The Cashew Value Chain in Mozambique

Carlos Costa
(with contributions by Christopher Delgado)
THE CASHEW VALUE CHAIN IN MOZAMBIQUE

Carlos Costa
(with contributions by Christopher Delgado)

The Let’s Work Partnership in Mozambique is made possible through a grant from the World Bank’s Jobs Umbrella Trust Fund, which is supported by the Department for International Development/UK AID, and the Governments of Norway, Germany, Austria, the Austrian Development Agency, and the Swedish International Development Cooperation Agency.
ABSTRACT

Mozambique has a low average yield of raw cashew nut (RCN) of 3 kg/tree. The latest census of agriculture in 2015 estimated that 1.33 million households owned cashew trees. Another 30,000 households were involved post-harvest. One-half of RCN production sold was processed in 2015, up from 1/3 in 2008. A large share of cashew exports are raw nuts, mostly “informal” (no tax). In 2017, national production was only two-thirds of 1972, when Mozambique was the world leader in cashew exports. An export tax was imposed on RCN exports in 2001, currently 18% of the F.O.B. price, to promote domestic processing. Key challenges for production include replacing aging trees with improved root-stock and stepped-up anti-fungal spraying. Industrial processing now comprises 15 factories employing 17,000 workers, 57% of whom are women.

Main recommendations are: a multi-stakeholder Platform to periodically review cashew developments; smallholder participation in producer organizations; privatization of seedlings distribution and tree-spraying without subsidies; public and private commercial infrastructure (warehouses, transportation, access roads); accessible international market and technical information; using cashew shells to generate energy; using cashew apple to produce packaged fermented beverages; and a cross-Ministry push on food safety protocols for cashew.
ACKNOWLEDGEMENTS

This report is part of the Let’s Work Partnership program in Mozambique (P155043). The principal author is Carlos Costa, with contributions by Christopher Delgado. They thank colleagues in the Let’s Work Partnership for regular feedback and advice. Very valuable insights were kindly provided by Ilidio Bande, Director of the Instituto de Fomento do Cajú (INCAJU) and his team, and Silvino Marins and Gonçalo Correia from the Associação dos Industriais de Cajú (AICAJU).

The authors are also grateful for helpful comments provided by Irina Schuman, Sr. Agricultural Economist, World Bank, as a peer reviewer of the paper; and to Francisco Moraes Leitao Campos, Sr. Economist, World Bank, for his valuable contributions to the paper. The report was prepared under the general direction and ongoing support of Ian Walker (Task Team Leader). The authors are also grateful to World Bank Country Director, Mark Lundell, for his interest and ongoing support. The report was made possible through a grant from the World Bank’s Jobs Umbrella Trust Fund, which is supported by the Department for International Development/UK AID, and the Governments of Norway, Germany, Austria, the Austrian Development Agency, and the Swedish International Development Cooperation Agency. As always, responsibility for the conclusions drawn remains with the authors. Finally, the authors would like to acknowledge the outstanding editorial assistance received from Aldo Morri.
CONTENTS

ABSTRACT ................................................................................................................................. 2
ACKNOWLEDGEMENTS ............................................................................................................ 3
EXECUTIVE SUMMARY ............................................................................................................. 8
1. INTRODUCTION .................................................................................................................... 12
  1.1 Background ...................................................................................................................... 12
  1.2 Objective of the study ....................................................................................................... 13
  1.3 Structure of the report ...................................................................................................... 14
2. THE CASHEW TREE AND ITS CULTIVATION ..................................................................... 16
  2.1 General description, main characteristics ......................................................................... 16
  2.2 Cultivation practices ........................................................................................................ 16
  2.3 Cashew for multiple purposes ........................................................................................ 17
3. GLOBAL AND AFRICAN CASHEW PRODUCTION, PROCESSING, AND TRADE ............. 20
  3.1 Global cashew value chain ............................................................................................... 20
  3.1.1 World Raw Cashew Nut (RCN) production .................................................................. 20
  3.1.2 World raw cashew nut production trends .................................................................... 20
  3.1.3 World raw cashew nut processing features ................................................................. 23
  3.1.4 World cashew kernel markets trends ......................................................................... 24
  3.2 AFRICAN RCN PRODUCTION, EXPORTS, AND PROCESSING .................................... 25
    3.2.1 African countries RCN production and exports evolution ......................................... 25
    3.2.2 African countries processing evolution .................................................................... 26
4. MOZAMBIQUE CASHEW VALUE CHAIN BACKGROUND .................................................... 28
  4.1 Cashew value chain governance ..................................................................................... 28
    4.1.1 Main institutional constraints .................................................................................... 29
  4.2 Cashew value chain features .......................................................................................... 29
    4.2.1 The formal and informal sectors and cashew products flow stages ............................ 30
    4.2.2 Cashew value chain direct stakeholders and their functions ................................... 31
  4.3 Cashew value chain main segments .............................................................................. 33
    4.3.1 Cashew production and harvesting ........................................................................ 33
      Cashew production systems ............................................................................................ 34
      Factors influencing cashew production and harvesting .................................................. 34
      Cashew orchard characteristics ..................................................................................... 34
      Cashew tree yields and productivity ............................................................................. 35
      Post-harvest handling and storage ............................................................................... 36
      Technical assistance and input use .............................................................................. 36
      Constraints hindering development of cashew production ........................................... 37
    4.3.2 Cashew processing ..................................................................................................... 38
      Cashew processing systems ............................................................................................ 41
      Constraints hindering development of cashew processing ........................................... 42
    4.3.3 Cashew Marketing ..................................................................................................... 43
Constraints on cashew marketing process ................................................................. 43
4.4   Cashew value chain financing issues ........................................................................ 44
   4.4.1   Financial constraints within the cashew value chain ........................................ 44
5. CROSS-CUTTING ISSUES IN CASHEW VALUE CHAINS ........................................... 47
   5.1   Gender issues ....................................................................................................... 47
   5.2   Environmental issues .......................................................................................... 48
      5.2.1   Climate change ............................................................................................... 48
      5.2.2   Disease and pest management ........................................................................ 49
      5.2.3   Cashew processing effluents ......................................................................... 50
6. THE CASHEW POLICY ENVIRONMENT IN AFRICA ................................................ 51
   6.1   Overview of African cashew policies ..................................................................... 51
      6.1.1   Production policies ......................................................................................... 51
      6.1.2   Processing policies ......................................................................................... 52
      6.1.3   Marketing policies and value chain organization ............................................ 53
      6.1.4   Food safety and traceability policies ............................................................... 54
   6.2   Mozambique evolution and effectiveness of cashew policies ............................... 55
   6.3   The impact of policy on the cashew business ....................................................... 56
7. CASHEW VALUE CHAIN POTENTIAL FOR JOB CREATION ..................................... 57
   7.1   Constraints deterring existing jobs from being better paid or the creation of new jobs ............................................................................................................. 57
      7.1.1   In production ...................................................................................................... 57
      7.1.2   In processing ..................................................................................................... 58
      7.1.3   In trading ........................................................................................................... 58
   7.2   Opportunities to create new and better paid jobs ................................................ 59
      7.2.1   Opportunities at different stages of the value chain ....................................... 59
         Cashew production .................................................................................................. 59
         Cashew processing ................................................................................................ 61
         Cashew trading ..................................................................................................... 62
8. MOZAMBIQUE CASHEW REGIONS AND MAIN MARKETS TO TARGET .................. 64
   8.1   Regions to look at for developing the cashew industry ......................................... 64
   8.2   Markets to focus on to stimulate cashew value chain growth .............................. 66
9. THE NEED FOR A SOUND STRATEGY TO CREATE MORE AND BETTER JOBS ........ 67
   9.1   Creating a better environment for job creation .................................................. 68
      9.1.1   At the institutional level .................................................................................... 68
      9.1.2   At production level ........................................................................................... 69
      9.1.3   At processing level .......................................................................................... 70
      9.1.4   At trading level ............................................................................................... 70
BIBLIOGRAPHY ............................................................................................................ 72
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACi</td>
<td>African Cashew Initiative</td>
</tr>
<tr>
<td>ACIANA</td>
<td>Nampula Commercial, Industrial and Agriculture Association</td>
</tr>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>AICAJU</td>
<td>Cashew Industry Association</td>
</tr>
<tr>
<td>CAGR</td>
<td>Compound Annual Growth Rate</td>
</tr>
<tr>
<td>CNSL</td>
<td>Cashew Nut Shell Liquid</td>
</tr>
<tr>
<td>CTA</td>
<td>Confederation of Private Sector Business Associations</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EEG</td>
<td>Export Expansion Grant</td>
</tr>
<tr>
<td>FAO</td>
<td>United Nations Food and Agriculture Organization</td>
</tr>
<tr>
<td>FAOSTAT</td>
<td>FAO Statistical Information System</td>
</tr>
<tr>
<td>FO</td>
<td>Farmers’ Organization</td>
</tr>
<tr>
<td>FSP</td>
<td>Financial Service Provider</td>
</tr>
<tr>
<td>GDP</td>
<td>gross domestic product</td>
</tr>
<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit</td>
</tr>
<tr>
<td>HAACCP</td>
<td>Hazard Analysis Critical Control Point</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IIAM</td>
<td>Mozambique National Institute of Agronomic Research</td>
</tr>
<tr>
<td>INC</td>
<td>International Nut and Dried Fruit Council</td>
</tr>
<tr>
<td>INCAJU</td>
<td>Cashew Development Institute</td>
</tr>
<tr>
<td>INNOQ</td>
<td>Mozambique National Institute for Standardization and Quality</td>
</tr>
<tr>
<td>KOR</td>
<td>Kernel Outturn Ratio</td>
</tr>
<tr>
<td>LWP</td>
<td>Let’s Work Partnership, World Bank Program</td>
</tr>
<tr>
<td>MASA</td>
<td>Ministry of Agriculture and Food Security</td>
</tr>
<tr>
<td>MIC</td>
<td>Ministry of Industry and Trade</td>
</tr>
<tr>
<td>MT</td>
<td>Metric Tons, or more simply “tons”</td>
</tr>
<tr>
<td>NAIP</td>
<td>National Agricultural Investment Plan</td>
</tr>
<tr>
<td>NDP</td>
<td>National Development Plan</td>
</tr>
<tr>
<td>OE</td>
<td>State Budget</td>
</tr>
<tr>
<td>PPP</td>
<td>Public-Private Partnership</td>
</tr>
<tr>
<td>PO</td>
<td>Producer Organization</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>RCN</td>
<td>Raw Cashew Nuts</td>
</tr>
<tr>
<td>ROFR</td>
<td>Right of First Refusal</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>SDAE</td>
<td>District Services for Economic Activities</td>
</tr>
<tr>
<td>SMEs</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>TNS</td>
<td>Technoserve</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

