



Southern Highlands coffee value chain analysis in Tanzania

Value chain analyses assist in informing policy dialogue and investment operations. They help the understanding of how agricultural development fits within market dynamics. They permit an assessment of the value chains' impact on smallholders and businesses.

The European Commission has developed the methodological framework for analysis. It aims to understand to what extent the value chain allows for inclusive growth and whether it is both socially and environmentally sustainable.

The value chain context

Coffee is one of the most important crops, bringing foreign exchange to Tanzania. The country produces two types of coffee: Robusta (30%) and Arabica (70%). Despite its small share in the world market (less than 1%), the Tanzanian coffee industry has potentially a bright future because it produces a Mild Arabica coffee of Colombian origin, which is of high quality and demand. Nevertheless, Tanzania needs to stabilise the quality and improve the traceability of the commodity to reinforce net returns derived from coffee.

The European Union intervention

In line with the Tanzanian National Development Strategy and the corresponding 'Big Results Now' initiative launched in 2013 and with the EU Agenda for Change, under the 2014-2020 National Indicative Programme (NIP), the EU aims at promoting pro-poor, inclusive and sustainable growth in Tanzania.

The EU provides support to the coffee value chain (VC) through several projects: 'Agriconnect' under the 11th EDF NIP (that focuses on the Southern Highlands of Tanzania) and 'MarkUp' under the 11th EDF Regional Indicative Programme. Previously, the EU implemented STABEX interventions since 2002, with a €14m programme for Coffee Research and Technology Support for the Tanzania Coffee Research Institute (TaCRI).

The VCA4D study (and the results presented in this document) focused on the coffee production of the Southern Highlands of Tanzania (Mbeya and Songwe districts), which are of particular importance for Agriconnect, except some information given at the whole country level, mainly in the functional analysis.

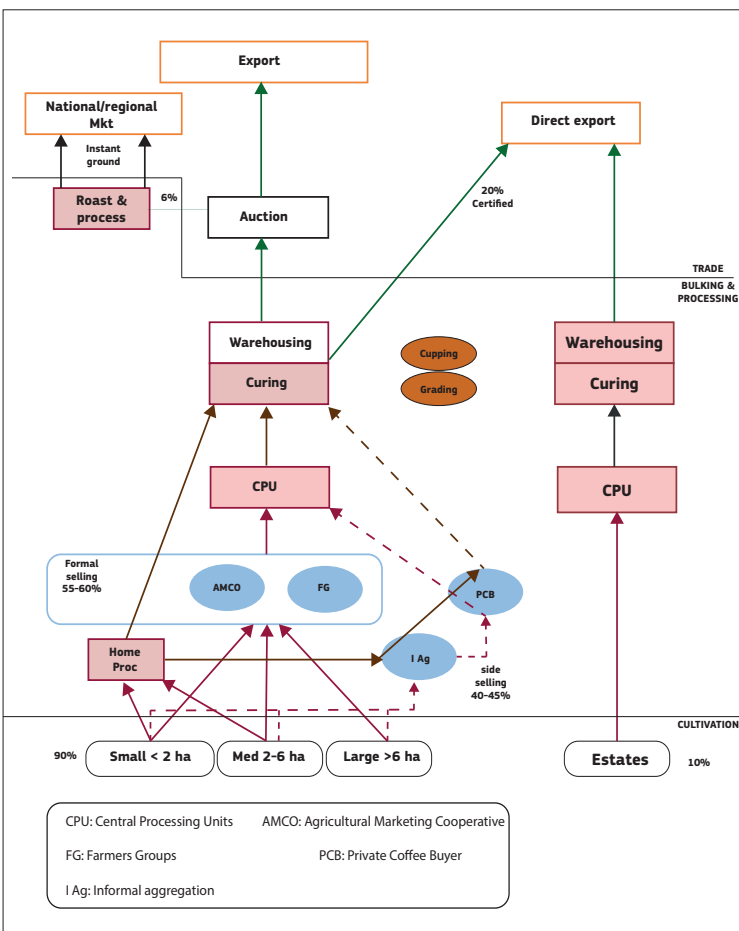


Figure 1 : Mapping of the coffee value chain in Southern Tanzania



Functional analysis

Production and yields

275,000 hectares in Tanzania are estimated to be under coffee cultivation. The national coffee production was **42,000 t in 2017/18**.

