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The Collective Action as Potential Driver of Bottom-up Reconfiguration from Captive to Relational Value Chain. The Case Study of the Northern District in Sierra Leone

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ABSTRACT

In recent decades, the increasing growth rate of the African cashew business has involved a large number of corporate actors such as global retailers, processors and exporters in cashew supply networks. The increasing role of agro-food supply chains enables African countries to enhance their position in global markets and to sustain local development and growth, by encouraging a higher market-orientation in the governance of global value chains. In this paper, an exploratory analysis based on a questionnaire involving 319 smallholder farmers in the North of Sierra Leone is conducted in order to explore the role of collective action in driving the potential bottom-up reconfiguration of cashew value chain. A change from captive to relational governance is expected to positively support the local industry upgrading, to reduce transaction costs and information asymmetries, and to increase the local development and growth by enhancing employment creation and poverty alleviation.

Keywords: *Collective action, farmer organizations, global value chain, captive governance, Sierra Leone*

1 Introduction

Cashew is one of the important tree-nut crops, ranking third in the international trade after hard nuts (29%) and almonds (21%). World production of cashew is estimated at 750,000 metric tons.

In recent decades, cashew production has been moving from Brazil and Asia to Africa (West more than East Africa). Data provided by the Food and Agriculture Organization of the United Nations[*] (FAO) argue the increasing global weight of African cashew production. Even though Asia, especially, South-East Asia, remains the first cashew producing region in the world, Africa shows the greatest growth rate (1380%) in the last two decades, shifting from a production of 126,858*t* in 1990 to 1,882,131*t* in 2012 (see Figure 1), reaching almost the same value as Asian countries (FAO, 2015).

These numbers have increased the awareness of African policy makers about the crucial importance of cashew industry development as a driver for regional growth and poverty alleviation.

[*] Aggregate data, may include official, semi-official, estimated or calculated data by FAO (http://faostat3.fao.org/download/Q/QC/E)

Two million African farmers currently grow about 45% of the world's cashews. Over the past ten years, African smallholder farmers have more than doubled production. While processing in Africa remains low, it is on the rise, growing from 35,000MT in 2006 to 73,000MT in 2010. It is estimated that a 25% increase in RCN processing within Africa would generate more than US$100 million in household income, improving the lives of many families in rural areas. The West African countries, Côte d'Ivoire, Guinea Bissau, Benin and Nigeria on the whole are the second largest producer of cashew nuts.

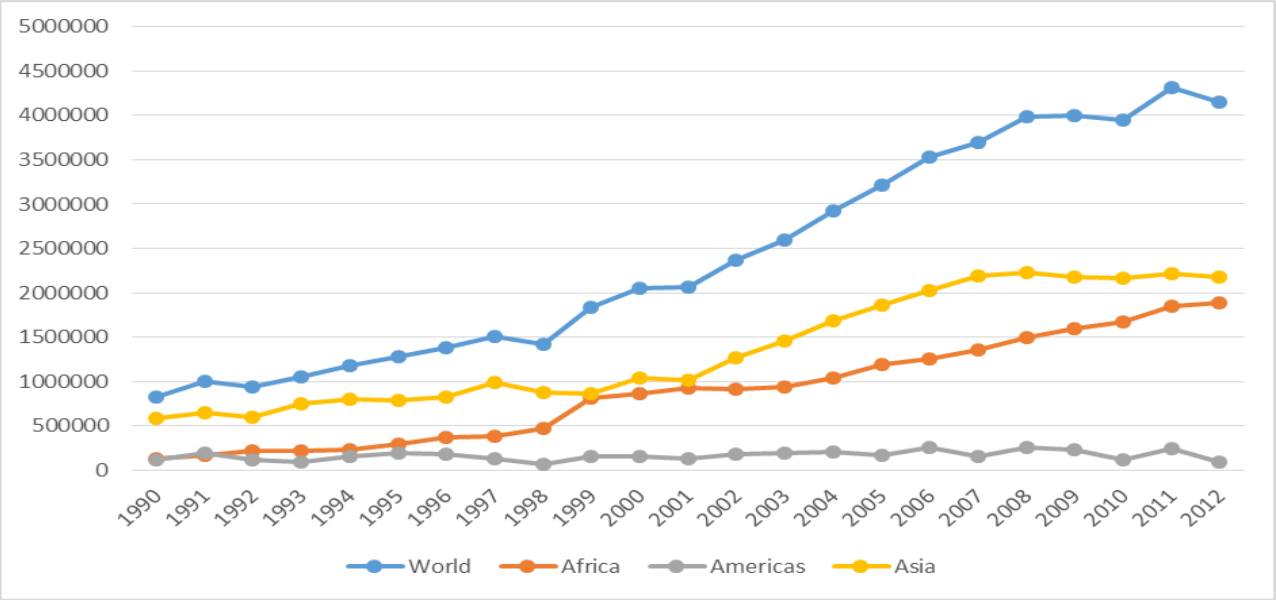

Figure 1. Trend in the cashew nut production (in tons) per macro-regions from 1990 to 2012 (our elaboration from FAO database)

Furthermore, recent studies have stressed the relevance of cashew value chain in African countries in regard to food security (Carvalho and Mendes, 2015) and economic development (Antonio and Griffith, 2017) objectives.

In Guiné-Bissau Cashew represents more than 90% of exports, but also represents one of the main activities in most rural areas and around 40% in average of the food intake depends on cashew sales (Carvalho and Mendes, 2015). In Mozambique, cashew nuts are the second most important commodity in terms of contribution to export value in the agriculture sector and are the main source of income for over one million rural families (Antonio and Griffith, 2017).

