

Value chain analysis of cotton in Cameroon

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 a standardised 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.

Under the 11th (EDF), the EU is contributing to improve the infrastructures that facilitate the commercialisation of cash crops, including cotton. Moreover, it currently invests in the action 'Accompagnement des mutations du Bassin Cotonnier du Cameroun' (ABC) in order to improve the socio-economic situation of the population while also preserving the environment. Finally, the EU is developing a new sectoral budget support programme (€50 million), also focussing on cotton.



The value chain context

In a context of strong demographic growth, persistent insecurity and growing conflicts between farmers and transhumant livestock farmers, cotton is of major economic importance in the northern part of the country, the poorest region. Cameroon is the fifth largest exporter of cotton fibre in Africa, and 12th internationally. Cotton provides income for 2 million people (around 30% of the rural population), thus contributing, together with cereal crops grown in rotation, to food security.

The European Union intervention

Considered a promising sector by the 'Programme National d'Investissement Agricole (PNIA)' and the 'Stratégie de Développement du Secteur Rural' (SDSR), cotton is also part of the Cameroon Industrialisation Master Plan and Sustainable Development Strategy. The European Union (EU) supports this national policy which sets a production target of 400,000 t of seed cotton (SC) by 2022.

Since 2011 the EU has funded several programmes under the 'Programme d'Appui à l'amélioration de la Productivité Agricole' (PAPA), which included a component for 'l'Appui à la Diversification en Zone Cotonnaire' (PAPA/ADZC) in light of securing producers' income, increasing supply to the market and strengthening professional organisations.

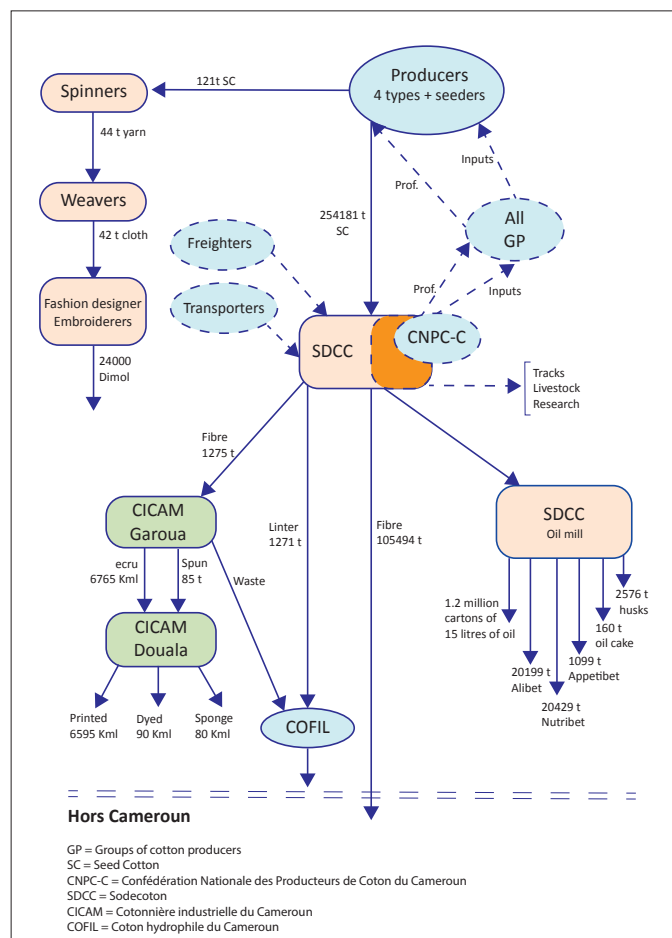


Figure 1 : Flow chart of the cotton value chain in Cameroon

Functional analysis

Seed cotton production

Production is located in the **North and Far North** regions of the country, where it involves 30-40% of households. The strong land pressure in the Far North region has led to a migratory movement towards the North region and the subsequent overflow of cotton production to several protected areas known as 'Zones d'intérêt cynégétique (ZIC).

The yield of seed cotton is the highest of Francophone Africa (almost 1,400kg/ha). **Producers differ according to the size of their cotton production area** (Table 1).