Approximately 1.3 million Mozambican farm households have cashew trees, which generate cash income to supplement subsistence diets. Thirty percent of these households are headed by women. Overall, 6.5 million people derive livelihoods in part from cashew, adding US$80 to $120 per capita to the annual net income of growers. Furthermore, 150,000 people are employed in some capacity in cashew marketing and processing, with potential to add another 30,000 processing jobs. Before gaining independence in 1975, Mozambique was the world’s largest producer of raw cashew nuts at about 139,000 tons in 2017\(^1\). National primary production was only 70 percent of the 1972 level in 2017, but it is once again growing strongly: The national cashew institute estimates that cashew production will surpass pre-revolutionary production by 2020.

Key challenges in primary production include the need to replace aging trees with improved root stock, and the need to increase the pace of anti-fungal spraying to increase yields from the current low average of about 3 kg/tree. Many pre-revolutionary primary processing plants shuttered in the late 1990s following controversial removal of a protective export tax that had favored processors at the expense of growers. A new law (13/1999) led to export tax re-established in 2001 set to be between 18 and 22 percent of free-on-board (FOB), currently 18 percent.

Cashew, cotton, tobacco, and sugar cane remain measurable contributors to improving the Mozambican trade balance. However, unlike those crops, whose production is supported by private enterprises through specific schemes, cashew production in Mozambique is carried out by millions of rural families without support other than that provided by public services. Only half of Mozambique cashew exports in 2015 were processed (up from about 1/3 in 2008) and at least 3/4 of raw cashew nut (RCN) exports were estimated to be “informal” in 2015 (that is, did not pay the export tax)\(^2\). And in 2015, the processing industry was operating at about 70 percent capacity. Since then, there has been considerable effort to tighten up on informal exports. Even so, Mozambique still processes only a little above one-third of total RCN production industrially. This implies that the crop has potential to generate better jobs through more efficient processing industrialization. It is crucial to invest in new modern processing units that add value to RCN.

The report identifies key obstacles to job creation within the cashew sector and provides insight on how to remove obstacles. It begins with a general description of cashew culture, its characteristics and cultivation practices, and emphasizes the multipurpose uses of cashew, including a range of by-products that could support generation of new and better jobs.

The report also presents an overview of the world cashew industry. It concludes that the global industry is flourishing and the market for cashew nuts is growing faster than other popular nuts such as almonds, macadamia, pistachios, and walnuts. This provides an opportunity for African cashew producers to capture a growing world market. Asian countries, such as India and Vietnam, are leaders in the world cashew industry, but Africa in the last 10 years overtook Asia with 52 percent of world RCN production. This has been mostly due to rapid growth of

---

2 Mishra and Martin (2016).
West African production, especially Côte d’Ivoire, which shares the dominant position for global RCN production with India. East African countries, once leaders in global RCN production, today only hold 12 percent of market share. Most of this is from Tanzania, accounting for 8 percent of world production. Mozambique accounts for only 3.3 of world production, a fraction of its previous majority share.

The present global cashew business suggests an opportunity to add value to domestic Mozambican cashew production and generate new jobs, provided development of an efficient processing industry. Any strategy to achieve this will need to improve on four inter-related determinants of cashew industry growth:

- Good raw cashew nut quality and “out-turn”, which leads to higher kernel output ratio (KOR).
- Higher labor productivity.
- Adequate working capital.
- Technology relevant to prevalent smallholder producers.

The diagram below lays out current estimates of relative magnitude and numerical importance of cashew to jobs in Mozambique:

The potential for expanding jobs in processing cashew internally is lower than from increasing RCN production, but is not negligible. Trading is the third area of potential job creation, given the thousands of small to medium trader middlemen, retailers, wholesalers, and exporters. We conceptualize the value chain in Mozambique therefore according to three stages: production, processing, and marketing.

---

3 Out-turn is the amount of kernel retrieved from 1 kg of raw cashew nuts in shell. It is measured in pounds of kernel per 80 kg of raw nuts. Out-turn is an important indicator of quality of the raw cashew nut and determines processing yields.
• Production is dominated by smallholder producers. This stage includes seedling production and distribution and insecticide spraying and agricultural extension to producers. Production is highly affected by pest management chemical usage and climate change. These issues must be considered in any strategy to boost production.

• Industrial processing performance has varied for about 30 years, after privatization of main processing units. It was revitalized over the past decade with support from donor-funded initiatives. The processing sector now comprises 15 factories employing approximately 17,000 workers, 57 percent of whom are women. Employment in the industry has the potential to double. Effluent emissions from processing units remain an environmental issue not yet well managed.

• Marketing includes RCN domestic trading, exports, and specialty outlets for white, roasted, and flavoured kernel. It also includes small quantities of Cashew Nut Shell Liquid (CNSL), and some alcoholic beverages from the cashew apple.

Financing is important for all cashew value chain segments. In Mozambique, financial institutions are not widely serving cashew value chain actors. While all stakeholders suffer from lack of access to financing, the main processors and exporters can easily access credit from commercial banks. Only a few microfinance institutions have dared support small cashew businesses. Any strategy to scale development of the cashew value chain must address financing for smallholder producers and small-scale traders and information for farmers about cashew production and handling as a business.

The cashew sector is one of the most regulated in the world, with fiscal policies governing incentives for main activities in each producing country. Yet, despite heavy government interventions, results have been mixed between countries. The Government of Mozambique (GoM) has not been particularly successful with policies, especially with its export tax to discourage export of RCN to save it for domestic processors. Primary RCN production has not grown in Mozambique, still trailing the rate of growth of most African producers; nevertheless processing has grown steadily to be once again the most developed in Africa.

GoM decided recently to maintain law 13/99 keeping export taxes in force while reformulating accompanying regulations. Any strategy to intervene in the cashew business must consider the 18-22 percent taxes on RCN exports. The new regulation includes a set of rules and activities intended to govern cashew value chain activities.

The National Institute of Cashew (INCAJU), the state agency in charge of supervising the cashew business in Mozambique, implements the GoM-approved Cashew Master Plan for 2017 to 2020. This includes several interventions to develop all dimensions of the value chain, promote the processing of new products, and improve existing jobs while creating new ones. It stresses the need for any development promoter to coordination work with relevant state agencies and the private sector to implement the Cashew Master Plan.