Moreover, the global growth of cashew production, application and consumption has led to the transnational extension of supply networks by involving several international players. Therefore, the global extension of the cashew value chain makes the Global Value Chain (GVC) approach particularly interesting for a better understanding of governance, business-to-business relationships, and the ways and mechanisms for increasing efficiency, productivity and value added in the developing countries such as Sierra Leone in Africa.

Specifically, the GVC literature explores how the evolution of global-scale industrial organizations affects *'the fortunes of firms and the structure of industries, but also how and why countries advance or fail to advance in the global economy'* (Gereffi et al., 2005, 79). According to Gereffi et al. (2005) there are five types of global value chain governance identified using three key variables: inter-organization transaction complexity, the mitigation of the transaction complexity degree through codification processes and the ability of suppliers to match the buyers' requirements. Hierarchy value chain is characterized by vertical integration and managerial control. Captive value chain is characterized by networks composed by small suppliers transactionally dependent on larger buyers, high degree of monitoring and control, high switching costs for suppliers and low supplier capabilities. Relational value chain is characterized by interactive networks, which are based on mutual dependence, close and trustful social ties, high levels of product specificity and high supplier capabilities. Modular value chain is similar to the market value chain, involving specialized suppliers who make products to match customers' specifications, but with a higher complexity of transactions. Finally, market value chain is characterized by low information complexity, easy of codification of information, high supplier capabilities and low switching costs for all the parties.

The potential reconfiguration from vertically integrated firms (hierarchies) to market-based relationships among firms, as the opposite ends of a continuum, move through intermediate forms of governance (captive, relational and modular) which depend on the extent of the subordination of suppliers to buyers (Gereffi et al., 2005).

Agro-food systems in developing countries are traditionally characterized by captive value chains due to the large fragmentation of smallholder agriculture and the transactional dependence of small local suppliers and producers on large buyers. In the African cashew supply chain and especially in Sierra Leone, the captivity of governance depends on the presence of a multiplicity of smallholder farmers with very low bargaining power, low credibility and reputation, low ability to codify knowledge as well as low agricultural capabilities related to cashew production, harvesting and storage. The lack of farmer competences in ensuring productivity and quality, and the transactional dependence for access to markets make small producers captive and frequently marginalized within the cashew network, and also make them unable to benefit from the economic advantages of the global extent of the value chain. In addition, smallholder farmers require a high degree of monitoring and control to ensure collection and trading of adequate raw nut volumes and acceptable quality standards, despite of transactional costs. In this light, high level of indirect control and monitoring by intermediaries as compared to vertical integration with large buyers suggests a captive more than hierarchic governance. However, in the last decade, the growth of the cashew market value has led to the introduction of ever more rigorous international standards pressing for a more market-oriented value chain in order to reduce the transactional costs and improve the production quality (Barham and Chitemi, 2009). Furthermore, from African local economies' point of view, the switch from captive to a more relational type of governance is able to enhance the empowerment of small farmers by increasing scale economies, lowering transaction and coordination costs, supporting access to capital markets and risk management, and improving incomes and livelihood (Datta, 2004; Bernard and Spielman, 2009, Ahimbisibwe, 2014). Since a number of recent studies have highlighted the role of collective action in leveraging the farmer performance by enhancing production capabilities, social relationship and market knowledge (Corsi et al. 2017; Orsi et al., 2017), we retain the collective action supported by farmer associations could drive the bottom-up reconfiguration from captive to relational value chain.

Firstly, this study analyses the cashew supply chain, with the focus on African countries, by exploring the players, links and constraints which characterize the captive structure of this industry. Secondly, it analyses the case study of the cashew value chain in Sierra Leone with specific regard to the role of smallholders. Then it argues the advantages to reconfigure from a captive to a relational value chain and introduces the role of collective action and farmer organizations in leveraging this reconfiguration and in supporting the socio-economic development of the African cashew industry.

2 Cashew Global Value Chain

Looking at the cashew global value chain requires, according Gereffi and Fernandez-Stark (2011), the definition of some basic dimensions: the geographically distributed input-output structure, which describes the processes of transforming raw materials into final products, and involved players; the governance structure, which explains how the value chain is controlled by considering the power relationships and institutional context in which the industry value chain is embedded.

The geographically distributed input-output structure of the cashew value chain

The global input-output structure is carried out by the increasing use of cashew nuts in snacks and in bakery products and by the larger variety of derived products which have produced the current growth of global demand. It has been estimated that about 60% of cashew nuts is consumed in the form of snacks, mostly roasted and salted. The remaining 40% is instead used in confectionery and bakery products, often as a substitute for peanut and almond (Dendena and Corsi, 2014). Several products are also from the cashew apple, such as fresh and fermented beverages (liquor, vinegar, juice, juice concentrate), products from cashew apple pulp (jam or fruit bars) confectionery products (chutney and candied products), culinary products (pickles) and canned products. Recently, other products such as Cashew Nut Shell Liquid (CNSL) and Cashew Nut Kernel Oil (CNKO) have been extensively used for industrial applications.

The processes involved in moving the raw cashew nuts to the final market are production, harvesting, collection, storage, trading, processing, exporting and marketing. They are inclined to be geographically distributed from developing countries to industrialized ones. However, since Africa is actually the producing country that is growing more cashew, we explore these processes by looking at the African context. *Figure 2* shows the players in the cashew value chain and the main market channels involving developing and developed countries.