Coffee yields are highly variable over time. In past years, the average yields could reach up to 500 kg/ha for small farmers, but the trend is decreasing, due to relatively old trees, limited fertilizers applications and losses due to coffee diseases. Climate change is also an important challenge for coffee production, due to higher temperatures and more rainfall variability resulting in almost half the yields of standard years. Market prices can also cause **fluctuations**.

Around **450,000 small farmers** (between 0,5-1 ha) and **110 large estates** produce respectively 90% and 10% of the Tanzanian coffee. The production of medium and large farms is marginal.

Processing

Coffee processing starts after the harvest of ripe red cherries by handpicking. The beans are either home-processed or transported to a nearby **coffee processing unit (CPU)**, which can process cherries in bulk. Some farmers' groups have a CPU. The main operations of this processing consist in the removal of the pulp from ripe cherries, the fermentation in sinks, the washing with clean water in order to produce the best coffee, the sorting and the sun-drying on tables. Thereafter, coffee in the form of 'parchment' is sent in bags to the **curing factory** where the green coffee is obtained by milling and either sent directly to the harbour for direct export or through to the coffee auction.

Flows and exports

Coffee is mostly traded at the weekly Moshi auction, while some 30% is handled as direct trade. High quality coffee represents more than half of deliveries at the auction. Multinational companies dominate the coffee auction by operating through several subsidiary companies established with different licenses, in order to overcome the "one-license" regulation implemented by the Government. They purchase coffee beans directly from local farmers, process them and put them up for auction; they then buy their own coffee in the auction at low prices (buy-back system). In this way, they can suppress auction prices while benefiting from higher export margins, covering eventual losses and limiting the capacity of cooperatives to receive premium prices at auction.

About 6-10% of the coffee produced is sold in the local market and more than 90% is exported. Tanzania has the comparative advantage of being able to export **mild Arabica coffee (labelled as 'Kilimanjaro')** as early as July/August, ahead of the Central American suppliers when the world market is short in supply.

Governance in the VC

Private and public institutions play roles in input provision, production, processing, curing and warehouses, marketing and exporting. The Ministry of Agriculture in collaboration with the Tanzania Coffee Board (TCB) is responsible for issuing rules and guidelines to the coffee industry. The links between VC agents are characterized by **service supports** and **contractual mechanisms** that could be further developed, such as: pre-financing by private coffee traders; bulk input supply (fertilizers) to support yields; free seedlings provision to enhance coffee plants renovation (Tanzania Coffee Research Institute and District councils); certification (with premium) through curing companies; warehouse receipts systems for pre-auction advance payments; coffee auctions to support market transparency and higher prices.

The Southern Highlands

Coffee production is concentrated in **three main geographic areas** of Tanzania: in the north (Kilimanjaro, Arusha and Tarime), in the west (Kigoma and Kagera) and in the south (Mbeya, Songwe, Iringa and Ruvuma) (Figure 2). The Southern Highlands (mainly Mbeya and Songwe regions) are the main place where an increase in coffee areas and yields can be foreseen thanks to land availability and favourable climate conditions (1000-2000 mm rain/yr).

Coffee production in the **Mbeya and Songwe regions** was around 10-12,000 t in recent years, representing about a quarter of total national coffee production.

The VC in the Southern Highlands is structured along four major segments: (i) small farmers (< 2 ha); (ii) medium farmers (2-6 ha), both of them processing coffee at a local CPU and selling at the auction through regional curing plants; (iii) large farmers (6-20 ha) that have their own wet processing and sell at the auction through regional curing plants; and (iv) estates (around 40 ha) that are engaged in direct exports. There is a big diversity of practices, depending on irrigation and certification, with a bulk of **4500 certified organic farmers** (Songwe region) involved in the organic coffee initiative.