INCAJU’s main task is to create a business-friendly environment to attract cashew sector investments and generate new and better jobs. Success requires implementation of a strategy to address main constraints in each step of the value chain. It also implies that investors need to align with INCAJU in implementation of Cashew Master Plan directives.
INCAIU is already pursuing actions to address the following:

- Readjustment of current cashew policies to better incentivize value chain stakeholder.
- Improvement of the regulatory framework.
- Improvement of dialogue with business partners along the value chain, especially the private sector represented by the Confederation of Private Sector Business Associations (CTA), the Cashew Industry Association (AICAJU), and the Nampula Commercial, Industrial and Agriculture Association (ACIANA).
- Improvement of productivity in cashew nut production to make the processing industry internationally competitive for RCN and assorted cashew products.
- Supporting and promoting establishment of commercial structures—such as warehouses, transportation, and access roads—and a sound service provider network in cashew rural areas, especially relating to financial issues.
1. INTRODUCTION

1.1 BACKGROUND

According to a World Bank report released in October 2018, economic growth has been decelerating in Mozambique since 2016. The country’s economic downturn began after disclosure of hidden debt in 2016. After years of appreciable gross domestic product (GDP) growth, Mozambique dropped to 3.8 and 3.7 percent real GDP growth in 2016 and 2017 respectively, down from 8 percent on average over the last decade. The country is expected to attain the slightly lower rate of 3.3 percent in 2018 as the economy continues to confront the downturn that followed the debt crisis. Private demand, especially for services—the largest driver of growth in the years prior to the economic downturn—has slowed significantly, negatively affecting the whole economy.

The extractive industry has been one of Mozambique’s economic pillars. It was the main contributor to growth in 2017, but is expected to grow at a slower pace in 2018. The above cited report concludes, “Extractives will not be enough to reverse the economic trend, an intensive and ambitious focus on achieving diversification, raising rural productivity, and providing more equal access to services in national development efforts is essential for inclusive growth”.

Indeed, in recent years, the drivers of growth gradually shifted from agriculture, the sector with the lowest productivity, and moved towards services, a sector six times more productive, and industry. From 1996 to 2014, the number of workers engaged in agriculture fell from 87 to 71 percent, most of them moving to services, where from 1996 to 2014 the percentage of engaged workers increased from 9 to 24 percent. In contrast, the contribution of the industry sector to employment was rather limited in the last two decades, mainly due to a concentration of investments in large-scale, capital-intensive projects.

Nonetheless, agriculture can play an important role in achieving inclusive growth within rural areas, and likewise for cashew culture, which is among the main crop contributors to the Mozambique trade balance, along with cotton, tobacco, and sugar cane. However, unlike these other crops, whose production is directly linked to private enterprises through specific supporting schemes, cashew production in Mozambique is carried out by millions of rural families without support other than that provided by public services.

The fact that most of the RCN is still exported, despite the growing Mozambican processing industry, gives the crop certain advantages: it has the potential to generate better and inclusive rural employment, not only through farming but also through rural industrialization to exploit the full potential of the raw cashew nut and its covering false fruit. A sound cashew sector strategy is needed to achieve inclusive growth based on intensive job creation and qualitative improvement of existing jobs.

---

1.2 OBJECTIVE OF THE STUDY

The purpose of this report is to assess opportunities and constraints to development of the Cashew Value Chain in Mozambique, as well as to point to sound interventions that create more and better jobs in the value chain. The measures identified in this report result from exploration of emerging opportunities to enhance cashew value chain performance in Mozambique. The goal is to improve the working environment by making existing jobs sustainable and creating new and better-paid jobs to help alleviate poverty, mainly among smallholder cashew producers.

Concerned with creating more and better-paid jobs, the Let’s Work Partnership (LWP), a World Bank Program, under the Component “Jobs Policy Dialogue”, supports the Government’s National Employment Policy action plan by providing opportunities for small and medium enterprises (SMEs), informal enterprises, women, and youth.

Besides identifying the main constraints deterring the cashew sector from improving existing jobs conditions and creating quality new jobs, this report seeks to highlight the policy themes and public and private actions that can make a difference in building a robust private sector in the cashew value chain, which can in tandem create sustainable jobs over time.

Since the public sector plays a critical role in providing a social safety net for the poorest and creating a business environment in which the private sector can thrive, the report also elaborates on the institutional constraints and opportunities that once considered can expand the potential of all dimensions of the cashew value chain.

In this context, it is important to acknowledge that to reap the benefits of worldwide increase in demand for nuts, Mozambique will need to promote effective partnerships between the various stakeholders along the value chain. This includes direct partnerships between smallholder producers—by far the group with lowest market power—with the processing companies operating in rural zones.

Mozambique will also need to invest in market research, promote intensive training programs for producers and processors regarding good agriculture and processing practices, and ensure that agents at all levels of the supply chain—including small farmers—are on a level playing field in terms of access to key information about the state of cashew markets, food safety standards, and traceability. The focus would be on:

- Establishing partnerships between the public and private sector.
- Creating a network of service providers to rejuvenate cashew orchards.
- Promoting appropriate technology (nurseries) to produce seedlings and to deliver to rural families in their own land.
- Incentivizing care for older trees already in production.
- Reinforcing the Information System (IS) to allow effective data collection on all dimensions of cashew business activity.
1.3 STRUCTURE OF THE REPORT

In Section 1, this report begins by contextualizing its purposes through defining the LWP’s aims to support the Government of Mozambique’s employment policies. It also emphasizes the report’s intent to provide insight to help design interventions for job creation in the cashew value chain.

Section 2 provides a general description of cashew culture, its characteristics and cultivation practices. It emphasizes the cashew’s multipurpose uses and its potential for, in addition to RCN for kernel, a vast range of by-products that can, if well exploited, be significant generators of new jobs within the cashew value chain.

In section 3, the report presents a general overview of the cashew industry around the world, comparing evolution of value chains in the most relevant cashew producing countries. It stresses the importance for the cashew sector in Mozambique to follow developments in the rapid growth of the global cashew market, and describes the potential and prospects for African cashew country producers to compete in the world cashew market.

The fourth section analyses the Mozambique cashew value chain, detailing the main characteristics of each segment. This section also highlights some of the main factors influencing cashew production, processing, and commercialization. It elaborates on the characteristics of cashew value chain governance, and describes some of the main institutional constraints. A flowchart depicts how the different business activities within the Mozambique value chain are structured in comparison with other countries where the sector is more developed. It also describes the tasks performed by each relevant value chain stakeholder, describing production and processing systems in all segments of the value chain and factors that influence performance, including main constraints. The section closes with an analysis of financial issues affecting the different segments of the value chain, emphasizing the main constraints and providing some insights to address them.

Section 5 covers cross-cutting issues, analysing the role of women in the cashew business and the potential for creating new and better jobs for them. It also analyses the impact of environmental issues on the business, focusing on the possible effects of climate change on the sector as well as conversely the impact of the cashew business on the environment. The section briefly analyses the impact of chemical use on the environment and on operators and neighbouring people, finishing by evaluating the impact of processing effluents.

Section 6 covers cashew policies in Africa and Mozambique and its impact on cashew business development. It identifies the most relevant policies adopted by the main African cashew producer countries to develop value chains in the last two decades, as well the institutional framework created to guide implementation issues.

Section 7 evaluates cashew value chain potential to improve existing jobs and create new jobs. It identifies main constraints deterring the sector from keeping existing jobs and generating new ones, focusing on the different value chain steps and stressing the rationale for suggested interventions. The section identifies value chain segments with more business potential, and estimates the number of jobs that can be created through investments in several areas of potential growth.
The 8th section identifies Mozambican cashew geographic zones with potential to create jobs due to strong RCN production potential, adequate existing infrastructures, and access to markets. It also identifies the most promising markets for each cashew producer region in Mozambique.

The final section 9 describes a set of activities INCAJU is planning to carry out in line with its Cashew Master Plan for 2017 to 2020. These include several interventions intended to improve existing jobs and promote processing of new products that can add value to national production and create new jobs. Moreover, the Plan stresses the need for development promoters to work in coordination with state agencies and the private sector to implement the Government’s Plan.
2. THE CASHEW TREE AND ITS CULTIVATION

2.1 GENERAL DESCRIPTION, MAIN CHARACTERISTICS

The cashew tree, *Anacardium occidentale* L., belongs to the *Anacardiaceae* family of plants, which also includes the mango, the pistachio, and poison ivy (Coulter, 1982). The tree is native to Brazil, but it has spread to other parts of tropical South and Central America, Mexico, and the West Indies. In the 1600s, Portuguese traders introduced the cashew tree in India and Africa to prevent soil erosion. By the beginning of the 19th century, the raw cashew nut (RCN) started to be commercialized, and by the middle of that century the Portuguese began processing cashews in Mozambique.