The VC experienced a sharp drop in production between 2004 and 2010, after opportunistic producers abandoned it following the default of loan repayments. The stabilisation of the input credit system allowed for the recovery of production so that in 2014-2015 it reached the same level as the record year of production for the country, 2004-5. Such a recovery was however the cause of a serious financial crisis. The VC was not able to process the whole production into ginned cotton in a satisfactory way, because of **insufficient industrial and transport capacities**.

A recovery plan was implemented in 2017 to increase production with the upgrading of the ginning and crushing capacities as well as the means of transport for the evacuation of the SC. This plan is a success in terms of evolution of SC production, as it allowed a production of 254,181 t of SC in 2017-18 on an area of 182,610 ha for 107,618 t of cotton-fibre (CF). However, without adjusting industrial capacities and given the objective of further increasing production, there is a great risk of seeing the VC subjected to a new financial crisis but of greater magnitude.

Campaign 2017-18	Coton <1 ha	1-5 ha	5-10 ha	>10 ha	Total
Number of producers	106 981	37 848	6 104	1 679	155 162
% producers/ total	70	25	4	1	100
% cotton/farm area	26	40	58	58	39
Age of the farm head	41	43	45	48	43
Number of wives	1,2	1,6	2,5	3,9	1,7
Number of children	5,1	7,2	11,2	16,7	7,4
Number of oxen	0,7	1,5	2,8	3,9	1,5

Table 1: Types of producers

A highly integrated value chain

The main actors in the VC are **Sodecoton (SDCC)**, **la Confédération Nationale des Producteurs de Coton du Cameroun (CNPC-C)**, producer groups (PG), producers, **la Cotonnière Industrielle du Cameroun (CICAM)** and the

artisanal tailors of gandoura. Other actors supply services to the SDCC (Figure 1).

The main functions of the **SDCC** consists of (i) supporting the PG in the production and commercialisation of seed cotton, (ii) the ginning and sale of the CF and the crushing of seed cotton, (iii) the commercialisation of oil (Diamoor) and by-products such as oilcake and livestock feed.

For the past decade, the SDCC (59% State owned) has also been performing public service missions such as supporting livestock, maintaining rural roads, supporting research or the professionalisation of PG. The financial compensation for by the State is partial and often late.

The CNPC-C is the umbrella entity overseeing the regional confederations, covering the PG unions at the village level. It cooperates with the SDCC for the acquisition and management of inputs and equipment, and the professionalisation of the PG. The two entities co-chair the 'price-risk management mechanism' by which the purchase price to producers is negotiated in advance and the operations of the smoothing fund (established to reduce the effects of decrease in the world price) are decided.

Operating mechanisms of the inputs fund

The SDCC supplies an **inputs fund** to produce seeds through seed farmers who benefit from a purchase premium, and by this way provide seeds free of charge to other producers. The individualisation of an 'inputs fund' in SDCC's accounts is used as a guarantee for the orders placed by the CNPC-C, while establishing a cash flow reserve for the SDCC.

Inputs (mainly imported) are acquired by the CNPC-C and distributed by the SDCC. It is the same for agricultural material locally bought.

Inputs are distributed to producers on credit by the PG.

A certain level of productivity and the absence of arrears are the eligibility criteria for inputs credit. The producers do not benefit from input subsidies and face transport costs linked to their isolation.

Fibre transformation

The CICAM, founded in 1965, is the only organization carrying out the industrial processing of the cotton fibre in the country, for a volume of between 1,000 and 2,000 t per year. Factory by-products resulting from the ginning and spinning processes is simply cleaned for export by the company Coton hydrophile du Cameroun (COFIL).

In rural areas, there is a cotton-based textile craft industry making boubou gandoura, present in around a hundred villages in the cotton areas with some 24,000 people involved.

Economic analysis

Profitability

The agricultural activities of the VC are economically viable, as they generated a positive net operating profit of CFAF 32.7 billion (€49.8 million) for the 2017-18 campaign.

The SDCC's net operating profit is improving. However, the viability of its activities is weakened by the difficulties of selling oilcake. Artisanal gandoura production is profitable, with a net operating profit of CFAF 2.8 billion (€ 4.2 million), it is also viable as it doesn't require capital nor expensive inputs.