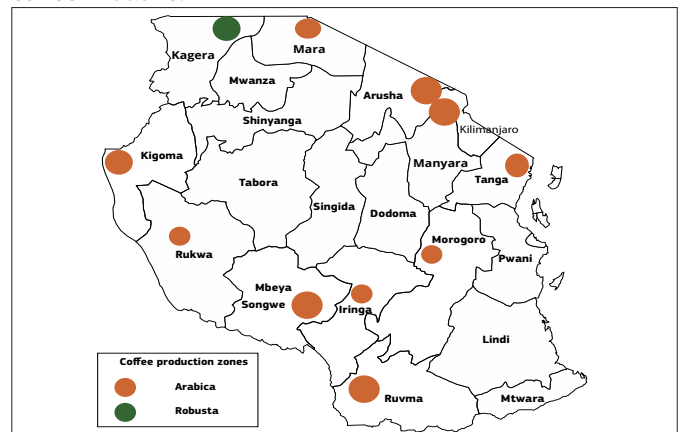


Figure 2 : Major coffee regions in Tanzania

Economic analysis

Profitability of the actors

In the conventional VC, the profit margin for the farmers and the estates in Southern Highlands varies **between 30 and 40%** depending on the size of the farm and the practices of the farmers. Small farmers with their own home-processing facility have high costs related to salaries for processing but are often able to sell coffee at a higher price, making a higher profit margin than small farmers without their own processing capacities that bear high costs for external processing. **In the organic VC**, the profit margin is estimated at **around 60%** for small farmers. The profit per year is estimated at **€ 850 for a small conventional farmer**, while at around **€ 1300** for a small **organic farmer**.

A typical exporter and a curing factory in the Southern Highlands benefit from the largest individual profits per year: respectively **€ 189,000** and **€ 163,000**.

Value added and income distribution

The total value added (direct + indirect) generated by the Southern Highlands coffee is estimated at **€ 20 million** for the **conventional coffee VC** and **€ 1 million** for the **organic coffee VC** in 2018.

Small farmers and workers gain together **62% of the incomes** generated by the VC (Figure 3).

The share of the final price at farm gate in the organic and conventional coffee VC is **91% and 89%** respectively, indicating that small farmers generate a substantial part of the coffee economic value.

Macroeconomic perspective of the coffee VC

The Southern Highlands coffee VC is **well integrated in the national economy with a ratio of 71%** meaning that the production of 100 € of coffee generates 71 € of direct and indirect incomes for domestic actors.

Its **contribution to the balance of trade** is positive with an amount of **€ 23 million**: exports of coffee coming from the Southern Highlands are higher than the imports of goods and services used to produce, process and sell it. However, at the national level, the share of coffee in exports is gradually declining and imports of fertilizers, machinery and packaging bags tend to reduce the net generation of foreign exchange.

The regional VC is viable within the global economy (Domestic Cost Ratio is 0.15 and Nominal Protection Coefficient is 0.80) generating positive gains for the national economy.