The cashew tree is a tropical, drought resistant evergreen with a short, often irregularly shaped trunk. In its common variety, it can grow up to 14 meters (46 ft) high, however the more common dwarf trees grow no more than 6 m (20 ft) and have a symmetrical spread of up to 25 meters. The smaller varietal has proved to be more productive, with earlier maturity and higher yields. Cashew can grow with a minimum of attention and it is easily cultivated by rural families around the world. It is usually found from sea level to an altitude of 1,000 meters, in regions with annual rainfall as low as 500 mm and as high as 3,750 mm.

2.2 CULTIVATION PRACTICES

In most producing countries, chiefly in Africa, smallholders grow the crop. Most plantations in Africa are not organized and typically are not larger than a hectare with around 70 trees. India, Vietnam, and especially Brazil have large plantations, which allows them to take better advantage of the crop by exploiting cashew derivatives rather than only RCN.

Tree production consists of cashew nut (the fruit), whose contents are usually named “kernel”, and a juicy cashew apple (false fruit). Cashew nuts production is mostly carried out by smallholder producers in most African countries including Mozambique, but unlike India where the domestic market is huge, cashew kernel does not make up part of peoples’ daily diet.

The cashew apple can be used in various dishes and to produce beverages and liquor. The cashew nut shell liquid (CNSL) can also be utilized in the pharmaceutical industry, oil paint preparation, and in making submarine cable materials, among other uses.
2.3 CASHEW FOR MULTIPLE PURPOSES

Cashew is known for its health benefits and economic uses. It contains protein, vitamins, copper, phosphorus, magnesium, manganese, and zinc. It has also zero cholesterol (Antonio and Griffith 2017).

![Figure 1 – Cashew fruit and false fruit components](image)

The cashew tree is a multipurpose species, and cashew products have a wide range of uses still far from being completely exploited in most cashew producer countries. The most important are raw cashew nut, the true fruit, and the juicy false fruit (pulp). The cashew apple (see picture above) constitutes 80 percent weight of the product and the nut about 20 percent (Sobhana et al. 2011).

However, other products and byproducts can be extracted from the tree. Cashew nuts (kernels) are the most popular. The kernel is extracted from its shell, which contains a poisonous liquid contaminated by the toxic substances embedded in the mesocarp (CNSL). Once extracted from the nut, the kernels are roasted to destroy remaining toxins. Kernels are consumed all over the world and targeted to medium-to-high economic segments. Cashew kernel is commonly consumed in sophisticated markets in developed countries as a snack, and in chocolate bars, salads, desserts, and in many other recipes.

---

5 Figure 1 from Tanzania Cashew Value Chain – a diagnostic African Agribusiness and Agro-industries Development Initiative (UNIDO 2011)
Figure 2 and 3 from [https://www.gettyimages.com/photos/cashew](https://www.gettyimages.com/photos/cashew)
Below shows a photo of kernel peeled and unpeeled extracted from the shell.

![Cashew kernel with and without red skin (testa) extracted from the shell](image)

Discarded cashew nuts are nuts unfit for human consumption. Normally they are used to feed livestock. This practice is not usual in Mozambique, at least not commercially.

Cashew apples (false fruit, see Figure 1 and 3, red pulp) ferment and become utterly useless within 24 hours of harvesting. If the nut is separated from the apple, that time is slashed to just six hours. They are too fragile and highly perishable to be suitable for transport. So, the false fruit is commercialized in organized areas of production with controlled cashew farms such as India, Brazil, and more recently Vietnam.

![Growing raw cashew nut and false fruit (pulp)](image)

Cashew pulp is the residue of the separation of the nut from the false fruit, and cashew bagasse (cashew pomace, cashew apple waste) is the residue of the juice extraction from the false fruit. Both products are suitable for livestock feeding (Valerio Geron et al., 2013).

Cashew nut oil meal, or cashew nut oil cake, is the residue of the oil extraction from kernels. It is suitable for livestock feeding.

Cashew nut testa (see Figure 2 for red unpeeled kernel) are the red skins that are manually or mechanically removed in the final step of preparing cashew nuts for confectionery. These skins
may contain pieces of broken kernels and also can be used for livestock feeding (Donkoh et al., 2012).

Cashew tree leaves can be cut and eaten fresh or cooked, but this practice is very rare.

Cashew tree timber provides good firewood and can make valuable charcoal; however, this use only makes sense when the trees begin to lose their productivity, normally after 30 years of production. In Mozambique this is uncommon since orchard renovation is not linked to tree cutting for charcoal or other uses. This activity is normally conducted in organized plantations that make most efficient use of the orchards.

Cashew nut shells (see picture 1 for shelled raw cashew nut) can be burnt to produce heat for processing cashew, or even as fuel to produce steam for other uses.

Cashew Nut Shell Liquid (CNSL), also known as cashew shell oil, is contained in the fruit mesocarp. CNSL has innumerable applications, such as friction linings, paints, laminating resins, rubber compounding resins, cashew cements, polyurethane based polymers, surfactants, epoxy resins, foundry chemicals, and intermediates for the chemical industry. It offers large and varied opportunities for development of other tailor-made polymers.
3. GLOBAL AND AFRICAN CASHEW PRODUCTION, PROCESSING, AND TRADE

3.1 GLOBAL CASHEW VALUE CHAIN
3.1.1 World Raw Cashew Nut (RCN) production

Cashew is grown in most tropical countries. Most of commercial cashew production is concentrated in four main production areas: South-Eastern Asia, West Africa, East Africa, and Brazil. Cashew trees are widely cultivated in coastal regions of Southern Africa, including Mozambique, Tanzania, Kenya and Madagascar; in West and Central Africa, where Cote d’Ivoire, Guinea-Bissau, Nigeria, Benin, and Burkina Faso are the main producers; in South Asia, from Sri Lanka to the Philippines, with India, Vietnam, and Indonesia being the largest producers in this region; and Latin America where Brazil is the main producer.

In the last 10 years, Africa cashew production, representing 52 percent of world production, overtook Asia, becoming the main production region (Figure 4). This mainly due to the contribution of West Africa countries, representing 40 percent or world production, including Cote d’Ivoire, today together with India the largest RCN world producer; Guinea-Bissau; and Nigeria. East Africa countries represent around 12 percent, led by Tanzania with 8 percent of the world production and Mozambique representing 3.3 percent, totaling 104,000 tons out of around 3.19 million tons of world production in 2016.

**Figure 4 – Share of cashew production by major region 2007-2016**

Source: Technoserve database; FAOSTAT; review of the literature; author’s analysis.

3.1.2 World raw cashew nut production trends

The world cashew business has boomed in the last two decades. Demand for cashew nuts in the world market is now equal with the most popular nuts such as almonds, walnuts, and pistachios. The world market for cashew nuts grew almost seven times in four decades from 0.5 to around 3.4 million MT (estimate for 2018). Global RCN production continues to grow at a
stable compound annual growth rate (CAGR) of 3.1 percent per annum. Africa is ramping up production and has already outgrown Asia.

Figure 5 shows the evolution of cashew production across the world. In the last decade, African countries’ RCN production grew faster than in Asian countries. In fact, some African countries, including Tanzania (CAGR 10.1 percent), Côte d’Ivoire (CAGR 7.5 percent), Guinea-Bissau (CAGR 6.7 percent) and Nigeria (CAGR 7.7 percent), have experienced huge growth in production, making Africa today the most important world raw cashew nut producer.

On the other hand, the last decade was characterized by declining cashew nut production in Asian and Latin American main producer countries. As shown in Figure 6, among the main cashew world producers, CAGRs for Vietnam (-1.70 percent), Brazil (-4.91 percent) and Indonesia (-2.82 percent) were negative, while India (1.34 percent) has managed to maintain production levels, suggesting stagnation.
Figure 7 below shows that India has managed to grow its production slightly, while in the other Asian countries RCN production has declined substantially in the last 10 years.

**Figure 7: Main Asian and Latin American producers**  
(compound annual growth rates)

Source: Technoserve database; FAOSTAT; Literary Research; Author’s analysis.

