Lebanon Industry Value Chain Development Project
Round table discussion - Working paper

Improving the competitiveness of Lebanese Apples' Value Chain

Beirut - October 18, 2016

Executive summary

Apples represent an important sector in the Lebanese agricultural economy. However, this value chain is facing many challenges hindering its development and reducing its competitiveness on the local and export markets due to the high production costs, inefficient harvesting techniques, insufficient and inefficient post-harvesting facilities, small farm size and land fragmentation, high number of small farmers relying on other economic activities, and lack of quality control. Moreover, in the last five year years, the sector faced additional constraints related to the Syrian crisis and the devaluation of the Egyptian pound.

With the objective of contributing to the improvement of the apples' value chain, the LIVCD project and the Agriculture Committee at the Federation of the Chambers of Commerce, Industry and Agriculture in Lebanon (FCCIAL) organized on October 18, 2016 a round table discussion on the Challenges and Competitiveness of the Lebanese Apple Sector. More than 30 persons participated in this round table, representing the main stakeholders of the value chain.

The round table involved interactive interventions from all stakeholders, who reviewed and validated the major facts and figures of the apples' value chain, discussed the major challenges and constraints of the sector, and presented several solutions and opportunities to positively impact the sector on the short, medium, and long term.

Following the round table a briefing paper on the sector was prepared. It presents the structure of the apples' value chain, including a mapping of stakeholders. It also summarizes the discussion of the round table under three axes representing the main phases of the value chain:
1) Production: nurseries, input supply, and orchard management;
2) Post-harvest: orchard management, sorting, packing, and cold storage;
3) Trade: agro-industries, local market, and export market.

All the stakeholders agreed on the importance of accurate data and its role in any planning process to improve the apple sector. Therefore, it was agreed that the Ministry of Agriculture should play a major role in aggregating the available statistics from different sources and ensuring the availability and accessibility to accurate and up-to-date information about this sector in the future.

Most of the stakeholders agreed that the decision of the Lebanese Government to subsidize farmers for this season to reduce their losses is not a sustainable action and will not solve the competitiveness problem for future years. However, it may be necessary to limit the decline of the sector and stop large numbers of farmers from abandoning their apples' orchards.

Solutions and opportunities were proposed for each challenge for each stage of the value chain. The proposed actions/interventions were specified to be implemented on the short and/or medium/long term, according to their priority, complexity, and cost. They could be considered as a guiding framework for all stakeholders, each according to his mandate, responsibility, and field of expertise, in the planning, development, and improvement of the apple sector competitiveness.

The key recommendations for the success of any future intervention in the apple sector are the following:

- Build on existing success stories at all the levels of the value chain and seek to utilize them as models to be replicated all over Lebanon, while taking into consideration the specificities of each region;
- Intervene mainly with medium and big farmers to promote agricultural professionalism;
- Undertake comparative analysis of direct competitors of Lebanon in this field (Turkey, Italy: South-Tyrol area), benefit from their successful integrated production systems and trade enhancing mechanism, and search for comparative advantages to compete with them;
- Introduce innovation, creativity, and new technologies in all the phases of the apples' value chain aiming to have these modern tools and techniques available and accessible for all farmers;
- Work on market intelligence to match the production output with the market demand on both the local and export market;
- Encourage the implementation of a traceability system for hygiene and safety purposes;
- Establish a national agriculture record under the supervision of the Ministry of Agriculture;
- Adopt a regional clustering approach to regroup farmers (especially small and medium farmers) around certain poles of production and post-harvesting facilities;
- Establish Regional/Satellite service centers where farmers can find their needs for inputs, equipment, technical advice, technology transfer and seek support for any constraint or challenge.

Introduction

LIVCD project and the Agriculture Committee at the Federation of the Chambers of Commerce, Industry and Agriculture in Lebanon (FCCIAL) organized on October 18, 2016 a round table discussion on the Challenges and Competitiveness of the Lebanese Apple Sector.

More than 30 persons participated in this round table, representing the main stakeholders of the Apples' value chain in Lebanon including the: Ministry of Agriculture, Ministry of Economy and Trade, exporters, cold storage and packing centers, supermarket chains, producers, agricultural experts, NGOs, and cooperatives.