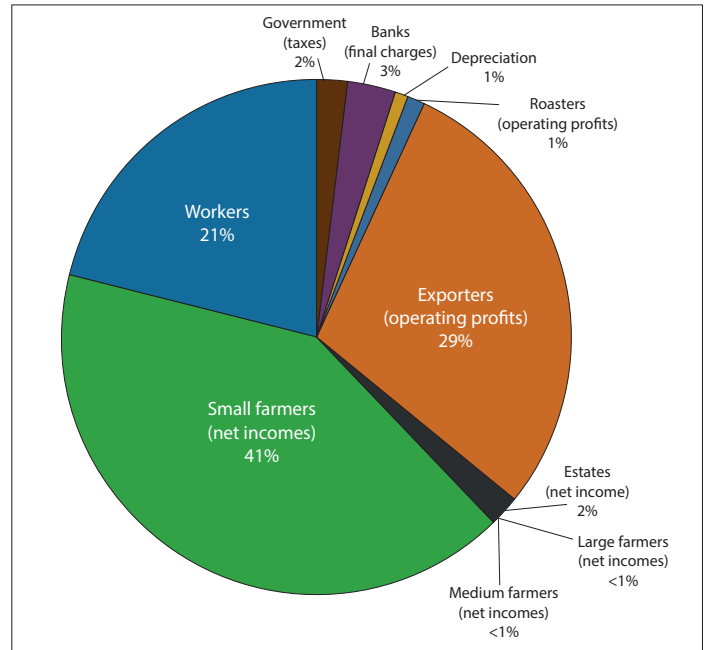


Figure 3: Direct value added distribution in the Southern Highlands

WHAT IS THE CONTRIBUTION OF THE VALUE CHAIN TO ECONOMIC GROWTH?

Representing 0.7% of the regional GDP, coffee from the Southern Highlands is not quite the backbone of the regional economy. Nevertheless, the profits for the different types of farmers are higher than 30%, and coffee is often the only cash crop that provides funds to support better education, investments in the farms and a degree of upward social mobility to households.

At the national level, while accounting for just 3.5% of Tanzania's total exports, the impact on the balance of trade is positive. Moreover, as the value chain is competitive in the international economy, export opportunities to premium markets (Japan) and to certified outlets (organic, voluntary labels) may offer prospects for increasing value-added generation.

IS THIS ECONOMIC GROWTH INCLUSIVE?

At the national level, the largest share of coffee is produced by small farmers (90%). Around two thirds of the direct value generated by the coffee coming from the Southern Highlands are incomes for small farmers (41%) and workers (21%). However, even if the profit rates are still high for small farmers (higher than 30%), input costs are rising for disease control, fertilization and irrigation requirements (linked to an increasingly erratic climate). Organic farming generates higher profits due to the lower purchased input costs and higher prices of selling, despite the lower volume of coffee production at farm. Nevertheless, improving yields and labour productivity could be more effective than certification. The value chain generates many jobs, approximately 2,7 million working days per year, corresponding to around 10,000 full time jobs.

Social Analysis

	Major issues in the Southern Highlands
Working Conditions	<ul style="list-style-type: none"> Tanzanian laws reflect international labour conventions and allow for workers to form and join unions, bargain collectively, and conduct strikes. The VC provides opportunities for local employment and the majority of the labour force is employed on a casual or informal basis.
Land and Water Rights	<ul style="list-style-type: none"> No explicit reference to VGGT among the coffee VC companies and institutions visited but this is likely to change in future as the level of awareness grows (a two-day seminar was held in Dar-es-Salaam in November 2017 by the FAO concerning the VGGT). The Government is encouraging all farms to be registered in order to obtain an official certificate of ownership or lease. However, it is estimated that 95% of all farms in the Songwe and Mbeya Regions are still unregistered. National laws provide for and recognize the equal rights to land. However, in practice, there have been considerable disputes between villages, districts and national administrative authorities. The study found no evidence of issues in Mbeya and Songwe.
Gender Equality	<ul style="list-style-type: none"> Women provide the majority of labour capacity during production, either working on their household farm and/or as labourers on other farms and estates. Few women legally own their coffee farms. There are women in farmers groups, often inheriting their position from their husbands. However, coffee is still considered a man crop, and it is men who largely control its marketing and revenues.
Food and Nutrition Security	<ul style="list-style-type: none"> The income from coffee production has the potential to improve access to food in the local market depending on the dynamics of household finance. Small farmers in Songwe and Mbeya are in a better position to meet their household food needs, than in other areas of the country.
Social Capital	<ul style="list-style-type: none"> Group membership is important for small farmers allowing access to markets, either through direct sales to private buyers or through the auction. Farmers have no influence over the price they can get at auction, beside the ability to differentiate between better or poorer quality coffee.
Living Conditions	<ul style="list-style-type: none"> Coffee income benefits the local economy as a whole and, at small farms level, is often invested in farm improvements, housing and children's education; facilitates access to credit; enables savings and acts as a safety net against food insecurity and health care needs.