The main reasons for this decline in production are:

- **India** - Agricultural investments such as for new technologies and agriculture diversification, labor availability, minimum salary increases, competition from other crops, and competitive pricing of crops increased relative costs. Cashew industry profitability depended in part on low labor costs and easy access to affordable RCN. These trends have changed the structure of the India cashew industry, which is today facing difficulties in supplying its huge processing capacity. To overcome this difficulties Indian companies have recently invested in large plantations and in the financing and management of processing facilities in Africa.

- **Vietnam** – Scarce land for expanding crop production combined with the agriculture diversification strategy seems to explain the decline in cashew production. Yet Vietnam has invested heavily on cashew processing to become the main world cashew importer. Recently, shortage of capital has hampered the operation of many small cashew factories in Vietnam; 80 percent of small cashew processing factories have closed since June 2018 due to lack of raw materials and capital for production, causing a major blow to the country’s economy. As in India, Vietnam is also investing in large plantations and processing units in Africa.

---

6 Global Cashew Market Mordor Intelligence Analysis of growth, trends and forecast 2017-2022
7 https://vietnamnews.vn/economy/462725/cashew-businesses-lack-capital-to-continue-operation.html#ISMIU2RQoCYtwy51.97
• **Brazil** - The country has suffered considerably from adverse climate conditions. Consecutive years of drought, and then very heavy rainfall when it came, severely decreased cashew production in Ceará and São Paulo provinces, together accounting for over 80 percent of surfaces cultivated, preventing the country from maintaining its level of cashew production. Brazil is also setting up processing units in West Africa.\(^8\)

### 3.1.3 World raw cashew nut processing features

India and Vietnam are by far the main processors in the world. Despite RCN production expansion, Africa is still in its infancy stage of growth, with an opportunity to add value to cashew domestic production and generate new jobs, provided African countries focus on building an efficient processing industry.

While Africa has substantially increased its share of world cashew production, the same did not happen in processing; the industry remains highly dominated by Asian countries (Fig. 8), chiefly Vietnam, nowadays the most efficient processor, followed by India. Brazil is the third largest processor, but quickly losing market share to those two competitors.

India and Vietnam are the leaders in both processing and RCN imports. India, the long-time most efficient processor and largest exporter of kernel, has been losing ground to Vietnam in the last few years, particularly in regards to processing efficiency.

![Figure 8 – Processed quantities of raw nuts (RCN) - 2016](image)

**Source:** Technoserve database; FAOSTAT; literature review; author’s analysis.

Brazil has the reputation of having a wider range of cashew products. The Brazil cashew industry has developed not only the kernel industry but also CNSL, and false fruit for fresh consumption, juice processing, and spiritual beverages, among other cashew products. India has also developed the false fruit processing industry, mainly to produce alcoholic beverages such as a spirit commonly known as *Feni*, a popular alcoholic beverage consumed in the

\(^8\) ITC Market Insider 2013
Southern States of India. However, most producers are far from being able to scale up the many possible cashew products.\(^9\)

Processing RCN into kernel is the most important and profitable segment of the cashew industry. It is very important for producing countries to have an efficient processing industry to be able to add value to their own production and help create jobs. With improved technology, opportunities for increasing local productivity are higher for several countries.

### 3.1.4 World cashew kernel markets trends

Quality-conscious markets such as Europe and USA collectively constitute one-third of global kernel consumption. These western markets are projected to grow at 6 percent and reach about 350k MT by 2020, as global demand reaches 1.1mn MT. As global demand outstrips supply, market kernel prices are expected to remain above about US$5/lb., ensuring a healthy price for African cashew producing countries. Those in the Southern Hemisphere, like Mozambique, can fetch a price premium of up to 15-20 percent due to pricing seasonality.\(^{10}\)

Figure 9 below indicates that the price of cashew kernel (CAGR 7.30 percent) is expected to continue growing at a faster pace than other nuts such as almond, pistachios, and walnuts.

**Figure 9 – Upward trends nominal prices of different nuts**

```
<table>
<thead>
<tr>
<th>Year</th>
<th>Cashew kernel (CAGR 7.30%)</th>
<th>Almonds (CAGR 2.83%)</th>
<th>Shellled Pistachios (CAGR 2.50%)</th>
<th>Shelled walnuts (CAGR 2.58%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2009</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2011</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2012</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>2014</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2015</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2016</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2017</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>
```

Sources: RONGEAD; Almond Board of California; (US) Walnuts Growers Association; Rabobank AgFocus - April 2015; USDA; Literary Research, Technoserve Review.

Africa is the only region where cashew production is increasing fast enough to meet growing demand.\(^{11}\) This context provides attractive opportunities for African countries to grow the cashew industry, add value to their domestic RCN production, and create jobs by investing in cashew trees and in processing capacity.

---

\(^9\) Most countries like Guinea-Bissau, Cote D’Ivoire, Mozambique and others have small-scale initiatives that stop and go typically with donor funding.

\(^{10}\) Mishra, & Martin Mozambique Cashew Industry Analysis, August 2016.

\(^{11}\) Fitzpatrick Outlook & Opportunity World Cashew Market.
AFRICAN RCN PRODUCTION, EXPORTS, AND PROCESSING

Africa was no doubt mainly responsible for the RCN production boom of the last few years (see Fig. 5 above). Geographical cashew production has favored the African countries, mainly those in West Africa, whose production grew exponentially. Côte d’Ivoire, set to consolidate its position and to overcome India as the main world producer, is fast introducing sector reforms to maintain and reinforce that position and to build a value-added processing industry.

Tanzania, the country with the highest RCN production growth CAGR, has positioned itself as a fierce competitor to Guinea-Bissau, usually the second largest African producer. However Tanzania has not so far been able to build a sound industry, and has made no new investments in cashew processing over the past few years.

Mozambique’s RCN production growth 2008-2017 was modest when compared with other African cashew producers. Its CAGR of 3.9 percent does not exhibit the overall investment in recovering cashew orchards claimed by INCAU. Mozambique is still far from peak production verified on the eve of its independence. Nevertheless, despite its poor level of production, Mozambique was able to rebuild its processing industry by increasing installed capacity and partially replacing old labor-intensive technology with new semi-automatic equipment. This has somewhat increased productivity of processing, while also reducing harmful worker health effects related to handling the CNSL.

3.2.1 African countries RCN production and exports evolution

Thus, Africa has become the world’s largest producer of raw nuts and has great potential to consolidate its leadership from 2007 to 2016, Africa’s share of world cashew production grew from 34 percent to 52 percent. Tanzanian production grew faster due to implementation of a well-structured cashew production development program, but Côte d’Ivoire established itself by far as the largest cashew producer in Africa. Mozambique, the main African producer at the end of the 1970s, is today only the fifth African producer by volume (see Figure 10 below). African cashew producer countries (see Fig. 11 below), export most of their raw cashew nut to India and Vietnam (Jim Fitzpatrick 2017).

Figure 10 – Main African cashew producers 2008-2017 (CAGR)

Source: Technoserve database; FAOSTAT; Literary Research; author’s analysis.
### Figure 11 – RCN production and exports per country 2016/17 (tons)

<table>
<thead>
<tr>
<th>Country</th>
<th>Production</th>
<th>Exports to India</th>
<th>Exports to Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>719,000</td>
<td>189,984</td>
<td>345,095</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>680,000</td>
<td>94,738</td>
<td>88,405</td>
</tr>
<tr>
<td>Vietnam</td>
<td>370,000</td>
<td>83,520</td>
<td>99,450</td>
</tr>
<tr>
<td>Tanzania</td>
<td>260,000</td>
<td>31,796</td>
<td>44,204</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>225,000</td>
<td>54,442</td>
<td>14,088</td>
</tr>
<tr>
<td>Nigeria</td>
<td>170,000</td>
<td>139,000</td>
<td>69,807</td>
</tr>
<tr>
<td>Mozambique</td>
<td>130,000</td>
<td>130,000</td>
<td></td>
</tr>
<tr>
<td>Benin</td>
<td>129,000</td>
<td>129,000</td>
<td></td>
</tr>
<tr>
<td>Brasil</td>
<td>129,000</td>
<td>129,000</td>
<td></td>
</tr>
</tbody>
</table>

Sources: TNS West African Archives and Fitzpatrick (2017)

#### 3.2.2 African countries processing evolution

The situation with cashew processing in African countries show a very different pattern from that of RCN production. Together, African countries process less than 10 percent of their combined RCN production. While some African countries have tried to substantially increase processing capacity over the past decade, it is still well below main processors such as India, Vietnam, and Brazil. Mozambique has so far maintained its RCN processing leadership in Africa by achieving a higher rate of installed capacity use (see Figure 12).