Effects of the value chain on the national economy

With a **total value added (VA) of CFAF 96 billion (€146 million)** in 2017, the VC accounts for **0.6% of the national GDP** and **4.3% to agriculture, fishing and forestry GDP**. Direct actors' contribution to the total VA is 80.7%, the producers alone contributing with 38.4% (Figure 2). Goods and services providers, PG and the CNPC-C contribute 19.3% of the total VA (creation of indirect VA).

The CFAF 106 billion (€ 162 million) of CF exports represents 16.8% of agricultural exports. After deduction of input imports, the **net contribution to the balance of trade is CFAF 51 billion (€78 million)**.

Taxes accounted for CFAF 9.4 billion (€ 14 million), or around 10% of the total VA (Figure 3). These taxes are net of input subsidies of which the CNPC-C is the sole beneficiary, for a modest amount. The SDCC accounted for 67% of total tax contribution and producers for 16.8%, through the inputs used. The export tax represents approximately 20% of the taxes paid by the SDCC.

Jobs

Jobs related to the VC mainly benefit stakeholders in rural areas. The 1,545 active PG pay, for their functioning, about 6,780 people, they give premiums to 10,815 people for their roles in the PG and give a compensation to at least 9,270 people, including youth and women, for seasonal commercial activities. At the SDCC, the number of permanent employees was 1,960 in 2017, with a seasonal workforce of 1,300 to 1,600 people.

International viability

The cotton VC in Cameroon would be more viable in the international environment if it lifted the industrial constraints on ginning. The **nominal protection coefficient is estimated at 0.9** (value showing a market price in the country slightly lower than the international price and a lack of protection), this means that the incomes are lower than what they could be internationally. However, this indicator has little relevance because of the **subsidies paid in the largest producing countries** (particularly the USA). The same applies to the domestic resource cost for areas without the possibility of alternative productions.

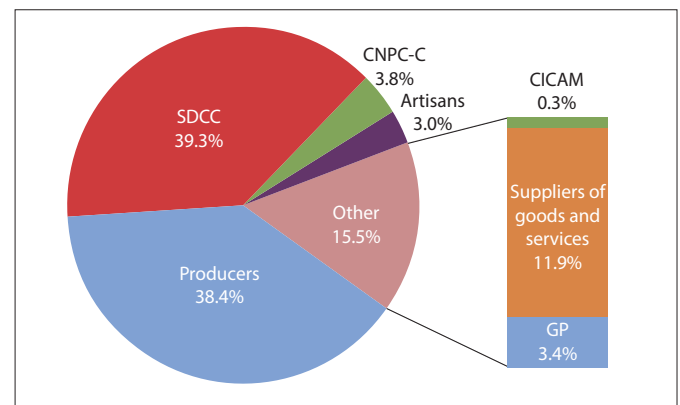


Figure 2: Contribution of actors to the creation of total value added

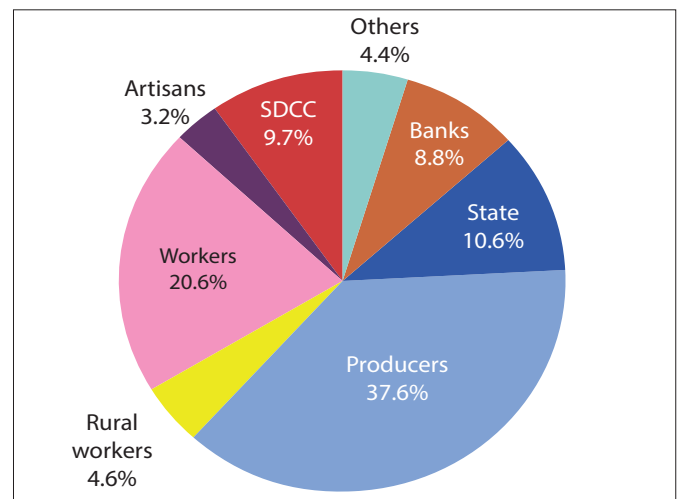


Figure 3: Distribution of total value added

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

The cotton VC makes a significant contribution to economic growth, public finances and the balance of trade of Cameroon. The activities are profitable for all agents, except for CICAM. On average, cotton provides producers with income that corresponds to almost six months of the Interprofessional Guaranteed Minimum Wage. The cash receipts of producers' groups allow them to conduct actions with socio-economic impact. The profitability of crushing seed cotton by the SDCC is hampered by the difficulties in disposing of the oil cake in domestic markets, where cottonseed oil has won its place. The sustainability of the activities of the SDCC depends on the upgrading of industrial and transport capacities for ginning, which is in itself a condition for the sustainability of the activities of the other VC actors.