IS THE VALUE CHAIN SOCIALLY SUSTAINABLE?

The coffee value chain allows small farmers of the Southern Highlands of Tanzania to have good living conditions, due to expenditures on education, improved farming practices and other assets including housing and transport. Nevertheless, small farmers face challenges managing their household budget over time and are often forced to trade-off between different priorities. Better access to savings and loan facilities, along with building their capacity to budget and work together, will have a positive impact on farm productivity and food security.

For workers, most of the paid work is done on an informal basis. Tanzanian legislation is evolving positively in the key areas of labour and land tenure, although there are challenges in implementation. Women are visible in farmers' organizations and decision-making and achieve a degree of financial independence. However, they are disadvantaged in terms of land tenure and control over cash and assets.

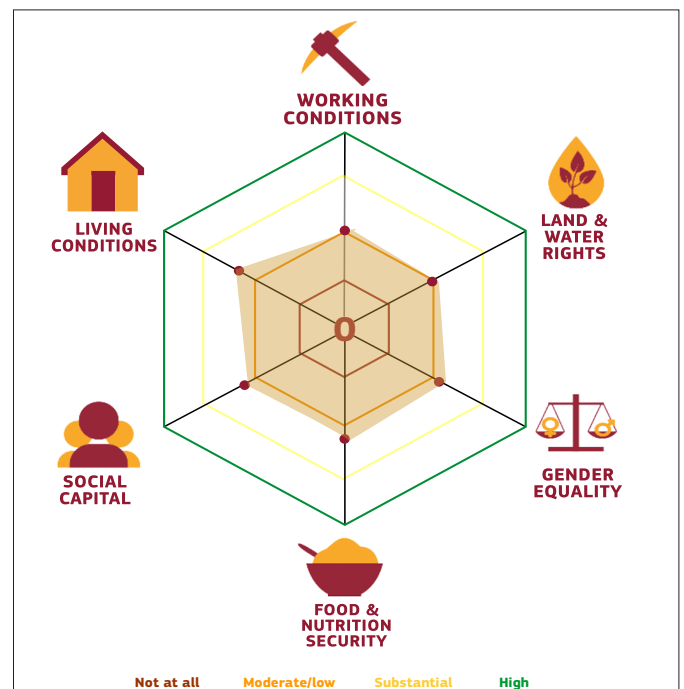


Figure 4: Social profile

Environmental analysis

The environmental impacts of the Southern Highlands export coffee VC on the three areas of protection inside the boundaries of the country can be summarised as follows:

Resource depletion: the impacts are largely determined by the cultivation phase.

The impact of estates is higher than that of the small farms. The small farms with irrigation have the lowest impacts due to the high production yield (around 1850kg/ha) combined with low use of mineral fertilisers. The impact of the large farms is higher than those of the small farms due to their high amounts of insecticides.

Ecosystem quality: the impacts are influenced by the yield, the land use and the agrochemicals use.

Small farms with irrigation show the lowest impacts on ecosystem quality due to the low level of mineral fertilisers. Large farms have the lowest impact after the small farms with irrigation because of their higher yield.

Human health: the impacts are inversely proportional to the yield in comparable production systems.

The impacts on human health of small farms are much lower than the impacts of estates for the following reasons: i) small farmers use in general less agrochemicals than estates, ii) yields in estates are not high enough to compensate the negative impacts of higher amounts of herbicides.

The impact of the large farms which combine low amounts of mineral fertilisers with high amounts of manure are lower compared to those of the estates where the use of mineral agrochemicals is higher.

IS THE VALUE CHAIN ENVIRONMENTALLY SUSTAINABLE?

The environmental performance of the production systems is more correlated with the agricultural practices and their associated yields than with the size of the farm.