### Figure 12 - % of utilized processing capacity in Africa countries

The African countries face fierce competition from Asian countries in cashew processing. India and Vietnam, by far the main RCN world processors, can handle more effectively key determinants of efficient processing because they have easier access to:

- Good raw cashew nut quality and out-turn, leading to a higher kernel output ratio (KOR) (See figure 13), because they have their own production and import from other countries, mainly Africa.
- Higher labor productivity.
• Adequate working capital.
• Appropriate technology to the prevalent social economic context.

The adequate combination of the above-mentioned factors is no doubt of crucial importance to guarantee high processing yields. In fact, the quality of RCN is intrinsically linked to obtainable processing yield. Figure 13 shows the correlation between quality of RCN and potential processing yields for each country. It is clear that the worse the RCN KOR, the lower the yield. Mozambique and Nigeria have the lowest KORs, and consequently the lowest potential processing yield, of the countries analyzed, while Guinea-Bissau has the highest quality RCN for processing.

**Figure 13 – Correlations of RCN quality (out-turn ratio)\(^{12}\)/kernel output ratio (KOR) by country**

(KOR correlation coefficients in %)

```
<table>
<thead>
<tr>
<th>Country</th>
<th>Average RCN out-turn</th>
<th>KOR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozambique</td>
<td>46.3</td>
<td>21.35%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>49.3</td>
<td>22.75%</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>46.6</td>
<td>22%</td>
</tr>
<tr>
<td>Benin</td>
<td>47.8</td>
<td>22.21%</td>
</tr>
<tr>
<td>G. Bissau</td>
<td>52.5</td>
<td>24.53%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>45.3</td>
<td>20.46%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>47.3</td>
<td>22.30%</td>
</tr>
<tr>
<td>India</td>
<td>47.3</td>
<td>22.30%</td>
</tr>
</tbody>
</table>
```

Sources: Technoserve database; FAOSTAT; literature review; author’s analysis.

Despite being leaders in RCN production, African countries are disadvantaged in tackling the above key determinants of efficiency. Thus, processing costs in African countries are not competitive, a negative factor hindering efficient use of installed capacity and improving their value-added indexes. Mozambique, for instance could capture 49 percent of the value in the chain if it were to process its RCN domestically (S. Mishra and W. Martin 2016).

In addition to these factors, the suitability of the general business environment also has an important influence on cashew industry efficiency.

---

12 Out-turn is the amount of kernel retrieved from 1 kg of raw cashew nuts in shell. It is measured in pounds of kernel per 80 kg of raw nuts. Out-turn is an important indicator of quality of the raw cashew nut and determines processing yields.
4. MOZAMBIQUE CASHEW VALUE CHAIN BACKGROUND

For much of the 20th century, Mozambique, was the leading producer of cashew nut, responsible for about half of world production. Africa’s first industrial cashew processing plant was established in Mozambique in 1960, and the domestic processing industry began to thrive soon thereafter. Mozambique quickly built a reputation for quality production and efficient processing. By the middle of 1970s, Mozambique stood alongside India and Brazil as one of the main processors and kernel exporters in the world. Mozambique was able to take advantage of its long coast and good cashew climate conditions ideal for producing the best-tasting cashews.

Today, the cashew industry, despite challenges, is positioning itself to reclaim its former glory in international markets. The cashew business can contribute greatly to the economy by earning foreign exchange and providing thousands of new jobs, especially in poor rural areas.

4.1 CASHEW VALUE CHAIN GOVERNANCE

To steer cashew value chain development, the Government of Mozambique in 1997 created by decree (Decree 43/97, December 23) a Cashew Development Institute, INCAJU, which is today subordinated to the Ministry of Agriculture and Food Security (MASA). The Cashew Institute is mandated to invigorate and boost the cashew value chain, promoting growth of RCN production through seedling production and distribution, cashew orchard renovation, cashew products commercialization, and restructuring of the RCN and other cashew by-products processing industries.

To carry out its duties, the INCAJU program includes the following activities:

- Pursue cashew promotion programs outlined in the Cashew Master Plan.
- Promote introduction of new technologies to cultivate and process cashew.
- Promote processing industry to extend product buying to more completely exploit cashew business potential.
- Adopt worker training programs to train people in techniques to prevent uncontrolled fires, plagues, and diseases.
- Cooperate with research and extension services institutions to develop cashew R&D and collect specific data and research results.

Private sector organizations partnering with INCAJU to carry out some activities include:

Confederation of private sector associations (CTA) - among which are the Cashew Industry Association (AICAJU) and the Commercial, Industrial, and Agricultural Association of Nampula (ACIANA). Its main role is to dialogue with the Government and lobby in favor of the various value chain actors who seek improvements in the business environment.

Cashew Industry Association (AICAJU) – Created to promote the interests of processors and to influence Government policies for the sector. This organization is intended to provide specialized government bodies with relevant information on the cashew business to help create a favorable business environment to develop all dimensions of the cashew value chain.
Commercial, Industrial, and Agricultural Association of Nampula (ACIANA) - Brings together private companies in Nampula province. It also represents cashew exporters within the Cashew Committee, a group composed of main stakeholders who advise INCAJU on buying-season issues related to enforcement of the export tax decree.

Development promoters and service providers – Mozambique’s cashew value chain has benefited from help from several specialized international organizations, which have made substantial funds available to support development programs for cashew production, such as seedling production to replace unproductive old trees. NGOs and international cooperation organizations supporting value chain development programs over the years include the United States Agency for international Development (USAID), the United States Department of Agriculture (USDA), the European Union (EU), the International Fund for Agricultural Development (IFAD), the World Bank (WB), and the Asian Development Bank (ADB).

4.1.1 Main institutional constraints

Despite INCAJU’s efforts to accomplish its mandate, several constraints are preventing the institution from being more effective. Among them are:

- Private sector reluctance in being involved in extension services such as seedling production and spraying, and other producer support activities.
- Deficient business environment. This includes lack of rural roads, electricity, and clean water. Farmers associations are poorly organized. Their logistical and financial management is often not adequate. Distribution of benefits among members is not transparent and often a substantial share ends up in the hands of a few leaders.
- Virtually no farmer associations organized specifically around the cashew business. Farmers deal with other food and cash crops usually produced within the community, paying little attention to cashew production and commercialization.
- Very weak Mozambique National Institute of Agronomic Research (IIAM) and INCAJU research programs to introduce improvements in cashew production.
- Institutional coordination has been weak. This has affected RCN production and quality, creating relatively high intermediary transactions costs in the cashew value chain.
- Existing policies are poorly monitored, especially related to the export tax, whose impacts beyond encouraging domestic processing are not fully understood, and should be assessed. Possible unintended consequences on the whole gamut of incentives along the supply chain could even be harmful to the objective of maximizing total value-added from cashew in Mozambique, including processing. However, a judgment here requires evidence-based assessment using data and models adequate to capturing the effects in question, and to date this is not available.
- Available statistics are not consistent, and information collection is not reliable.

4.2 Cashew value chain features

The cashew value chain in Mozambique is not as well developed as in India, Brazil, and Vietnam. In Mozambique main cashew-related activities are concentrated on exporting (RCN) rather than processing into kernel exported for roasting abroad for final consumption. The three leading countries process nearly their entire RCN production and also import from other countries, including Mozambique, to fulfil remaining processing needs. They have developed
their cashew value chain to exploit a vast range of cashew byproducts. Value-added byproducts include a variety of food, feed, and industrial products: kernels for roasting and flavouring, cashew apple snacks, cashew juices and spirits, confectionery and bakery products, cashew flour and meal used in animal feed, residual cashew skin for tanning, cashew nutshell for fuel, and Cashew Nut Shell Liquid (CNSL) for such diverse industrial uses as antioxidants, fungicides, and anti-termite treatment of timber.

Mozambique’s cashew industry develops two main activities: RCN production and processing. RCN processing includes two steps: first, produce white kernel to export to foreign roasters; second to roast and flavor the kernel within the country to sell in the domestic market or to wholesalers abroad. The roasting activity is carried out by very few small units, most of them exploring the tiny domestic market, still in its infancy.