Production is traditionally localized in developing countries, above all Vietnam, Nigeria, India, Cote d'Ivoire, Benin, Philippines, Guinea-Bissau, Tanzania, Indonesia and Brazil. Harvesting, collection and storage processes are also locally managed. However, these countries depend on developed countries to gain access to production inputs, such as seedlings, chemicals, pesticides and fertilizer. Differently, the processing of raw nuts is strongly established in Asiatic countries such as India. Over 80% of the raw cashew nuts produced in Africa are exported to large-scale industrialized Asiatic processors (FAO, 2015). The remaining 20% are mainly treated by small- or medium-sized processors in Africa. Finally, the Netherlands plays a critical role in leveraging the exporting of processed cashew from Asia to Europe and America, which represent the most important final markets.

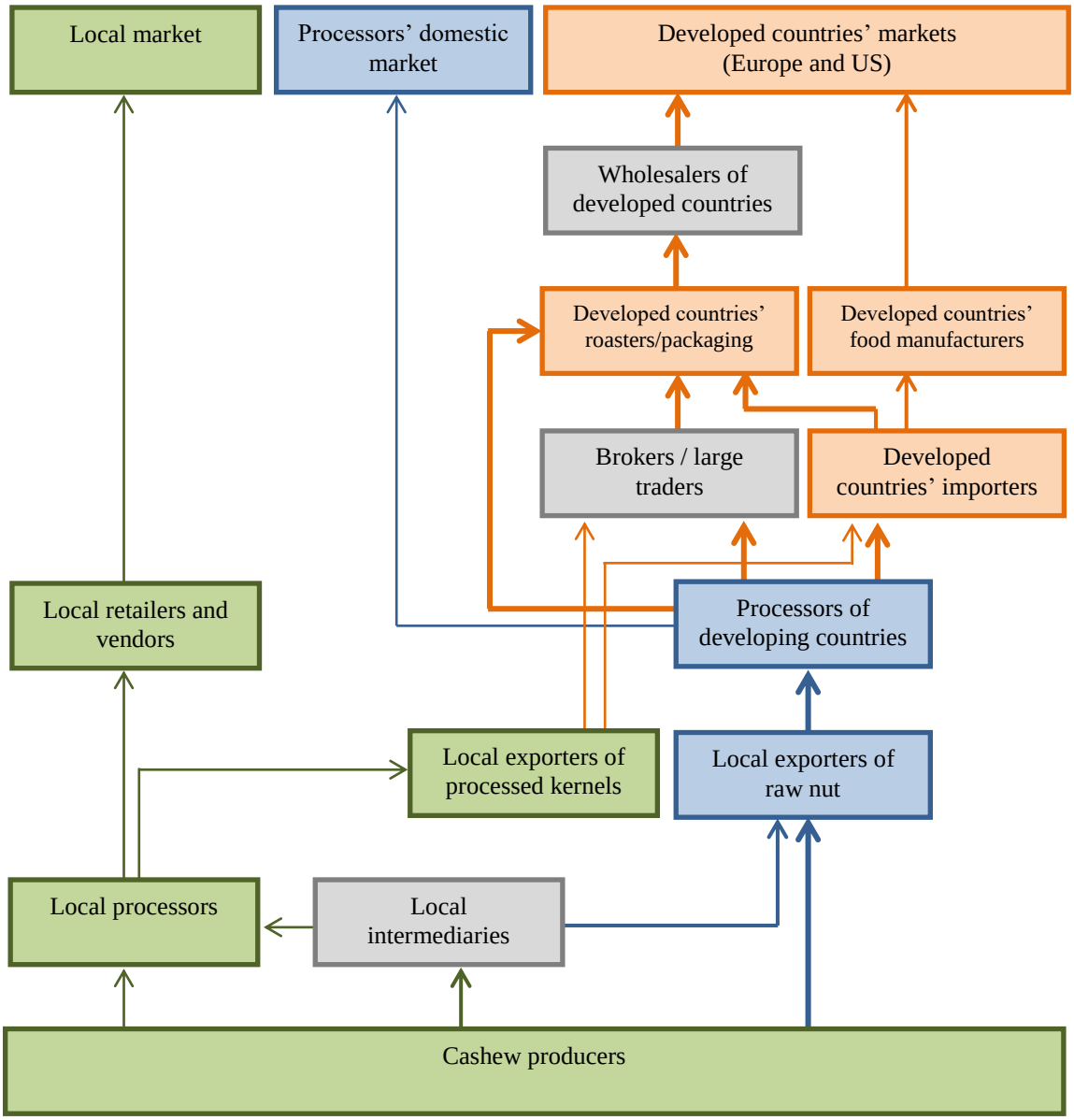

Figure 2. Cashew global value chain (players and market channels)

Specifically, with the exception of Brazil, whose cashew industry is based on large-scale mechanized factories, the vast majority of producers and processors worldwide are small or medium scale (Azam-Ali and Judge 2001; Mole 2000). Therefore, production, harvesting and preliminary storage are inclined to be frequently a family activity, which involves also women and children. They are critical steps because low production abilities and techniques, premature harvesting or storing without drying properly, could cause low quality nuts and eventually lead to poor pricing when taken to the market.

Collection, transport and logistics processes are performed by local intermediaries (typically engaged by large buyers, agents of exporters as well as agents of processors) who move from village to village to

purchase cashew nuts from the farmers and transport them from the production areas to larger storage centres. Usually the cashew is delivered from the districts/regions to the port where it is graded and then exported or delivered to local processing factories for their own processing plants. The trading process for exportation can be directly integrated by local intermediaries or more typically involve brokers or wholesalers.