This paper presents a general overview of the apples' value chain structure with facts and figures about the production volume and value, farmers' profile, local and export markets, and stakeholders' mapping.

The round table involved interactive interventions from all stakeholders, who discussed the major challenges and constraints of the sector, and presented several solutions and opportunities to positively impact the sector on the short, medium, and long term. This paper summarizes the discussions of the round table and presents them in three sections covering the main phases of the apples' value chain:

1) Production: nurseries, input supply, and orchard;
2) Post-harvest: orchard, sorting, packing, and cold storage;
3) Trade: agro-industries, local market, and export market.

All the figures and numbers mentioned in this paper are retrieved from reports published by the Ministry of Agriculture (MOA), Food and Agriculture Organization (FAO), data provided by the Chamber of Commerce Industry and Agriculture in Beirut and Mount Lebanon (CCIA-BML), as well as estimations communicated by experts and mentioned in local newspapers' articles. Some references showed the same figures and numbers, while others showed minor differences. These differences were debated during the round table discussions and data validation was done. All the stakeholders agreed on the importance of accurate data and its role in any planning process aiming at improving the apple sector. Therefore, it was agreed that the MOA should play a major role in aggregating the available statistics and ensuring the availability and accessibility to accurate and up-to-date information about this sector in the future[1].

1 In 2016, due to the marketing difficulties, the government decided to provide financial support to apple farmers. This support will be based on a full and comprehensive survey about the sector. It will be conducted by the Lebanese Army before the end of 2016. This survey will help updating the statistics of the sector since the last full survey done in 2003.

I. The Lebanese Apples' Value Chain: facts & figures

Apples represent an important sector in the Lebanese agricultural economy. However, this value chain is facing many challenges and constraints hindering its development and reducing its competitiveness on the local and export markets. Apples' value chain is relatively fragmented without any form of integration among the chain phases and between its stakeholders.

Competiveness is constrained by high production costs, inefficient harvesting techniques, insufficient and inefficient post-harvesting facilities, high number of small apple farmers relying on other economic activities, small farm size and land degradation, and lack of quality control. Moreover, in the last year years, the sector is facing additional challenges and constraints following the closure of the Syrian border and the devaluation of the Egyptian pound[2].

The following data gives an overview about the apples' value chain in terms of cultivated land and geographical distribution of the production, varieties produced, production and trade (volume and value), and farmers' profile.

Total Land area cultivated with apples: 122,793 du

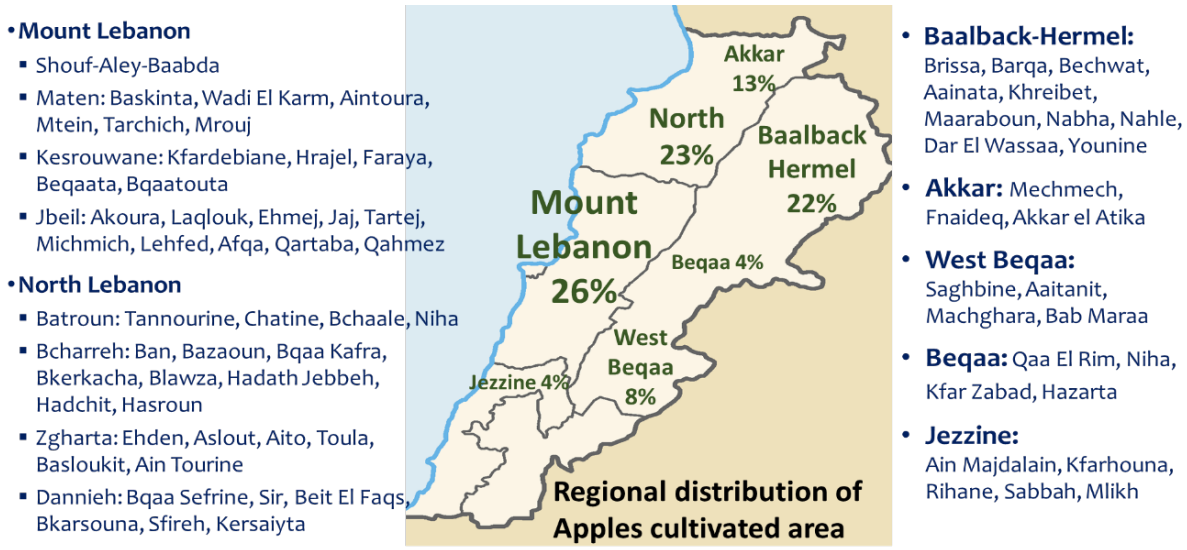

Figure.1. Geographical distribution of apples' cultivated area

2 Egypt is the largest importer of Lebanese apples with an average of 66% of the Lebanese apple exports in the last five years.