Mozambique has produced and exported CNSL, but a collapse of the international CNSL market interrupted this activity. Presently few companies are producing CNSL, but since the market has once again become attractive, processors have increased capacity to the point that it is now approaching a critical mass of production to make the activity viable.

The bulk of cashew apple production is almost completely lost. Rural families produce alcoholic beverages for their own consumption and sometimes to pay for hired services, but this insignificant production is not widely commercialized, furthermore there is no legislation ruling the activity and most of it is done informally.

4.2.1 The formal and informal sectors and cashew products flow stages

In Mozambique’s value chain, cashew products flow through informal and formal marketing channels before reaching processed cashew nut end consumers in domestic and international markets, as well exporters of raw and processed cashew nuts.

Under formal trading channels, cashew nut producers—individual farmers or farmers’ associations—sell their cashew nuts to small, medium, and large-sized traders, raw cashew nut exporters, or processing factories.

The informal channel is mainly dominated by women, who use traditional home methods to process RCN in very small processing units. They are essential buyers who add some processing value and sell the cashew kernel directly to markets, bazaars, street vendors, or door-to-door. Some of the women also sell small quantities to neighboring countries such as Malawi, Zimbabwe, South Africa, and even Zambia, through border trading mukeristas.¹³

The cashew value chain products flow includes three basic stages, as discussed below.

The first stage of the value chain is characterized by smallholder producers. Most are individuals heads of rural families and households. Smallholders also sometimes organize into associations, but usually these producer organizations deal with many other crops. Cashew is grown along the coast in remote areas, making it difficult for producers to collect and sell their products. Producers largely do not have market price information, while buyers are better informed and have more power in negotiations. Furthermore, producers have no alternative than to sell

¹³ National citizens who carry and trade products along the borders with neighbor countries.
the RCN regardless of quality or size. Neither seller smallholder producers and collectors nor buyers can control the quality of the RCN.

The second stage occurs when cashew nuts are collected and transported for export either raw or processed by local industry or the informal sector. Cashew growers and simple collectors\(^{14}\) sell locally to retail and wholesale traders, processors, brokers, and the informal sector. In this stage there is some quality control: exporters for instance are obliged to measure the out-turn of each exported lot, and processors usually do the same to control kernel quality.

The third stage takes place when raw and processed cashew nuts, crude or flavored, are exported to international markets. As mentioned earlier, a considerable share of the marketed raw cashew nut surplus is exported without being processed. Cashew nuts processed by the domestic processing industry are sold to both domestic and international markets.

**Figure 14 – Mozambique cashew value chain main activities by gender**

![Cashew value chain diagram](image)


### 4.2.2 Cashew value chain direct stakeholders and their functions

**Producers** - In Mozambique, rural families are responsible for nearly all cashew production. According to official statistics, about 1.3 million smallholder producers are involved in cashew production and trading, mostly concentrated in six major cashew producer provinces (Table 1).

\(^{14}\) Collectors are people who collect the raw nut from existing trees but do not produce.
Table 1 – Nº of small units involved in cashew production by gender\(^{15}\)

<table>
<thead>
<tr>
<th>Main cashew producer Provinces</th>
<th>Nº of small production units</th>
<th>Nº of small producer units with cashew trees</th>
<th>Nº of small production units headed by women with cashew trees</th>
<th>% of small production units with cashew trees</th>
<th>% of small production units headed by women</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Delgado</td>
<td>414,029</td>
<td>184,243</td>
<td>56,931</td>
<td>44.50%</td>
<td>30.90%</td>
</tr>
<tr>
<td>Nampula</td>
<td>739,457</td>
<td>382,299</td>
<td>81,430</td>
<td>51.70%</td>
<td>21.30%</td>
</tr>
<tr>
<td>Zambézia</td>
<td>688,439</td>
<td>251,969</td>
<td>72,315</td>
<td>36.60%</td>
<td>28.70%</td>
</tr>
<tr>
<td>Inhambane</td>
<td>199,354</td>
<td>165,065</td>
<td>66,026</td>
<td>54.40%</td>
<td>28.70%</td>
</tr>
<tr>
<td>Gaza</td>
<td>194,669</td>
<td>105,900</td>
<td>46,725</td>
<td>54.40%</td>
<td>39.40%</td>
</tr>
<tr>
<td>Maputo</td>
<td>775,971</td>
<td>123,379</td>
<td>39,852</td>
<td>15.90%</td>
<td>32.30%</td>
</tr>
</tbody>
</table>

Producers can act individually or in collective Associations, which in turn are integrated into a Forum (group of Associations), and afterwards into Unions (group of Forums). Associations typically have between 25 to 35 members, with some larger and others smaller. Commercially-oriented plantations are rare and their share of total production negligible. Each producer typically cultivates a mix of cash and food crops according to climate suitability and land available. Cashew trees complement livelihoods, although sometimes bringing a considerable portion of producers’ income.

**Small intermediate traders** - This group plays an important role in cashew marketing. While a smaller group, during the harvesting season they can number in the thousands. They are self-employed, and due to limited access to finance, they mostly work on behalf of others (usually large exporters and processors). They are the backbone of the process, bridging the gap between large buyers and small producer-harvesters, often accessing remote, difficult-to-reach areas.

**Wholesalers** - These are mostly traders who export raw cashew nuts, but they can be intermediary suppliers to other exporters or processors. They are few, and some also trade other crops. They usually have a marketing network established in rural areas, and depend on small intermediaries to purchase RCN on their behalf. They are critical financiers in the purchasing process.

**Primary processors** - An established processing industry, represented by AICAJU, processes kernels—including shelling, peeling, selecting, and grading—and exports raw kernel to the international market for processing for final consumer markets. They are legally constituted and integrate the formal sector, unlike the small traders who sometimes are clandestine. At present, about 16 primary processing units operate in Mozambique. Small processing units operate to supply the domestic market, but most small processors work as artisans and operate in the informal market using a network of street vendors spread throughout production areas and major urban centers.

**Cottage processors** - People involved in buying or collecting their own production to de-shell, peel, and roast cashew nuts manually in backyards. Often agents, mostly women, run these operations. They sell the product at small roadside stands, but often also sell abroad by transporting the product to neighboring country borders. It is estimated that hundreds of people

\(^{15}\) Anuário de Estatísticas Agrícolas, MASA, Web: [www.masa.gov.mz](http://www.masa.gov.mz)
are currently involved in this activity all over the country, but it has a potential to employ thousands in rural areas.

**Secondary processors (roasters)** - Mozambique has little tradition in secondary nut processing—frying and adding flavors to kernel—for final markets. The domestic market for such products is small, and the international market is very demanding. Processing units, such as one called “Sunshine”, supply the international market, but the remaining few go unnoticed, and some even operate in the informal market.

**Transporters** – Usually the agents involved in trading cashew products—medium-to-large traders, wholesalers, processors, exporters—have their own transport capability, but a few professional transporters operate within the cashew value chain.

**Retailers** – Despite the tiny domestic market for kernel as a snack, flavored and unflavored cashew nuts are available throughout the country at shop outlets, roadside stands, bazaars, mini markets, and larger supermarkets.

**Street vendors** - Hawkers who sell cashew nuts in cities and villages along main roads and near traffic lights, often operating on an individual basis. Sometimes they also work for intermediaries that dispatch them, in which case the hawkers receive only a very small sales commission. A significative number of women are involved in this activity.

**Brokers** - Acting as intermediaries traders for exporters, sometimes paid on commission, brokers benefit from exporter or even international importers’ financing, and carry out their activity with the specific aim of supplying the financing agent.

**Exporters** - About six domestic and foreign operators buy nuts in the national market through a purchasing network—field agents, cantinas, warehouses, and others—established in production areas. They usually operate with their own funds or loans from credit institutions, but also act on behalf of financing importers.

**International Market Buyers** - The market is divided into two vectors: 1) RCNs are normally exported to India and Vietnam, and 2) partially processed (primary processing) and processed (secondary processing) kernels are mainly sold to European (Netherlands, France, Portugal, among others), and North American (US, Canada) markets.

### 4.3 CASHEW VALUE CHAIN MAIN SEGMENTS

#### 4.3.1 Cashew production and harvesting

Cashew has been an important crop for Mozambique’s economy, and crucial to poverty reduction. As mentioned above, cashew production involves around 1.3 million households, comprising about 6.5 million people. The tree can grow easily on poor soils in poorer regions of Mozambique, making the crop an important source of rural income.