Social analysis

The following graph and table provide a picture of the main social consequences of VC activities in 6 strategic domains.

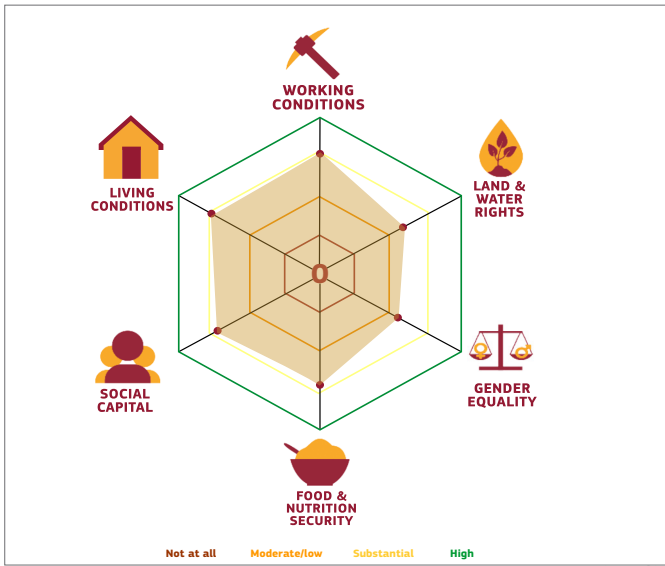


Figure 4: Social profile

IS THIS ECONOMIC GROWTH INCLUSIVE?

Producers (the majority being small, <1ha), receive around 62% of the income distributed. A weakness of the VC is the very poor level of textile processing, despite a very large factory in Garoua.

Four major elements of governance impact the degree of inclusiveness and the income of producers and of the SDCC. The input credit system (i) and the price risk management system, guaranteeing prices across the countries and protecting the producers against the cotton world price fluctuations (ii), are positive factors. The methods for setting input prices (iii) are somewhat disadvantageous to producers. The application of an export tax paid by the SDCC (iv) appears debatable.

IS THIS VALUE CHAIN SOCIALLY SUSTAINABLE?

The cotton VC has achieved praiseworthy social results in Cameroon and it is difficult to imagine the Far North without its presence. It brings income to actors, promotes crops in rotation, facilitates the organisation in producers groups and improves food security.

The domains 'working conditions', 'living conditions' and 'food and nutrition security' suggest favourable situations. The situations in the 'land and water rights', and 'gender equality' domains remain acceptable. However, these achievements remain fragile.

The VC decision makers (SDCC, CNPC-C and Ministries involved) are facing the challenges linked to demographic growth, ecological degradation, poverty, long-term intensification in a semi-arid region, and the coordination of different public and cooperation actions. Reforms to the social structure are necessary to improve the rights and conditions for women and smallholders or to manage the coexistence between crop and livestock farmers. This exceeds the current capacities of action of the SDCC.

Working conditions	<ul style="list-style-type: none"> • Low wages for work in comparison to other urban sectors • Risk of child labour during the harvest if there is a shortage of workers.
Land and water rights	<ul style="list-style-type: none"> • Loss of soil fertility contributing to extend the agricultural surface and to migration, accentuating the risks of conflicts with transhumant livestock farming and the cultivation of ZICs. • Increase of conflicts between crop farmers and herders in the absence of operational mechanisms of conflict governance and mitigation, absence of the State in villages and in the new communes of the Far North. • Due to the lack of land, difficulty for the poorest families to increase their area of cotton and risk of smallholder farmers being replaced by larger ones (>10 ha of cotton). • Land extension through the rental of land unfavourable to intensification and to soil fertility management.
Gender equality	<ul style="list-style-type: none"> • Marginalisation of women in the VC despite their efficiency. • Increased penalisation of women in medium and large farms: the more land men have, the harder it is for women to follow their own economic plans. • Tendency to expand cotton farms without reforming social structures including the new rights of women.
Food and nutrition security	<ul style="list-style-type: none"> • Favourable impact of cotton VC on food security but which can be influenced by excessive specialisation of producers on cotton to the detriment of food crops. • Food insecurity for the most vulnerable cotton producers forced by late payments to sell off cereals during the harvest period.
Social capital	<ul style="list-style-type: none"> • More than 2,000 PG constitute the most visible social capital, especially at village level. • Social capital is significantly strengthened through the structuring of the CNPC-C and the three functions of the SDCC. But it risks erosion if a specialisation cotton happens. • Difference between the large producers that are not in a PG and the smaller ones who still depend on the village community.
Living conditions	<ul style="list-style-type: none"> • The SDCC fills in for the State in several tasks essential for social development in the Far North. • Privileged situation of cotton growers due to economic actions and social investments of PG. Improvement of the standard of living in the production areas. • Positive and important contribution of the VC in the areas of health, education, training and opening up of the territory.