Apples' varieties distribution

a) Red apples cultivated area distribution per variety
- 60% Starking
- 9% Scarlet Spur, Early Red et Ace
- 31% non-identified

b) Yellow/Green apples cultivated area distribution per variety
- 56% Golden
- 3 to 4% for each of Granny Smith, Sans Pareille, Gala, Early Gold
- 26% non-identified

Table.1 Production, export, and local market volume (in Tons)

Year	2010	2011	2012	2013	2014	2015	Avg.
Production	140,000	150,000	138,000	153,000	155,000	110,000	140,000
Export	80,111	61,453	88,072	71,025	52,837	56,883	68,400
Export %	55%	41%	64%	46%	34%	57%	49%
Export value[3] Million USD	18	14	19	15	12	13	15

Table.2. Farmers profile and production (total number of farmers 21,860) ref. MOA census 2010

Farmer	Very small	Small	Medium	Big farmer
Land size	< 1 du	1 to 5 du	5 to 20 du	> 20 du
% of farmers	47	27	23	3
% of land	3	32	39	26
Production (Thousand Tons)	4,200	44,800	54,600	36,400
Farm gate value in M $ (average 650 LBP/kg)	1.8	19.4	23.6	15.7

3 This value is provided by the customs.gov.lb, however it does not reflect the real value since most of the quantity exported to Egypt (60 to 70%) is much higher, but due to payments regulations in Egypt: if the value of the shipment is higher than 4000 $ it should be processed through a bank, which is avoided by all exporters, consequently the values reported to customs are much lower than the real value that should be multiplied by 3.

