land use practices. The Amazon Fund example could be useful for the development of Ethiopia's Article 6 framework. Alternatively, the program can be registered through a standard such as VCS JNR or ART/TREES to access conventional carbon markets. In both cases a more elaborate accounting and reporting framework, including accounting for non-permanence will be required.

# A 4. ER mitigation potential for NCS

The ER potential per hectare can vary significantly across different NCS project types, depending, e.g., on the agroecological zone, and the type and status of vegetation at the beginning of the project. The potential ER per hectare and approximate potential adoption area for each category in Ethiopia are provided in the table below. ER in the livestock sector are quantified per unit of output (e.g., animal protein produced), i.e., a direct comparison with the other area-based categories is not possible.

**ER mitigation potential for AFOLU categories**

| AFOLU category | Example ER activities | ER potential per land unit* | Potential area | Regions with high potential |
|---|---|---|---|---|
| Afforestation, reforestation, revegetation (ARR) | ‣ Establishment of enclosures | 50-100 t CO2/ha | 14 million ha of degraded lands | Revegetation in enclosures applies to high and lowland regions |
| | ‣ Establishment of forest plantations / woodlots | 100-150 t CO2/ha | | Highland areas esp. in Amhara, Oromia and SNNP are suitable for the establishment of production forests |
| Agricultural land management (ALM) | ‣ Agroforestry<br>‣ Reduced fertilizer use and tillage<br>‣ Improved water and residue management<br>‣ Use of cover crops<br>‣ Grazing practices | Combination of measures, with agroforestry having the highest effect<br>40-90 t CO2/ha | > 15 million ha of crop land, of which about 40% (6 million ha) are affected by degradation<br>90% of crop lands are smallholder farms | Across Ethiopia, apart from arid and semi-arid areas (with very limited agriculture) |
| Improved forest management (IFM)° | ‣ Harvest deferral<br>‣ Extension of rotation age<br>‣ Low-productive to high-productive forest | 20-60 t CO2/ha | >800,000 ha woodlots<br>190,000 ha state forest plantations | Plantation and woodlots esp. in highland areas of Amhara, Oromia, SNNP, Tigray |

| AFOLU category | Example ER activities | ER potential per land unit* | Potential area | Regions with high potential |
|---|---|---|---|---|
| Reducing deforestation and forest degradation (REDD) | ‣ Reducing use of fuel wood (improved cookstoves)<br>‣ Fire management<br>‣ Avoided conversion to other land uses | Avoided degradation – avoided deforestation:<br>60-450 t CO2/ha | Area annually deforested: 85,000 ha<br>Values for forest degradation are not available | Natural forest and woodlands across Ethiopia |
| Avoided conversion of grasslands and shrublands | ‣ Avoided conversion to other land uses<br>‣ Adjustment of fire and grazing | 6-18 t CO2/ha | 7,000,000ha<br>Area annually converted not known | Bushland and wooded grasslands in the Ethiopian lowlands (< 1,900m) and semi/desert shrubland (< 400m) |
| Wetlands restoration and conservation | ‣ Rewetting drained wetlands<br>‣ Avoid conversion of wetland forest | >600 t CO2/ha^ | 2,250,000ha | Wetlands across Ethiopia, including highland riverine swamps across the central plateau, Rift Valley lakes, and lowland floodplains |
| Livestock+ (cattle, small ruminants, poultry) | ‣ Improving breeds<br>‣ Improving feed | ER per kg animal protein produced: 16-40 t CO2 | N/A | Includes mixed crop-livestock farms, urban and peri-urban smallholder farms, and commercial, farms |

*Depends on the pre-project carbon stocks in pre-project vegetation and soils, and ecosystem. EX-ACT value range for tropical dry-tropical montane climates. The project lifetime was assumed to be 20 years. The long-term average carbon stock after re/afforestation in woodlots and plantations is assumed to be reached within 10 years. Projects may have to apply deductions to reflect the risk of non-permanence and leakage, and for additionality (refer to Box 3 in section 0)

°Activities such as reduced impact logging or logged to conversion forest are not applicable in Ethiopia as planned timber utilization in natural forests is not practiced.

+Not land-based activities, i.e., not part of AFOLU.

^Based on values in the EX-ACT tool. Research on carbon content of wetlands in Ethiopia is limited (Tesfau Bekele et al., 2021).

Sources: Categories: Verra; ER potential/unit: Verra registry (# 799, 899, 1225, 1340, 1468), EX-Ante Carbon-balance Tool (EX-ACT) values for dry tropical to tropical montane climates, Unique internal database, Bateki et al. (2022); Area potential: Wolde Mekuria (2019), Gebeyanesh Zerssa et al. (2021), Demeke Asmamaw (2019), Dixon et al. (2020), EarthTrend (2003), Mengesha Asefa et al. (2020), MEFCC 2018 a & b)

# A 5. Technical notes

## A 5.1. Carbon market potential for Ethiopian landscape programs

## A 5.2. Ethiopia context, and legislative and regulatory review

## A 5.3. Nesting in large-scale jurisdictional programs

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