Coffee from small farms with irrigation and limited use of mineral fertilizers combined with organic fertilizers is the most sustainable production system. The environmental sustainability in estates, medium and large farms could be enhanced by improving the productivity and replacing mineral agrochemicals by organic fertilizers. The use of manual weeding could also help reducing the frequency of herbicides which are the main cause to human health impact.

Shifting from conventional wet processing to eco-pulping could considerably reduce also the impact of the coffee VC on resource depletion and human health.

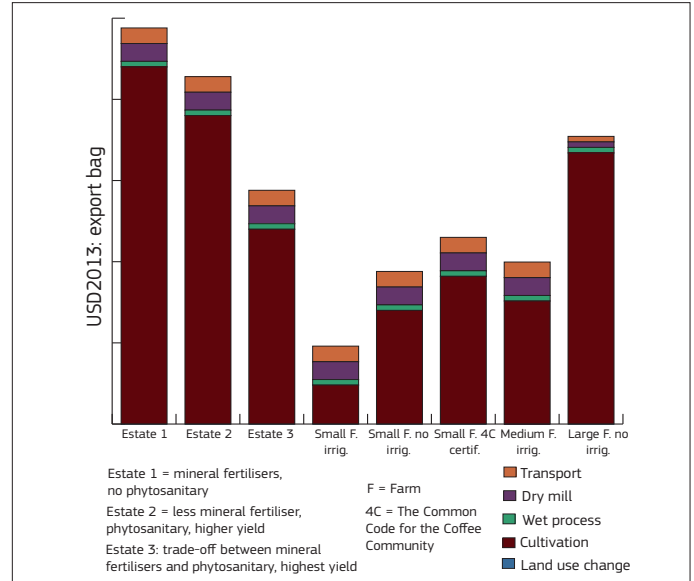


Figure 4: Impact on resource depletion

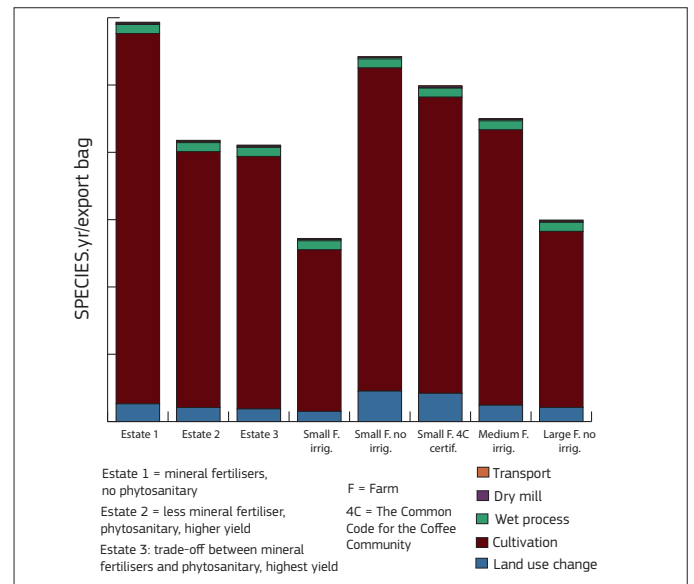


Figure 5: Impact on ecosystem quality

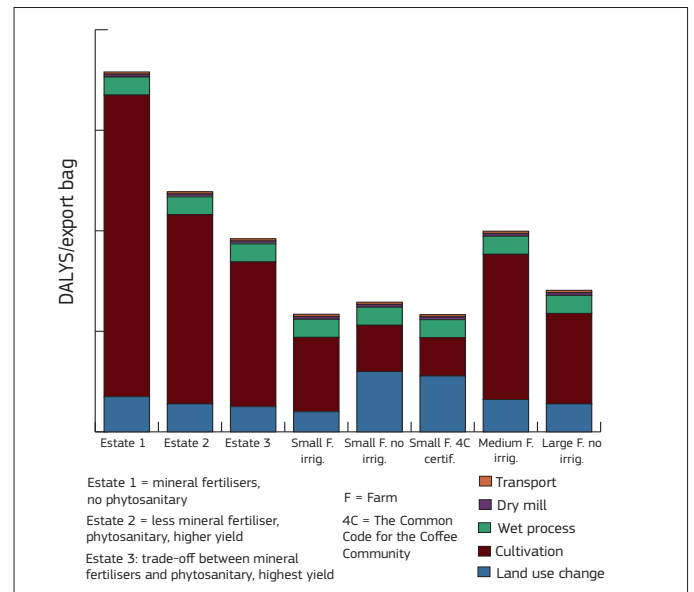


Figure 6: Impact on human health

Conclusions

Constraints and risks

Low coffee yields: in the Southern Highlands of Tanzania, most of the coffee development is based on extensive growth (area expansion), whereas coffee yields are still very low (and far below their potential) and have not substantially increased during the last decades.

Climate change: some coffee renovation has taken place with more disease resistant and drought tolerant varieties, but rising temperatures and uncertain rainfall patterns related to climate change threaten the coffee development.

Market uncertainty: market and prices fluctuations do not favour investments towards coffee upgrading.

Main findings

Coffee production is important for many small farmers, and temporary wage workers, being a critical **source of cash income**. This income is key for household expenditures. However, farmers that are semi-specialized in coffee and get better incomes are more **vulnerable to price changes and erratic weather events**.

Whereas **women** are involved in the production and harvesting, coffee trade is usually controlled by men. Women's access to finance and banking is also constrained.

Coffee production requires a large number of **support services** that enable production, processing and trade. Seedlings for improved varieties have become available, but the availability of suitable formulas of fertilizers (from local agro dealer shops), access to credit and/or financial services to enable input purchase, and technical assistance and extension services, are scarcely available and thus limit the coffee production.

Small farmers with irrigation have relatively **lower impacts on the environment** because of their high levels of yield