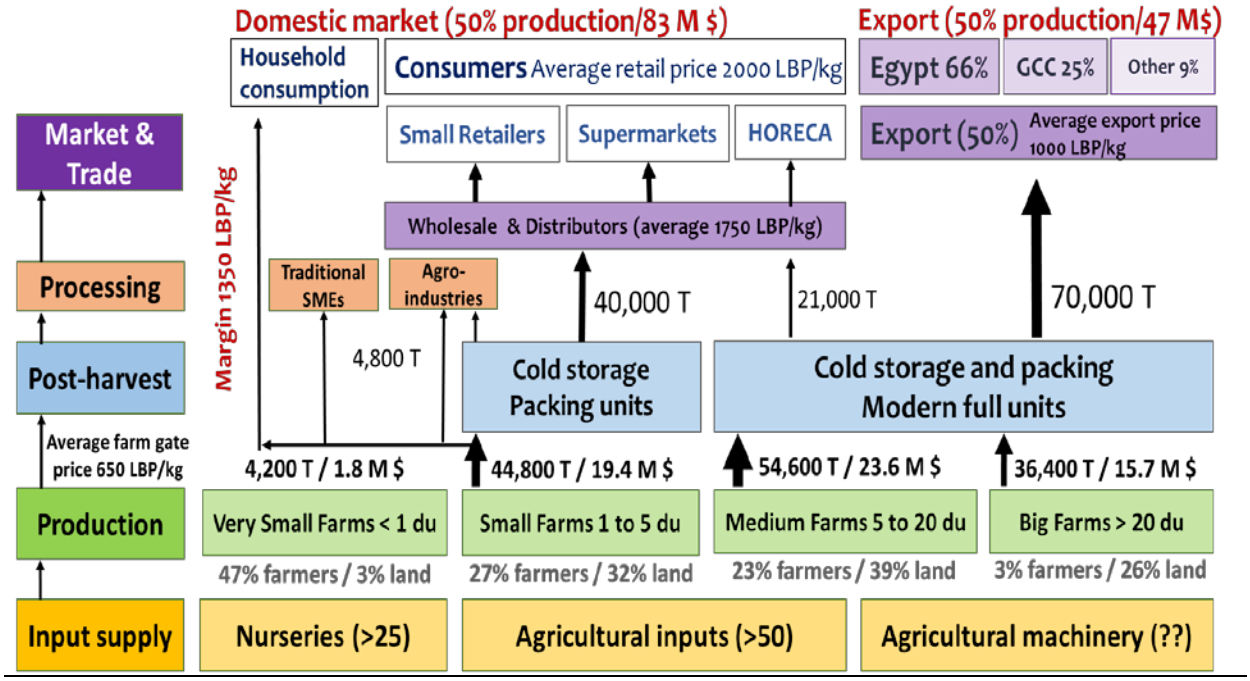

Figure.2. Apples' Value Chain - Structure

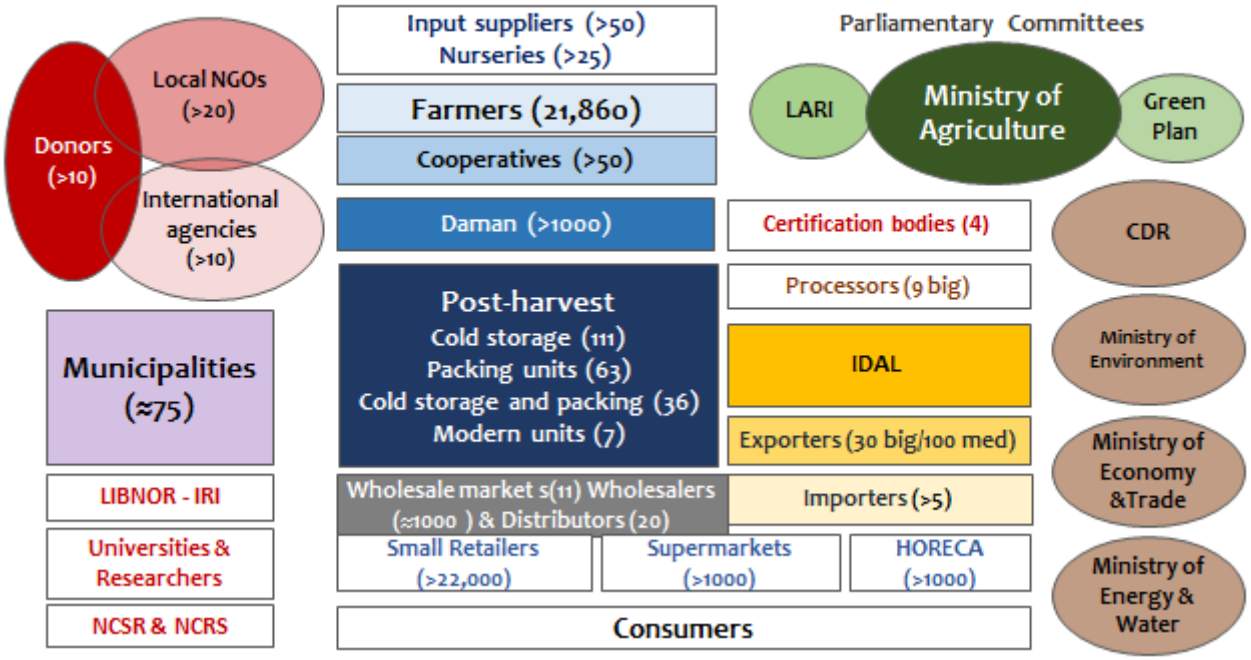

Figure.3. Apples' Value Chain - Stakeholders

II. Production: challenges/constraints vs. opportunities/solutions

Nurseries level[4] (Stakeholders: MOA, LARI, Universities, Nurseries)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Phyto-sanitary quality of vegetative material	Produce true to type and virus free material	Certification, and rootstock traceability
Lack of varieties diversity on the nursery level	Increase rootstocks and varieties' choice	Research & Development on local varieties to create a Genetic Bank

Input supply (Stakeholders: MOA, Suppliers & Traders)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Inconsistent quality and quantity of inputs	Control and monitoring	Set rules and regulations Certify input suppliers
Extension services linked to input sales	Base extension services on real needs	