Environmental analysis

Impacts by area of protection

In the area of **human health**, 51% of the impact of the supply of 1 bale of cotton for export (until the ports of Douala and Kribi) is due to climate change. The use of pesticides also has harmful effects on human health (poisoning).

In the area of **ecosystem quality**, 87% of the impact is caused by soil consumption associated with the production of seed cotton in the field.

More than 99% of **resource depletion** is due to the consumption of fossil fuels for transport throughout the VC, from the cotton farming to the supply of CF bales for export.

Impacts at each step of the value chain

Given the low level of cotton processing, **the main environmental impacts** for the production of a cotton bale within the country (before export) are **concentrated in the phases of production at the field and transport**. Seed cotton production is responsible for 68% of the effects on human health, for 96% of the degradation of ecosystem quality and for 17% of the resources depletion.

The **production of CF bales** (from field production to ginning) contributes more than 95% to the environmental impact. **Grinding to produce oil** adds 2-5% to the impact of the VC. The environmental impact of the **production of linter and livestock feed** is insignificant (<1%).

Impacts according to the production system

The differences in environmental impact per kg of seed cotton are small between the different production systems. However, **smaller production systems (<1 ha) tend to be more eco-efficient** (less impact) because, despite lower yields, farmers use significantly fewer inputs. Overall, the eco-efficiency of production in the North is slightly higher than that in the Far North, as seed cotton yields are on average higher.

The fact that the production systems with a size of 5-10 ha offer higher yields but without showing greater eco-efficiency per kg of seed cotton, indicates **that it is unlikely that this can be improved by intensifying production**. In the case of intensification, the quantity of inputs applied would reinforce local environmental effects, with risks of degradation of the soil and of natural and semi-natural ecosystems.

Biodiversity and population growth

Expanding cultivation areas to increase production volumes is also not a sustainable solution. Inward expansion (to areas already cultivated) would be detrimental to food security and social sustainability, because less food could be grown for

human consumption.

An expansion into new areas for cultivation could also damage biodiversity because 45% of the North region is currently classified as area intended for conservation (national parks) or for tourist hunting.

Lower fertility and organic farming

Soil fertility is declining in the Far North. **Organic cotton is a response to decline in soil fertility** in the region and to the need of small farmers. Organic cotton is interesting for small producers (<5 ha) as it would reduce the cost of fertiliser and pesticides (~75% of cotton credit). It could potentially be of interest to at least 20,000 farmers, for an annual production of 10,000 tonnes of seed cotton.

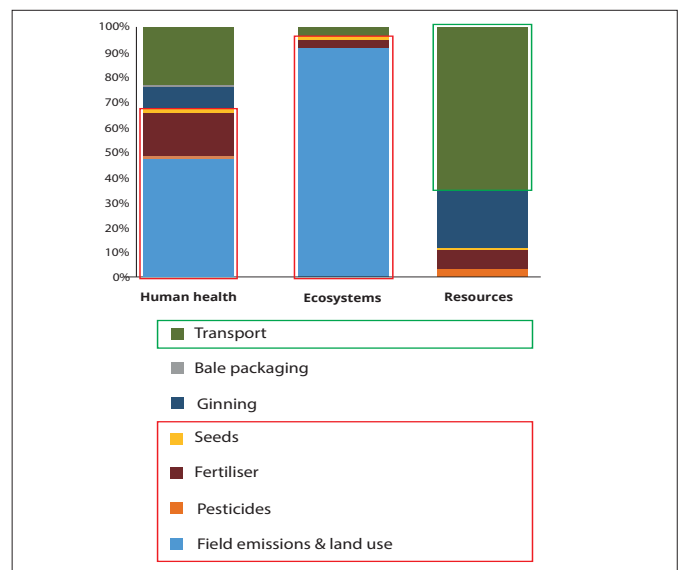


Figure 5: Contribution to impact of 1 CF bale by step of the life cycle (framed in red: the production of seed cotton)

IS THE VALUE CHAIN ENVIRONMENTALLY SUSTAINABLE?

