

Functional analysis

Varieties

The two main varieties of pineapple cultivated in Togo are the **Smooth Cayenne** and the **Brazza (or Sugarloaf)**. The Smooth Cayenne has a firm yellow flesh and a tangy taste, and it is preferred in organic agriculture, export and processing. The Brazza variety, white in flesh, is sweet and juicy. It is used for local and regional markets. The Smooth Cayenne has fewer thorns, making handling less painful. However, this variety produces fewer suckers (2 to 3 per foot). The leaves of Brazza produce more thorns, but the production is abundant in all areas as a single stem can produce a dozen (or more) suckers.

Location and cultivation systems

Pineapple is cultivated in two agro-ecological areas: the **«Maritime area»** that comprises the whole Maritime region and the South of the Plateaux region; and the **«Plateaux area»** that corresponds to the North-West of the Plateaux region (prefectures of Danyi and Kloto). The soils and climate of other regions are not very favourable to the crop.

These two areas are distinguished by **the cropping system, variety and yield** (Figure 2). The two systems are **conventional and organic cropping**. The Maritime area has both certified organic and conventional (using chemical inputs) cropping systems, while the Plateaux area is known for its lower use of chemical inputs and little organic input. In both areas, there is no irrigation and the work is mainly manual on small plots of land (less than 1 ha).

	Maritime area bio	Maritime area conventional	Plateaux area bio	Plateaux area conventional
Variety	Cayenne	Brazza	Cayenne	Cayenne
Suckers (unit/ha)	57 750	57 750	36 750	36 750
Yield (t/ha)	55	60	30	30
Yield (t/producers)	22	24	12	12
% producers	44	24	24	8
Price of fresh pineapple to producers (CFA/kg)	110	60-100	110	70-90

Figure 2: Characterisation of pineapple production areas

Production and processing

In the absence of reliable monitoring, the VC data is often overestimated. However, it is reasonable to estimate that pineapple is grown by some **3,200 producers** (taking into account also those who did not harvest in 2018) and that production was close to **30,000 t in 2018**, 65% of which was organic pineapple and 35% conventional pineapple. The

processing sector is growing rapidly, **the number of MSMEs has increased from less than 30 to around 50 between 2017 and 2019**. 32% of pineapple is exported fresh by a dozen companies, whilst around 30 companies are currently producing more than 1 million l of pineapple juice (200,000 l of which is organic) and 476t of dried pineapple (Figures 1 and 3). More than 60% of pineapple is exported fresh or as processed products, mainly in Europe for organic products (France, Germany, Switzerland, Italy) or to the regional market (Burkina Faso, Ghana, Mali, Niger). Imports are very small (some limited pineapple from Benin to the north).

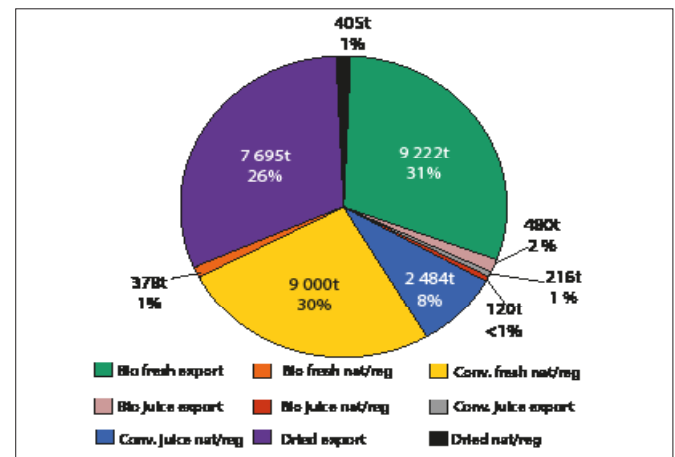


Figure 3: Distribution across the various markets (fresh pineapple equivalent in t /%)

Governance

Organic pineapple producers are organized in **cooperatives** while conventional pineapple producers are mainly small independent and often unorganized farmers. **The organisation of producers is however still limited**. In general, poor producers' access to international pineapple price information creates asymmetry benefiting processors, exporters and semi-wholesalers. Trust is generally low between producers and processors; and contracts (when they exist) are not always respected.

Some processors and exporters have developed **horizontal coordination**: companies that can not cope with the demand, subcontract some of their orders so that they can satisfy customers within the required time. This is especially true of two sub-chains: organic dried pineapple and organic fresh pineapple packaged on farm for export.