Cashew nuts are currently marketed under a multi-channel system which depends on the path the product takes from the producer to the final customer. The extension of the channel depends on the number of intermediaries between producers and buyers. There are four main market channels: the small-integrated farmer channel, the local small processing or retailing channel, the medium-large processing channel and the raw cashew nut export trader channel. The first of these represents a vertically integrated channel in which the small farmers, located fairly close to rural markets, fulfil the role as harvester, transporter, wholesaler and retailer who markets directly to the consumer. In the second channel the local small processors purchase nuts directly from small farmers or primary collectors and sell the processed products to vendors who resale in urban markets, especially on the streets or to local hotels, supermarkets or other retail stores. In the third channel, the medium and large scale processors have a more effective combined processing capacity, use technological systems, and directly export kernels to markets in Europe, India, the USA, Canada, Australia, Germany and the Netherlands. Finally, in the fourth channel, the buyers collect raw nuts from small and large farmers/producers and then sell to large-scale processors and small/large exporters. This channel is actually targeted at the Indian market for foreign processing.

In Africa, since the first two channels are mainly targeted at the domestic market because of the high fragmentation of producers and the limited volumes of nuts locally processed, the export channel is actually the more relevant.

Looking at African processing, in fact, it takes place in three different forms. The first is rudimentary at the household level. The households process some of their produce for own consumption at a subsistence level with a few of the processed kernels making their way onto community markets through vendors. The second form is small and medium scale processors who usually employ a few more than ten people and move the cashew nuts to markets through local retailing, such as urban supermarket outlets or local vendors who retail direct to consumers on designated urban markets or resell to mobile vendors and hawkers who conduct their business on the streets. The third form of processing is by large-scale industrialized processors employing several people and using technological equipment.

African processing is actually very limited. Due to lack of processing facilities and market outlets, most of the cashew nuts produced in Africa are exported in raw form to India for processing. Then the processed cashew kernels move to the local processor's market or more often to Europe and America for final consumption or to roasters. In industrialized countries the cashew kernels are mainly consumed as salted, coated or spiced snacks. Most European roasters also carry out packing activities, whereby cashew nut kernels are packed into consumer packaging for the retail sector or bulk packaging for the food industry and catering sector. While large European and American roasters tend to import cashews directly from processors, smaller market players make use of importers. For the latter, the most common access route of shelled cashew nuts (or cashew kernels) into Europe and North America, coming from Asia, Africa or Brazil, is the Netherlands (via the port of Rotterdam).

The governance structure of the cashew value chain

The types of governance are often attributed to the whole value chain. However, in the case of the cashew value chain, the governance structure is split into different types which depend on the players and the market channel being analysed.

The small-integrated farmer and local small processing channels are typically characterized by a market governance type. The domestic market does not require particular raw or processed product specifications so transactions between farmers, local processors and local retailers are usually easily codified and organized.

Differently, in the medium-large processing and raw nut export channels, dissimilar types of governance can be identified. On the one hand, the power relationships between local exporters, South-East Asian processors and developed countries' importers are ever more frequently based on relational governance. Firstly, exporters do not want to be tied to a restricted number of importers in order to reduce the risk of being excluded from the chain. Secondly, the capability of the largest exporters to diversify their markets increases their bargaining power with respect to importers. Moreover, the relationships between importers and final retailers and supermarkets in developed countries are to move towards more modular

linkages (Dolan and Humphrey, 2004, Giuliani et al., 2005), because of the high competences of importers and their capacity to provide modular packages, thus reducing the buyers' need for monitoring and control.

On the other hand, the relationship with farmers is typically based on captive or hierarchic governance. Vertical integration describes the most explicit types of hierarchic agro-food value chain governance where buyers have strong control over the means of production. A captive value chain is differently characterized by the transactional dependence of smallholder farmers, local processors and suppliers from multinational firms and large exporters. In other words, the high influence of powerful multinational firms on trading, processing, manufacturing, and commercial domains and the presence of a huge number of disconnected smallholder farmers (Pimbert et al., 2001; Hu et al., 2004; Brown and Sander, 2007) produce a context where the high complexity of transactions, low ability to codify transactions, and low capabilities of the suppliers enable a high level of explicit coordination and control by exporting multinational firms (Gereffi et al., 2005). Focusing on the African case, the lack of large farmers and the quasi-monopoly of the overseas market for raw nut (more than 80% of African cashew nuts are exported to south Asia, especially India) are two of the main reasons leading to the captive governance structure of the African cashew industry.

Moreover, since the smallholder farmers and producers are expected to meet international requirements and product specifications that frequently do not apply to their domestic market (Keesing and Lall, 1992), a high degree of monitoring and control by export firms and international players is ever more necessary to efficiently and effectively move the cashew to global markets. This gap between the capabilities required for the domestic market and those required for the international market is further widened when the buyers require consistent quality and traceability.

Finally, the political, socio-economic and regulatory instability of African countries further increase the weakness of the African cashew industry and reduce the opportunities for local development and growth.

3 Cashew value chain in Sierra Leone: an exploratory project

Agriculture is the largest economic sector in Sierra Leone, employing 60% of the population (of which 55% are women) and contributing 47% to GDP but exports earnings constituted only 7% (official). The output in cash crop, has recently increased particularly in the eastern part of the country but potential remain high especially for cashew.

Since 2008, the government has been distributing 250,000 seedlings and for many actual plantations in Port Loko and Bombali districts, were created recently and just started bearing fruits. It appears that cashew is seen as a potentially attractive cash crop even in the traditional cocoa areas in the country.

In despite of the increasing demand for cashew products, the small local farmers suffer several problems such as the weakness in the appropriate knowledge for the production, the lack of appropriate techniques and means for conservation and processing, and the lack of awareness among the farmers of the commercial value of the cashew and of commercialization skills.