Orchard level (Stakeholders: Farmers, Coops, MOA, Input Suppliers, NGOs, Certification)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Fragmented production and high cost	-Adopt integrated production systems with introduction of new technologies and sustainable practices -Increase the access and availability of extension services -Empower cooperative work -Create demo plots on intensive production and new varieties. -Provide technical trainings -Support certification efforts, IP [5], IPM[6], Global GAP, Organic -Respect standards and acceptable MRL [7] for each target market, and conduct Lab tests before harvesting -Choose the best geographical area with the optimal climatic conditions to develop new orchards with high competitive potentials (altitudes ranging between 1400 and 1800 m)	
Lack of extension and agricultural services		-Establish regional production clusters and business oriented consortiums -Establish regional service centers and satellite centers in each region (one stop shop models)
Old agricultural practices (pruning, fertilization, irrigation, pest and diseases management)		-Register farmers in the MOA and adopt specific criteria based on profile and land size to be able to adhere to the Farmers' register
Aging trees and dominance of two traditional varieties	Replace old orchards and introduce new varieties	Strategic agricultural land use planning
Poor harvest management and handling	Introduce new practices and technologies	Research & development
High harvesting cost (30% of production cost)	Organize community apple picking activities with youth and families	Develop agro-tourism in apple farms
Climate change adaptation and Natural Disaster Risk Reduction	Introduction of new varieties Integrated production system	Invest in Research & Development Crop insurance

[4] Machatel Loubnana cooperative (regrouping 11 nurseries) provide 80% of apple plants in Lebanon
[5] Integrated Production
[6] Integrated Pest Management
[7] Maximum residue level

III. Post-harvest: challenges/constraints vs. opportunities/solutions

Orchard post-harvest level (Stakeholders: Farmers, Cooperatives, Traders, MOA, NGOs)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Poor handling and losses in quantity and quality	-Expand the use of fortified plastic crates already used by established packing and sorting facilities -Use specific picking baskets	-Invest in modified atmosphere plastic containers (capacity 200 to 420 kg (could be produced in Lebanon
No preliminary sorting and grading	-Introduce preliminary sorting and grading through simple tools and equipment	

Sorting, packing, and cold storage level
(Stakeholders: Cooperatives, Services provider, Wholesalers, Traders)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Old packing and storage units and lack of new technologies	-Modernize and upgrade the existence facilities -Equip medium size facilities with sorting and packing lines -Introduce modified atmosphere as demo units in selected facilities -Introduce Smart fresh technology (Ethylene inhibitor)	-Establish new facilities according to the regional clusters and based on production volume and characteristics -Invest in mobile cold storage serving multiple value chains
Limited availability and access to modern mechanical units with full services provision		

Full post-harvest services list:

- Apple baskets rental
- Green bins rental
- Forklift rental
- Pickups and transportation
- Traceability system
- Cooling, Smart fresh technology
- Modified/controlled atmosphere
- Sorting, Packing
- Maturity testing (Pressure and sugar content)
- Training on harvesting

IV. Trade challenges and opportunities

Agro-industries level (Stakeholders: Farmers, Investors, NGOs)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Lack of investment	-Promote investment in apples' agro processing -Provide incentives for such investments	
Inconsistent supply	-Choice of varieties at the level of supply to the processors -Adequate sorting	-Promote contractual farming
Low availability of apples for juice and molasses		

Local market level (Stakeholders: Farmers, Cooperatives, Municipalities, Traders)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Low negotiation power and skills of small farmers	-Empower cooperative work and cooperative marketing	-Promote regional apples' business consortium models
Lack of product development and price instability	-Better choice of varieties (early/late production, consumer preferences) -Improve sorting/grading -Develop new packaging and market segmentation (HORECA)	

Export market level (Stakeholders: Farmers, Traders, MOA, IDAL, Certification bodies)