Certification

Pineapple producers in Togo do not have individual organic certification. They depend on a certified organic processor or exporter who extends the scope of its certification to its suppliers. This certified actor sets up an Internal Control System that ensures the supervision of producers by technicians who ensure that the specifications of the certifier are respected.

Economic analysis

Viability for actors

The annual individual net income of pineapple producers (for 22/24 t in the Maritime area and 12 t in Plateaux area - Figure 1) varies between CFAF 403,000 (€614) and CFAF 1,388,000 (€2,116) depending on their location, their cropping system (organic or conventional), their cultivation practices (renewal of plant material, soil preparation work) and the cultivated variety. Production costs but also yields and incomes are higher in the Maritime area. Downstream actors have a larger production scale and therefore have higher incomes.

Creation of value added

The total value of the production of all products within the VC (fresh, juice, dried) was CFAF 7,072 million (€10,8 million) in 2018, 69% of which corresponds to the value added (VA) and 31% to intermediate consumptions (IC). Of these ICs, 34% are imports (calcium carbide, cardboard, bottles, gloves, office equipment, etc.) and 66% are domestic ICs (suckers, transport, electricity, certification, etc.). Cardboard packaging accounts for 63% of the imported IC needed for the VC.

The direct VA of the VC amounted to CFAF 4,908 million (€7,5 million), the domestic ICs generated CFAF 1,142 million (€1,7 million) of indirect VA, so the total VA of the pineapple VC in Togo amounts to CFAF 6,050 million (€9,2 million). Despite a high integration rate in the national economy (in the order of 86%), the VC's contribution to the country's economic growth is marginal, around 0.2% of GDP and 0.5% of agricultural GDP.

Public finances and balance of trade

The VC generates a total income (direct and indirect) for the State of CFAF 233 million (€355,000), mainly due to the export taxes and customs duties on imports of inputs for the VC. The State does not grant any subsidy, the contribution of the VC to public finances is therefore equal to the amount of such taxes.

Export value of pineapple products has been estimated at CFAF 4,606 million (€7 million) which corresponds to about 65% of the value of VC production. Since total imports (direct and indirect) of consumables amount to CFAF 967 million (€1,5 million), the balance of trade of the VC has a large surplus of nearly CFAF 3,639 million (€5,5 million).

Viability in the international economy

The Domestic Resource Cost ratio is 0.6 (less than 1) showing that the economic wealth created, measured at international prices, is higher than the cost of domestic resources used. Thus the VC is economically efficient. Globally, it has a comparative advantage that attracts the

interest of companies, especially foreign ones, to invest in the processing of pineapple and in organic pineapple, which is highly sought after on the international market.

Income distribution

Packaging and processing into juice and dried product significantly increases the VA in the VC. These activities accounted for 51% of the income generated, whilst primary production accounted for only 44% (Figure 4). Organic production has favored the development of export markets. Nevertheless, if the producer is able to obtain a better selling price (Figure 2), downstream players benefit even more: the farm-gate price to FOB final price ratio for fresh organic pineapple is only 22% and 36%, or 44% (depending on the area) for conventional pineapple.

The VC can be considered inclusive, the majority of the total VA being composed of wages (40%) and gross income for the actors (54.4%); 3.9% goes to the State, 1% to landowners and 0.7% to banks. 38% of actors' net income goes to producers.

Employment

Despite its limited size, the pineapple VC in Togo provides a significant number of jobs. The CFAF 2,249 million (€3,4 million) of total salaries (direct and indirect) corresponds to the equivalent of about 5,800 full-time jobs. Added to the self-employment (about 3,200 producers, 1,600-1700 traders), the VC exceeds 10,000 jobs in total to which family labour should also be added.

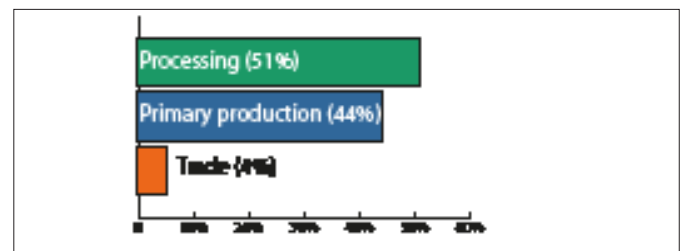


Figure 4: Contribution of sectors to the direct value added of the VC

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

The pineapple VC is not yet very developed compared to other agricultural products such as cereals, coffee, cotton or cocoa which play a greater role in the economic growth of Togo. It still makes only a small contribution to economic growth (less than 1% of agricultural GDP), but the recent development of packaging for export and processing of juice and dried products have doubled the value added in the VC. This contribution can still be improved by increasing the share of organic production and by continuing to develop processed products (juice and dried pineapple) in niche markets.