In this background, the project "NORTHERN LANDS CASHEW PROJECT: Strengthening techniques and approach of small scale farmers to enhance cashew value chain in Sierra Leone" is implemented by Cooperazione Internazionale (COOPI) with the partners National Farmers federation of Sierra Leone (NaFFSL) and University of Milan (UNIMI), and is co-funded by the European Commission (through the 10th EDF), Cariplo Foundation, Padova Municipality, FAO and UNIMI and is aimed at addressing the gaps mentioned above. The project started in July 2013 and will end in October 2015, for a 28 months duration. A second project, named "S.I.P.O.F.A.", started in January 2015 and ended in October 2016, was aimed at supporting the participated entrepreneurial development for the optimization of the cashew value chain in the same districts in Sierra Leone. The main goal of the project is the definition of innovative business model and social enterprises for an inclusive development of small farms. It has been funded by Fondazione Cariplo, Comune di Milano and Regione Lombardia and was implemented by Cooperazione Internazionale (COOPI), University of Milan (UNIMI) and Polytechnics of Milan (POLIMI).

Cashew plantations are spread among 6 districts: Kambia, Bambali, Koinadugu, Port Loko, Tonkoilili. At the beginning of 2013, cashew farmers were around 400, while today they are around 1400 (Bombali: 102 at the beginning and now 452; Kambia: 153 at the beginning and now 689; Port Loko: 140 at the beginning and now 246).

Currently, the global expansion of cashew farmed area is around 20.000 ha. Estimates report that the average farm size is around 3.2 ha of cashew cultivated with cashew, while the remaining areas are covered by companies' cultivation. In terms of productivity, Sierra Leone has yields production of

540kg/ha compared to 785 in world average and 900kg/ha for Guinea Bissau.

Considering the collection phase, in Sierra Leone it is done almost exclusively manually by seasonal workers. It is worth to note that often the enterprises buy raw cashew from smaller farmers together whom they have specific agreements.

Cashew apples are collected together with the nuts, mainly manually, once separated from the nuts, have to be peeled off and squeezed. However, at the moment in Sierra Leone cashew apples are not used at all, merely since their usage is not diffused.

Considering nuts, there are two main possible paths for cashew processing: manual processing and mechanized processing.

Manual processing requires a small number of mechanical instruments, while the process is quite labour intensive. In the districts under analysis there are some manual processors who employ paid workers, both seasonal and non-seasonal ones. Currently, the majority of processes for cashew is carried out manually and each entity could manually process around 1500 kg of raw cashew per year. Manual process allows having asfinal good roasted nuts, which are usually packed into simple plastic bags. Different sizes of bags are available. Usually, manual processors buy raw cashew at 2.000/3.000 Leones per kg (0,45 - 0,65 €/kg), while the selling price is around 100.000 Leones (22,50 €) per kg of processed cashew nuts. Finally, many of the local hawkers are also very small processors: they buy raw cashew from intermediaries or from the farmers themselves and process it in house (with the help of the whole family). They usually buy raw cashew for 7.000/10.000 Leones/kg (1,60/2,25 €/kg) and they sell at 20.000 Leones per kg of processed cashew (2,50 €/kg).

On the other hand, cashew nuts could be processed mechanically. For now, in Bombali, Kambia, Port Loko districts there is only one mechanical processor: Kamcashew. However, in Freetown another private company processing cashew is present; it is SecurSkySL (selling price: around 70000 Leones/kg, which means 15 €/kg). Nonetheless, through the analysis it has emerged that higher quantities would be needed to reach an actually efficient system. This kind of process allows to reach not only roasted nuts, but also more elaborated goods made up of cashew, such as cream, snacks, cashew water, soup, cannels, cashew butter, etc.

The cashew sector is not fully developed yet, with a combination of formal and informal activities and the not clear separation between local and international market. In fact, within the local markets, the role of intermediaries is crucial because they buy raw cashew nuts from the local farmers, and sell them to hawkers who manually process them in their households and sell roasted cashew nuts locally produced. Export is paying the higher price for the underdevelopment of cashew chain in Sierra Leone. Although currently a limited amount of cashew is exported to foreign countries and trading activities are not formally recognized, the value chain is typically captive. Intermediaries exert indirect control on the value chain taking advantage of the low bargaining power of smallholder farmers.

The research setting of the project

A project survey was defined and developed in order to understand the main features and expectations of cashew producers and to define the role of farmers' organisation as preliminary model of collective actions.

The final cleaned sample involves 319 farmers on 1359 participating to the projects. A stratified-random sample process was implemented in order to respect the quantitative distribution among the three main districts (Bombali, Port Loko, Kambia). Data collection was carried out through direct interview to the farmers conducted by 10 enumerators of Statistics Sierra Leone. Training of the data collection team was performed by COOPI and *Sierra Leone Agricultural Research Institute* (SLARI) staff, to understand the skills and technique required in soliciting information. Data collection was further supervised by COOPI and SLARI staff.

Two different clusters need to be distinguished and better analysed: farmers owning and not owning a productive cashew plantation before the beginning of projects. We define them as cashew beginning farmers (CBFs) and cashew expert farmers (CEFs). Clusters' size is respectively 88 and 231, corresponding to 27% and 73% of the sample. This categorization is required above all to explore the improvement in cashew production performances as leveraged by project association support.

The number of male farmers operating in cashew industry is widely larger than the number of women. The percentage of female is lightly higher within the cluster of CBFs (about 23%) than across CEFs (less than 10%). It suggests an increasing involvement of women who are interested to directly entry and

operate in cashew industry.