Challenges/constraints	Opportunities/solutions	
	Short term	**Medium/long term**
Inability to meet export needs in terms of quality, standards, and norms (non-tariff barriers)	-Production planning -Adopt integrated production systems -Support certification -Review and negotiate trade agreements	
Lack of trust between farmers and traders/exporters	-Build trust between regional production clusters/consortiums and traders/exporters -Promote contractual farming -Establish export protocols and unify procedures	
High dependency on Egypt (66% of export) facing currency devaluation	-Benefit from seasonal shortage in other countries' supply -Identify new markets and participate in international fairs -Create and promote a National/Regional brand name	
Low competitiveness on potential new markets	-Reduce production cost	
Post-harvest technical and logistic problems	-Upgrade existent facilities	Establish new facilities
Tariff barriers of some potential markets	-Review and negotiate trade agreements	
High administrative export cost in Lebanon	-Reduce administrative costs (certificate of origin, port fees/container)	

V. Conclusions and recommendations

The organized round table gave the apples' value chain stakeholders the opportunity to interact together and to discuss the challenges and constraints of the sector. Solutions and opportunities were proposed for each problem in the three main phases of the value chain. The proposed actions/interventions were specified to be implemented on the short and/or medium/long term, according to their priority, complexity, and cost.

Most of the stakeholders agreed that the decision of the Lebanese Government to subsidize farmers for this season to reduce their losses is not a sustainable action and will not solve the competitiveness problem for future years. However, it may be necessary to limit the decline of the sector and stop an important number of farmers from abandoning their apples' orchards.

The identified solutions/opportunities of this roundtable could be considered as a guiding framework for all stakeholders, each in his responsibility and field of expertise, in the planning, development, and improvement of the apple sector competitiveness.

The key recommendations for the success of any future intervention in the apple sector are the following:

- Intervene mainly with medium and big farmers (26% of total farmers covering almost 75% of the apples' cultivated area) to promote a certain cultural of agricultural professionalism. This approach will create successful business oriented farming which will increase competitiveness on the export market, as well as the local market.
- Build on existing success stories at all the levels of the value chain and upgrade them as models to be replicated all over Lebanon, while taking into consideration the specificities of each region. Pilot projects should become leaders in the field and a driving force for positive change.
- Undertake comparative analysis of direct competitors of Lebanon in this field (Turkey, Italy: South-Tyrol area), benefit from their successful integrated production systems and trade enhancing mechanism, and search for comparative advantages to compete with them
- Adopt a regional clustering approach to regroup farmers (especially small and medium farmers) around certain poles of production and post-harvesting facilities, in order to reinforce and integrate the value chain phases and to ensure a certain economy of scale, which will result in reducing the production costs.
- Introduce innovation, creativity, and new technologies in all the phases of the apples' value chain and make these modern tools and techniques available and accessible for all farmers through the above mentioned grouping and clustering approach
- When planning for production of apples, the priority should be given to match the produce with the market demand, either for the local or export market.
- Adopt a collective branding of apples in the market, could be one label and one package to every region where participants must be following the same agricultural practices and the same apple variety.
- Encourage the implementation of a traceability system for hygiene and safety purposes (Reducing the residues).
- Ministry of agriculture to adopt the national agriculture record.

- Establish Regional/Satellite service centers to play the role of a local Reference Center where farmers can find all their needs in inputs, machineries, technical advice, technology transfer and seek its support for any constrain or challenge they might face. The center should play a major role in creating linkages to market or to traders. The reference center mandate will be to:
  - ✓ Gather and consolidate all data related to the area of its coverage and update necessary data, as well as elaborate a stakeholders mapping.
  - ✓ Create/ facilitate and maintain vertical as well as horizontal sustainable linkages between farmers and all service providers, input suppliers, traders, possessors.
  - ✓ Ensure access to knowledge, information and technical advice for all those who are involved in the value chain (demonstration plot, linkage to universities and research centers).
  - ✓ Create linkages with other regional "Service Centers" to benefit from their experiences.
  - ✓ Ensure an economy of scale (lower purchase cost) at all value chain levels in accessing quality services such as: Machinery, new technology, crop insurance (when available), purchase of inputs, pruning, studies, consultancies, financial services and access to finance, promotion...
  - ✓ Ensure high negotiation power for producers at the market level as well as at decision making and government level.
  - ✓ Address collectively market requirement in homogeneity, reliability, consistency, quality, and traceability.
  - ✓ All "Services Centers" will be encouraged to work hand on hand and to form a National network of Cooperation that can evolve to play the role of a National Umbrella for producers, that will be the first seed towards a Functional and more Professional Value Chain.