Social Analysis

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

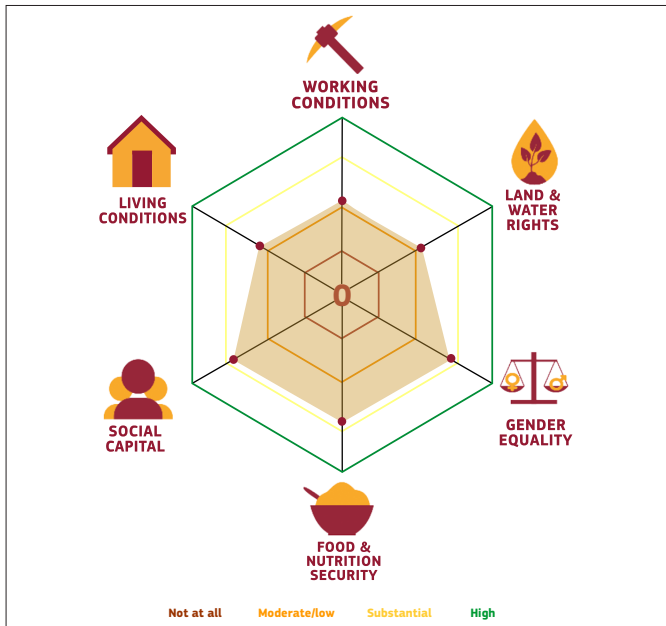


Figure 5: Social profile

	Major issues
Working Conditions	<ul style="list-style-type: none"> Togo has signed and ratified most of the international conventions on labor rights and incorporated their principles into the national legislation (Constitution, Labor Code, etc.). However, these agreements are poorly respected in processing / exporting companies and on farms. Arduous working conditions in agricultural production. Low interest of young people and lack of succession. The risk of forced labor is minimal in all sub-chains.
Land and Water Rights	<ul style="list-style-type: none"> Land disputes threaten the stability and security of the land: unbalanced situations in the definition of rental contracts or non-compliance by landlords. Poor protection of informal customary rights and very weak application of formal law in rural areas.
Gender Equality	<ul style="list-style-type: none"> Strong presence of women (35% of producers and 97% of fruit sellers in the local market) who control their own income. However, they are disadvantaged in acquiring land. Low level of public speaking by women. Workloads greater than men and exposure to strenuous tasks.
Food and Nutrition Security	<ul style="list-style-type: none"> In production areas, the food deficit has shrunk considerably and food has become more accessible to people. Pineapple contributes to the availability of food and allows the purchase of food through the income it generates.
Social Capital	<ul style="list-style-type: none"> Organisations and cooperatives facilitate access for organic pineapple producers to information on agricultural practices, policies and market prices. Some cooperatives receive bonuses for their participation in local development from fair trade companies (Fair For Life).
Living Conditions	<ul style="list-style-type: none"> Insufficient basic social services such as housing and health. Health facilities are inadequate and geographically inaccessible in some localities. The income from the sale of pineapple allows producers to improve their housing conditions by building permanent houses in the villages. The income of non-permanent employees in companies does not allow them to adequately meet their food needs and their housing conditions are not acceptable.

IS THIS ECONOMIC GROWTH INCLUSIVE?

The profitability of pineapple-related activities motivates producers, 35% of whom are women. The number of women in packaging / processing companies is increasing. The value chain is also very inclusive of women at the wholesale and retail level.

The value chain benefits more than 3,000 small-scale producers who earn an annual net income from pineapple averaging 1.4 times the Togolese minimum wage. The net income of pineapple, although not unique, is therefore satisfactory to meet the vital needs of these households, but it does not sufficiently attract young people.

The value chain offers salaried employment opportunities at all stages of agricultural production, as well as packaging for export, transport and processing of a wide variety of products. However, the level of wages could be improved.

IS THE VALUE CHAIN SOCIALLY SUSTAINABLE?