The distribution of age classes is homogeneously dispersed with respect to both gender and experience.

Looking at ethnicity, most of CEFs sampled are Themne (67%). The CBFs are more heterogeneous, even though the 50% is also belonging to Themne ethnic group. The other ethnicities are Limba (24%), Susu (11%) and Loko (9%).

The whole sample of CEFs focuses exclusively on crop cultivation. Otherwise, the 17% of CBFs perform activities different by crop cultivation such as trading (7%), civil servant (2.6%), livestock rearing (1.7%), skilled worker (1.3%) or other.

Data in Table 1 highlight CEFs generally have more years of experience than CBFs, even though the ratio is inverted for male and female farmers.

Moreover, CEFs have a larger availability of lands for cultivation but their own lands are less if compared to CBFs. That is proportional for both male and female. The ratio between cultivated and own lands is less than 40% for CBFs and more than 70% for CEFs.

Table 1.
Educational level of literate farmers (descriptive statistics)

	CBFs			*CEFs*		
	Female	*Male*	*Total*	*Female*	*Male*	*Total*
Number of years you have been cultivating crops	15,54	21,77	20,23	14,00	23,38	22,52
Acres of land to you own	11,49	43,63	35,67	10,88	25,13	23,80
Acres of land you cultivate	7,79	15,66	13,71	12,13	17,80	17,27
Acres of your land are used for cashew cultivation	3,84	5,42	5,03	4,91	10,67	10,14
Estimated value of your farming equipment (in SLL)	579,351	1,139,092	1,000,374	881,250	766,661	777,198

As expected, the acres of land used for cashew cultivation are twice for CEFs with respect to CBFs, who are starting-up their cashew plantations with support of the project.

Finally, the value of farming equipment is higher for CBFs than CEFs. However, this average value is very conflicting if you consider the gender classification. While female are scarcely equipped if compared to male among CBFs, their equipment is comparable or also better than male among CEFs.

The data analysis: the role of farmer organizations in supporting the development of cashew industry

As explained above the cashew industry in Sierra Leone has not developed yet and value chain is not well defined. The fractionalization of lands has led to a large number of small farmers who move their products mainly to local markets because each of them doesn't produce enough to attract international buyers.

Farmers association is expected, on the one hand, to favourite the development of productive competences of farmers and on the other hand, to enhance the role of farmers and their bargaining power within the value chain.

The 94% of the sample is a member of a farmers' association. Specifically, the most of farmers (90%) belongs to Farmer Field Schools (FFS). Some of them also belong to Agricultural Business Centre (5%), Farmer Based Organisations (4%) and market associations (1%).

The farmers of sample have been usually involved in associations for about 37 months. The most recent members have been joining an association for 4 months, the longest members for two years. The average numbers are similar for both CEFs and CBFs (respectively 31 and 37 months).

The typical size of associations involving CBFs is larger than associations involving CEFs (about 47 vs 30 members). Differently, the percentage of female members is higher in associations involving CBFs than CEFs (almost 40% vs little more than 25%). That suggests an increasing engagement of female farmers in cashew industry.

The 90% of the investigated farmers has already participated in the past to other agricultural projects whose often one concerned cashew plantation and production. The involvement in these recent projects suggests the farmers' expectation for further benefits. In this direction, the association should play a crucial role in supporting and facilitating the development of productive competences by training, the

access to input, the access to market and the development of relational opportunities with the different actors of the value chain.

One of the main factors expected to positively affect the success of agricultural projects is related to the involvement level of their members in associations' activities such as training and meetings.

The average overall level of engagement of CEFs is higher if compared to CBFs for both activities. CEFs are likely more aware of the importance of training with respect to CBFs. Moreover, female more than male CEFs are inclined to be involved in training activities. However, this ratio is inverted for CBFs.

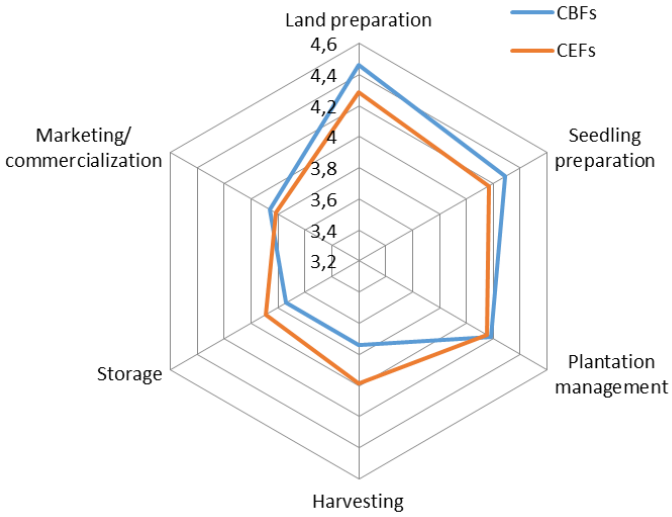

Figure 3. Importance of training activites

The *Figure 3* explores the main training topics and the interest level of farmers for each of them. Interest level is measured by using a five-point scale. The radial plot highlights CBFs are more interested to preliminary activities such as land and seedling preparation. It is probably due to be in starting-up phase. Conversely, CEFs are focused on harvesting and storage processes. Plantation management is to be considered crucial for both of them. Marketing and commercialization are perceived as less important than productive process, even though CBFs seem to be more interested in marketing than CEFs. All involved farmers have been likely focusing on production more than marketing, yet. Moreover, because of the low quantity of produced and processed cashew per farmer, the main market channel is the local market.