combined with low levels of mineral fertilizers and the absence of herbicides/fungicides/pesticides.

Recommendations

Coffee yields and labour productivity should be improved for strengthening the economic viability and attractiveness of coffee production. Besides technical improvements, there is a need for economic incentives for increasing yields and for farmers' to attend trainings on good agricultural practices.

Enhancing the quality of coffee is also central. Stable relations between local producers' organizations and coffee curing companies deserve to be strengthened, preferably through suitable financial mechanisms to pre-finance input purchase and harvesting costs.

Coffee is marketed through a diversity of markets outlets. Strategies for improving market efficiency should be based on shorter chains and more transparent contracts.

The **coffee auction should be voluntary**, to reduce the costs of vertically integrated exporters and to enhance cross-border trade.

The Tanzanian Coffee Board should disseminate prices and other information and monitor the progress of the auctions and other coffee statistics. The roles of the Board and of the Ministry ought to be clearly defined.

Governance arrangements are also crucial for the improvement of the performance of the coffee VC. Public agencies are critical for infrastructure provision, whereas there is a broad experience linking input and output markets through voluntary cooperative organizations. Moreover, the large heterogeneity of the farms in the VC should be further considered by policies.

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Agrinatura (<http://agrinatura-eu.eu>) is the European Alliance of Universities and Research Centers involved in agricultural research and capacity building for development.

The information and knowledge produced through the value chain studies are intended to support **the Delegations of the European Union and their partners** in improving policy dialogue, investing in value chains and better understanding the changes linked to their actions. VCA4D uses a systematic methodological framework for analysing value chains in agriculture, livestock, fishery, aquaculture and agroforestry. More information including reports and communication material can be found at: <https://europa.eu/capacity4dev/value-chain-analysis-for-development-vca4d->

This document is based on the report "Southern Highlands coffee value chain analysis in Tanzania" 2018, by Ruerd Ruben, Catherine Allen, Fayçal Boureima, David Mhando and Youri Dijkhoorn. Only the original report binds the authors.