The pineapple value chain in Togo has positive social effects in the domains of gender equality, food and nutrition security and social capital. The situation is less satisfactory in the domains of living conditions, working conditions and access to land.

One of the issues that threatens the sustainability of the value chain is its unattractiveness to young people. As activities within the value chain develop and provide employment opportunities, they remain unattractive due to the hardship of working in plantations and processing plants, unappealing income and wages, and difficulties for young people to access funding. At the agricultural level, this can lead to a loss of knowledge transmission in pineapple cultivation between generations.

The precariousness of the land situation and rights of some producers is also likely to call into question the social sustainability of the VC.

Environmental analysis

The life cycle analysis on pineapple compared several sub-chains: **5 fresh pineapple sub-chains** (Figures 6, 7, 8), 2 juice sub-chains (bio from the Maritime area, exported by boat; and conventional from Maritime area, local market) and **2 dried pineapple sub-chains** (Maritime area, bio, exported by boat; and Plateaux area, bio, exported by boat).

Resource depletion

In the fresh sub-chain, conventional pineapple destined for regional markets has the highest impact due to chemical inputs and the long distance transport from Lomé to the border with Burkina Faso (Figure 6). In the juice sub-chain, it is also the conventional product that generates the most impact because of chemical inputs. The impacts of processing and transport are virtually the same for organic juice and conventional juice. For the dried product sub-chain, the product from the Plateaux area has a higher impact due to the distance and volume of fresh pineapple to be supplied to the processors in Lomé.

Ecosystem quality

For fresh and dried sub-chains, pineapple from the Plateaux area generates the highest impact due to low yields (soil use). It is followed by Maritime area fresh pineapple destined for regional markets which, despite its high yield, uses more soil because of the long-distance transport losses towards the Sahelian countries (Figure 7). As for the juice sub-chain, the conventional product has the highest impact because of the use of chemical inputs. For processing, the use of natural gas, glass and cardboard packaging is damaging the quality of ecosystems.

Human health

In the fresh sub-chain, conventional pineapple traded on the regional market has the highest impact due to the use of chemical fertilizers, pesticides and emissions from the use of fossil fuel during transportation (Figure 8). Not surprisingly, the impact on human health is also higher for conventional juice (toxicity). For the dried product sub-chain, the impact of the product from the Plateaux area is the highest because of its low yield as well as emissions related to the use of fossil fuels for transport.