The role of associations in developing the production competences is likely the most important issue. The improvement of farmers' wealth and well-being is unfeasible without acceptable quality and quantity production performances making production attractive for global markets.

Farmers are also investigated with respect to the perceived improvement compared to previous year's performances considering the role of the association in leveraging the productive performance. A satisfactory level of improvement is averagely claimed, above all concerning the production quantity, quality and profit (value added by harvesting). Specialization is not specifically increased. In other words, farmers' production is inclined to be characterized by a high variety of products. It is likely due to the limited size of lands and the necessity to make production supporting the sustainability of farmer's family.

The improvement of performance may allow farmers to have more resources to access to better inputs or to extend the plantation area.

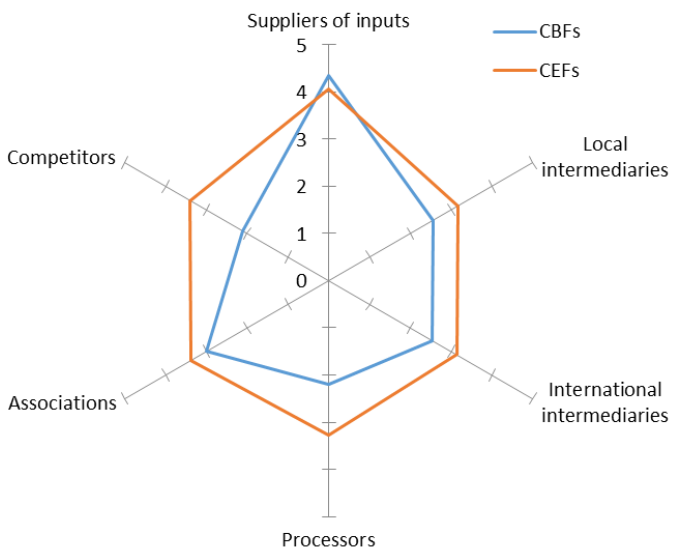

Figure 4. The importance of players in cashew value chain

A large share of farmers, who are beginning to cultivate cashew, are unaware about the several players operating within the cashew value chain. Their attention is mainly paid to suppliers of inputs and to associations. The firsts are crucial to have the necessary resources for manage the plantation and make it productive. The seconds are important because of the learning support and of the better access to inputs.

Differently, CEFs, who have been producing cashew for a larger number of years, have more awareness of the cashew value chain (see Table 1). They are inclined to attribute a higher and proportional importance to all actors of the value chain. However, no player is considered essential and channels for moving products to market are comparable.

Two main reasons may explain this perception. First, local competition is not supposed as significant likely due to a large occurrence of farmers in the beginning stage. That makes local markets attractive in the short time (even though an increasing competition is perceived concerning cashew apples). Second, the local scale of most of farmers makes them unattractive to industrial processors or international buyers. The opportunity to scale will depend on the associations' capacity to coordinate farmers' productions and intermediation process.

4 The role of collective action in driving the reconfiguration of value chain

The high fragmentation of landholdings produces several problems both for farmers and buyers. Due to the small dimension of plots, the former are disadvantaged to access capital resources and productive inputs, are unable to apply knowledge and technologies to increase productivity and efficiency, to create scale economies, and suffer from a lack of market access (Barham and Chitemi, 2009; Tiberti and Tiberti, 2015). There is increasing evidence that the opportunity for smallholder farmers to raise their incomes and profits by increasing their bargaining power within the value chain, mainly depends on their ability to access and participate successfully in the local and global markets (Barham and Chitemi, 2009; Markelova et al., 2009; Fischer and Qaim, 2012; Trebbin and Hassler, 2012).

Specifically, smallholder farmers face many limitations that inhibit them from taking advantage of growing market opportunities. Often living in peripheral areas with lack of infrastructure and communications, they face high transaction costs that significantly reduce their incentives for market participation for both agricultural input and output markets. Moreover, smallholder farmers lack market information on prices and technologies, lack of connections to established market actors, struggle to create scale economies and to meet buyers' food safety and quality control requirements, and are seldom able to provide standardized products on a continuous basis (Gulati et al., 2007). High transaction costs faced by smallholders due to their small scale operations exacerbate these challenges, especially in quality-conscious and niche markets such as organic or fair trade (Poulton et al., 1998). Access to these markets often requires expensive third party certification, which represents a main barrier to smallholder participation (Barrett et al., 2001). In addition, small farmers with few assets have traditionally limited access to services, including effective extension and rural credit, which are important preconditions for

upgrading production systems (Fischer and Qaim, 2012). Finally, the lack of resources is further combined with the lack of competences, which reduces both production quantity and quality, and makes the role of small farmers inclined to be marginal in the value chain. Differently a large scale process better supports access to inputs, favourable trading agreements and access to market, collaboration and learning opportunities.

Likewise, this lack of large-scale farmers leads to higher transactional costs for buyers to find the large volumes and minimal quality they need. Transactional costs include transportation costs (depending on distance, time, road conditions and availability of own means of transport), information costs (depending on the number of local intermediaries, the farmers' access to sources of market information and the buyers' search costs for quality and food safety), negotiation costs (related to the number of visits for reaching an agreement for the cashew selling) and monitoring costs (related to the extension of the trusting relationship with the local trader). Specifically, the large number of disconnected smallholder farmers makes it difficult for buyers to forge enduring collaborative relationships in order to better support the supply of inputs and learning processes. In other words, the high fragmentation ensures the high substitutability of producers but reduces the opportunities for collaboration and learning. However, since the growth of the cashew market value has introduced ever more rigorous international quality standards which stress the necessity to increase quantity and improve quality of production, the arrangement and collaboration between buyers and producers is crucial.