The production and transport phases cause the greatest environmental damage.

Intensifying production to meet the policy targets in terms of production growth would be a concern of environmental sustainability to be addressed because it would increase the risks of soil and ecosystem degradation. Spatial expansion to increase production volumes is also not a sustainable solution as it may be done at the expense of food crops or encroach upon biodiversity conservation areas.

In order to ensure the long-term sustainability of cotton farming, the effective preservation of soil fertility is essential, which necessitates a more efficient use of organic fertiliser and the need to adapt the intensity of production to the quality of the soil.

Organic cotton can provide a solution to soil erosion for small farms.

Conclusions

Main findings

The economic development and the management of rural lands in the north of Cameroon is largely determined by the cotton VC in a context of strong demographic dynamism, relative abandonment by the central State, limited operational capacity of the communes and dominance of the lamidats (traditional Fulani Muslim chiefdoms) in local operations.

Cotton is profitable for farmers, even if the majority of them produce on less than a hectare. Production has been on the rise for the past several years thanks to a remarkable partnership between the Sodocoton, CNPC-C and the PG, without negative indications for food security at the farms concerned.

While carrying out public service missions on behalf of the government of Cameroon (in particular, maintaining rural roads and supporting livestock farming), the SDCC has restored profits in its 'cotton' business. This return to a positive financial situation remains fragile, considering the state of transport and processing means and infrastructure, as well as the inadequate sale of oilcake.

In a situation of persistent lack of capacity relating to transport and industrial transformation and insecurity of the energy supply, the prospect of continuous increase in production is a risk of colossal financial deficit for the SDCC which has the obligation to buy all seed cotton from producers. Such a deficit, if it occurs, will cause a great disruption in the functioning of the VC.

On the level of farmers, the planned increase in production is based on the continued expansion of farms in a context of decreasing soils fertility. Problems related to land or the exploitation of the space add a threat to social stability and order. In the context of high demographic growth rates, these problems are raised in terms of the availability of land in the Far North, the increased farming of land in biodiversity conservation areas in the North, and the increasing difficulty of access to land for the masses of 'small' farmers (70% of farmers overall) across all cotton-growing regions.

Recommandations

In the short term, this would consist of:

- Bringing the SDCC's processing, transportation, and energy supply capacities up to standard;
- Adapting production support to the needs of both the small and the large cotton producers;
- Strengthen the PG's financial resources to increase the socio-economic impact of their actions;
- Establishing new partnerships to guarantee outlets for oilcake from crushed seed cotton;
- Strengthening research for new, more productive technical solutions with a reduced use of chemical inputs;
- Increasing skills in the use of IT tools at the SDCC to facilitate the monitoring of the actions carried out.

Within 5 to 10 years, this would consist of:

- Working to diversify agricultural production by continuing the actions already implemented (as in the case of soy) or by launching new crops, in order to establish new VC to complete the income sources for the population;
- Expanding the scope of action of the partnership between the SDCC, the CNPC-C and PG to include the issue of land and the occupancy of space with respect to their availability, access, and maintenance of fertility under the different land use regimes (in particular that of land rental). The involvement of both traditional (lamidates) and modern (communes) authorities is crucial; it demands an innovating effort so as to establish a new partnership framework transcending the current tripartite dimension, and a real willingness would be required to provide the necessary means and capacities.

The results of the study fuelled the Cotton Investors Forum supported by the European Investment Bank in April 2019.

Value Chain Analysis for Development (VCA4D) is a tool funded by the European Commission / DEVCO and is implemented in partnership with Agrinatura.

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 "Cotton Value Chain Analysis in Cameroon" 2019, by Michel Fok (CIRAD), Matthias Meier (FIBL), Gian Nicolay (FIBL), Oumarou Balarabe (CIRAD) and Romain Calaque Only the original report binds the authors.