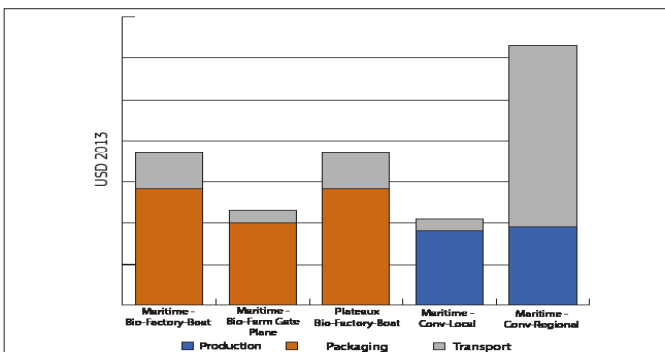


Figure 6: Impact of the fresh pineapple sub-chain on resources

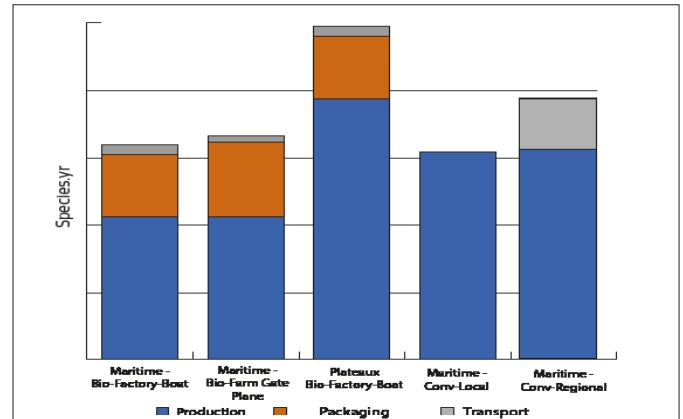


Figure 7: Impact of the fresh pineapple sub-chain on ecosystem quality

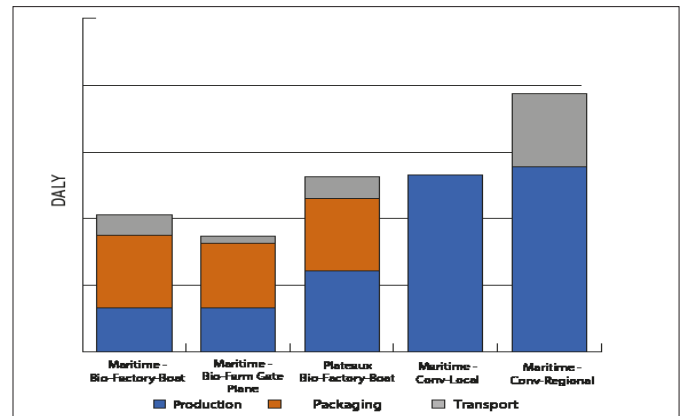


Figure 8: Impact of the fresh pineapple sub-chain on human health

IS THE VALUE CHAIN ENVIRONMENTALLY SUSTAINABLE?

Organic production of pineapple remains more environmentally friendly than conventional production, because the greater yield achieved by the use of chemical inputs is not high enough to offset its negative environmental impacts.

The environmental performance of crops in the Maritime area is better than that of the Plateaux area where crops are less dense and poorly maintained.

The use of energy, especially gas, during the processing phase is one of the main causes of impact on the environment. This phase generates a lot of non-recovered organic waste. Cardboard packaging also contributes significantly to environmental impacts.

Losses due to transport, packaging and storage conditions, and the use of chemical inputs, significantly influence the impact on ecosystem quality and human health.

All of these impacts may call into question the environmental sustainability of the value chain, but several solutions can be adopted to minimise these impacts (promotion of organic production, artisanal processing of waste into biogas, recycling of packaging, etc.).

Main findings

The pineapple VC is still underdeveloped, but offers **interesting prospects for the Togolese agricultural economy provided that actors mobilise to strengthen it**. Togolese pineapple is preferred to that of neighboring competitor countries for its aroma and taste. The country has the capacity to expand pineapple cultivation and occupies a niche in the market for organic products that are in high demand. This VC has enough assets to contribute to the agro-industrial and agropoles dynamics promoted by the national authorities and their partners. The network of MSMEs processing and shipping pineapple abroad is growing, which is very positive for job creation, economic growth and poverty reduction in rural areas. However, much remains to be done to improve the coordination of the actors, reduce the costs of certain inputs, better integrate quality approaches within the VC and also develop the national market.

Main risks

- **Loss of organic certification.** The forthcoming ban on the use of calcium carbide for pineapple destined for EU markets and the lack of an inexpensive alternative to this product are of concern for producers.
- **Decreased soil fertility.** The threat to yields due to the low organic matter supply (little livestock in Togo) despite the large availability of fertile land requires rethinking the sustainability of the VC (eg. recovery of waste from processing for compost to return to the land).
- **Slowdown of organic production.** The difficulty of finding agricultural labor to work in the plantations because of the hard working conditions for clearing and weeding, forces some producers to use aggressive herbicides such as the durion to control weeds.
- **Low innovation.** Inactive research in the sector, low recovery of by-products or processing waste, need for innovation to diversify markets. There are many opportunities also for the private sector.

Main recommendations

- Commit the VC to a quality approach, coupled with organic certification.
- Develop a specific label for organic pineapple from Togo and its processed products.
- Provide public support to companies exporting fresh produce (including pineapple) through the development of 'fruit docks' and the access of refrigerated boats to the port of Lomé.
- Plan the development of road infrastructure in production areas to open-up certain areas.
- Facilitate the organisation and professionalisation of stakeholders throughout the VC.
- Establish healthy and vigorous suckers production strategies to increase pineapple production.
- Supervise pineapple growers and encourage them to produce compost themselves and use it on their farms.
- Facilitate access to credit and the working capital for the different actors of the VC.
- Encourage local consumption.
- Improve working conditions in the VC.
- Encourage the development of a paperboard recycling sector and its transformation into high quality packaging.
- Disseminate techniques to reduce post-harvest losses.
- Improve the statistics on the sector.

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 "Pineapple Value Chain Analysis in Togo" 2019 by Gustavo Saldarriaga, Fayçal Boureima, Konga Palassi et Osée Alate.