Moreover, the impracticality to directly manage collection and storage processes encourages buyers to positively look for independent intermediaries such as small aggregators between smallholder farmers and retail distribution (Trebbin & Franz, 2010). However, the lack of competition and the limited access to credit for smaller traders leads to a monopoly of large traders and wholesalers which traditionally produces unfair marketing practices. Large traders are inclined to underpay farmers and farmers react by mixing good nuts with poor quality nuts or with foreign bodies in order to increase the weight in an attempt to reduce the effects of price undercutting. These practices further increase the inefficiency of the network and increase the costs for buyers.

There is evidence that collective action and producer organizations offer the possibility for smallholders to access and participate in the market more effectively (Markelova et al., 2009). Policy makers and practitioners increasingly promote collective action and farmer organizations as foci of the pro market access approach.

Meinzen-Dick and Di Gregorio (2004) define collective action as a voluntary action taken by a group in pursuit of common interests or in achievement of common objectives. In collective action, members may act directly or on behalf of an organization; they may act independently or with the support of external agents from governmental entities, non-governmental organizations (NGOs) or development projects.

Farmer associations are a form of collective action that is defined as voluntary action taken by a group of individuals, who invest time and money to pursue shared objectives (Markelova et al., 2009).

These commonly shared goal actions can enable farmers in Sierra Leone to take advantage of the changes in the global value chains and deal with existing market imperfections. Farmer associations can provide a wide range of services that are significant for market access. Stockbridge et al. (2003) synthesized the main services provided by farmer associations as follows:

- Facilitation of collective production activities
- Education services (business skills, health, general)
- Managing common property resources (water, pasture, fisheries, forests)
- Technology services (education, extension, research)
- Marketing services (input supply, output marketing and processing, market information)
- Financial services (savings, loans and other forms of credit)
- Welfare services, (health, safety nets)
- Policy advocacy

Thus, collective action through farmer associations can generate economies of scale in the production and commercialization phase (Trebbin and Hassler, 2012). Furthermore, farmers' cooperation groups can achieve efficiencies in production and can lower marketing and commercialization costs (Bernard and Taffesse, 2009; Francesconi and Heerink, 2011; Fischer and Qaim, 2014). In addition, by acting collectively, smallholders may be in a better position to decrease the transaction costs of assessing inputs and outputs (Markelova et al., 2009), obtain easier access to market information, ensure the achievement and effective use of new technologies and social innovation, jump into high value markets allowing rural

producers to compete with larger farmers and incumbents, gain entry into markets by improving their bargaining power with buyers and intermediaries because of higher quantities of marketable surplus, have easier access to financial and human capital, and, finally, monitor their own food safety standards ensuring traceability (Kherallah et al., 2002; Stockbridge et al., 2003; Narrod et al., 2009; Fischer and Qaim, 2012; Trebbin and Hassler, 2012).

It is unlikely that a single smallholder farmer can increase their skills, input-output competences and differentiate their products to escape from a situation of captivity in the agro-food value chain.

As shown in the results of the survey the role of collective action can be crucial to help farmers in enhancing their productive and marketing capabilities. The ability of smallholder farmer groups to create and sustain complex market-oriented networks is critical in linking farmers to value added markets (Barham, 2007) and in switching to a more relational type of chain. Collective action, through training programmes on production using farmer field schools and marketing training to build capabilities in the commercial and distribution phase, can shift away from standardised, poor products to greater levels of quality, safety, traceability, and a variety of small farmers' products to create and develop linkages with more high value markets that promote a safe environment, sustainable agriculture, fair trade and food security (Mani et al., 2013).

5 Conclusion

Generally, the agro-food value chain in developing countries, especially in Africa, is "captive" (Gereffi et al., 2005) and it is characterized by high levels of influence from powerful multinational firms in the trading, processing, manufacturing, and commercial domains (Pimbert et al., 2001).

Understanding how collective action can face market inefficiencies, barriers to market access or coordination problems and how farmers' cooperation can transform the structure of the agro-food value chain from 'captive' to 'relational', is particular important (Gereffi et al., 2005).

It has been shown that effective local collective action, combined with production and marketing training programmes, can indeed be a useful approach for the poorer, resource-dependent communities to sustainably manage their resources, generate marketable surplus, improve market performance and, as a virtuous consequence, improve their position in the value chain (Markelova et al., 2009; Barham and Chitemi, 2009; Trebbin and Hassler, 2012).

In the near future, the opportunity for smallholder farmers to raise their incomes and profits will mainly depend on their ability to participate successfully in the markets. Consequently, the focus on the role of collective action has broadened from building up farmers' production capabilities to facilitating farmers' access to markets (Shepherd, 2007).

Thus, market access proponents make a strong case that, for smallholder farmers to thrive in the global economy and to enter into relational value chains, it is necessary to create an entrepreneurial culture in rural communities (Lundy et al., 2002). This means shifting the focus from only production-related programmes to more market-oriented interventions (Barham and Chitemi, 2009).

Cashew value chain can be a strategic sector for the economic development and the food security in Sierra Leone, as in other countries, like Guiné-Bissau and Mozambique (Carvalho and Mendes, 2015; Antonio and Griffith, 2017).

The combined effect of production-related programmes and market-oriented interventions, focused on cashew value chain and oriented to relational approach, can improve the level of quality, safety, traceability, and variety of small farmers' products to create and develop linkages with more high value markets that promote a safe environment, sustainable agriculture, fair trade and food security.

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