Cashew is an important source of economic growth in Mozambique, with significant potential to generate better, inclusive rural employment through farming and rural industrialization. Thousands of jobs can be improved and new ones created if several factors and main con-

---

16 Small shops located in rural areas to buy agriculture products and selling basic products.
strains influencing cashew production and harvesting are addressed to ensure a conducive business environment for growth throughout the value chain.

**Cashew production systems**

Cashew is produced in Mozambique along the extensive coast line spanning over 2,500 km, and stretching inland approximately 200 km. As shown in Figure 15, the Northern region produces around 71 percent of total production, followed by the Southern region with 19 percent, and the central region with 10 percent.

*Figure 15 – RCN production by province 2016/17 (%)*

Nampula and Cabo Delgado provinces produce the best quality raw nut, and together account for almost half of total national production. Due to the higher availability of raw nut, these Northern provinces are also the main processing regions. Nampula is the main processing region followed by Cabo Delgado, then Zambezia in the Central region and Inhambane and Gaza in the South.

**Factors influencing cashew production and harvesting**

**Cashew orchard characteristics**

Almost no organized cashew farms exist in Mozambique as the few existing before gaining independence from Portugal in 1975 were abandoned. Since then, the few attempts to organize cashew farms failed. Cashew farms are difficult to maintain in a manner to keep them productive, and controlling harvesting to ensure a fair return on investment is also challenging. Lack of organized plantations is one of the main obstacles to developing the cashew apple processing industry in Mozambique; concentration of production would help control harvesting, supply, and processing of the highly perishable fresh cashew apple.

Most cashew trees in Mozambique were planted during colonial times, and the new ones were planted after independence by rural families in mono or mixed-crop farms (a combination of crops according to land suitability). While cashew is an important source of income for more than a million farmers and their families involved in production and collection, most farmers also need to cultivate other food and cash crops to survive, and they often pay more attention
to crops such as maize, cassava, groundnut, and beans, among others. The fact that farmers inherited the trees mitigates farmers’ motivation to care for them since they did not invest in the trees, thus behaving more as collectors rather than producers. Cashew trees also tend to be scattered around farms and information on their age is often not known, making it difficult to plan trees replacement.

According to Technoserve, eight of every ten households have less than 100 trees. At present average tree productivity of 2 to 4 kg/tree gives around 200 to 400 kg per family, providing around US$ 300 per season, thus only part of family needs for income. Furthermore, the crop has the advantage for smallholders that it can grow in poor soils and can handle erratic rainfall. While the trees can survive with minimal maintenance by farmers, they are still affected by severe adverse weather conditions and are prone to fungal disease when humidity is high.

Cashew orchards in Mozambique are mainly composed of a common tree variety five to six meters high with a large canopy, and whose gestation period lasts on average five to six years. INCAJU tried to introduce new varieties, particularly the Brazilian dwarf variety to gradually replace old trees with more productive varieties and lower gestation periods. However, this program for Brazilian dwarf seedlings based at INCAJU’s Nassuruma research station has since come to an end and INCAJU now produces common tree seedling there to replace the old trees. Recently, INCAJU has been encouraging use of polyclonal seeds thought to be more effective than seedlings and conventional seeds (MozaCaju, 2017).

**Cashew tree yields and productivity**

Cashew has been cultivated in Mozambique for more than a century, and its orchards, which held about 50 million trees at the beginning of the 1970’s, now have about 35 million trees. A large number are old trees that bear low yields of between two to four kg/tree.

The features of cashew production in Mozambique are unique. Independence abruptly changed the social, political, and economic environment and caused significative changes in type of ownership and control of existing cashew trees. As a result, three different kinds of ownership and control over cashew orchards are found17:

- **Un-Registered ownership:** Many cashew orchards dispersed along the country were abandoned during the 1977 to 1992 civil war. Until today, the extent of significant orchards growing on communal land is not clear. Officially these trees do not belong to anybody, despite some claims from community members living in those areas. Community members benefit from these abandoned, un-registered, and therefore uncared-for trees.

- **Family-owned but un-organized:** Some rural families have their own trees on proprietary, unorganized land where trees are scattered all over their farms or near houses. On average, families have between 10 to 20 productive trees. These families usually do not consider cashew trees as a crop to care for, so they act as mere collectors who harvest the fruits without taking measures to increase yield or improve nut quality.

---

17 Analysis of Cashew Value Chain in Mozambique – ACi February 2010.
The trees, there for a long time without care, are mostly very old and have low productivity. Replanting has not been a routine activity.

- **Small-to-medium organized farms:** Although these can be family-owned also, these farmers spend a great amount of time caring for orchards, spraying, weeding, and pruning regularly. Most of their trees are scattered throughout the farmland and are of different ages since these farmers replant, especially after years of high product prices. For the portion of younger trees 8 to 25 years in plantations, and with regular spacing, yield can be about 8 to 10 kg/tree. Some medium-sized farms have hundreds of cashew trees.

**Post-harvest handling and storage**

Another area that can influence the quality of the RCN and mainly the cashew apple, is post-harvest handling and storage. Current inefficient structures and poor cashew product handling is causing high losses and lower quality.

Raw cashew at the farm level is harvested over about four months; in the Northern region this happens from October to middle of January, and in the southern region from middle of January to middle of April.

Normally, the raw nuts are dried in open space under the sun for a minimum of three days and the apples eventually can also be dried to produce alcohol. Drying is important to attain required moisture content of eight percent to 10 percent. Anything over 10 percent will decay or rot the nuts, resulting in a low out-turn, making the product less profitable. Raw nut quality control in Mozambique is not very rigorous. Farmers sell raw nuts in bulk at the same price, no matter product size or quality; thus, there is no price incentive for better quality.

Farmers or collectors store low quantities at home in precarious conditions, sometimes on the floor without using pallets. They often use plastic bags or other containers used for other products, whose residuals can contaminate the raw nut. They then sell the raw nut to intermediaries at purchasing points and shops along rural roads. Intermediaries pack the nuts in 80 kg jute bags and store it, waiting for transport to buyer warehouses.

**Technical assistance and input use**

This is another activity that generates employment since providing technical assistance to farmers can be carried out by private operators who can, in addition to selling the product, provide technical assistance on its correct use and good agricultural practices (GAPs). The lack of a competing public network to provide similar agricultural services and inputs to cashew farmers represents an excellent opportunity for new entrants. Various studies show that the main determinants of costs in cashew production and yield increases relate to inputs, particularly fungicides, in addition to hired labor (Ashimogo et al., 2008).

However, in Mozambique the use of inputs such as fertilizers and chemicals in agriculture is still not significant. Cashew production follows the same pattern. Farmers are reluctant clean, prune, and spray their trees. The period for tree maturation is between three to six years, depending on variety, which dissuades farmers from caring for trees since they have other annual
crops to care for to generate income and daily food. The need to focus on other annual crops to guarantee survival hinders cashew investment.

To mitigate disastrous consequences from these practices, INCAJU has taken responsibility for cashew policies based on two vectors: 1) Recover cashew trees through integrated disease treatment, and 2) introduce new plants to replace old trees.

INCAJU’s main programs focus on producing seedlings to renew orchards and on spraying old trees. Other interventions include collecting and compiling relevant information, and research and development (R&D). The program, financed through the public budget, in theory if not necessarily in practice from export tax revenues as defined by the recently revised law 13/99, is described below:

- **Old trees treatment (spraying program).** This program began with INCAJU subsidizing the whole process, including purchase of sprayers, fuel, and chemicals, but later INCAJU decided to support only the chemicals portion as service providers should own sprayers. This program did not reach expected results. Per an INCAJU report, an average of only 5 million trees/year are being sprayed, representing only 16 percent of the over 30 million trees countrywide.

- **Seedling production and distribution to farmers (nursery program).** A partly subsidized program, seedlings were grown in nurseries and transported to the field, where they were sold for a symbolic price. This program also did not produce expected results; according to INCAJU, more than 50 percent of seedlings were lost in production and distribution, and there are no records of trees planted that are producing.

- **Research and Development (R&D) programs** have also not been sufficiently developed. Law 13/99 attributed the responsibility to the Mozambique Institute of Agricultural Research (IIAM) for technical work and as coordinator of the partnership and INCAJU (for technical support). Lack of funds specifically allocated to this activity, and the duality of the proposed intervention, diluted the responsibility of both institutions, resulting in poor cashew sector research.

In general, despite government efforts to increase cashew sector productivity, results are still far from expected and opportunities are still untapped, suggesting significant remaining opportunity to create new jobs in the sector.

**Constraints hindering development of cashew production**

The factors below are negatively affecting the growth of cashew production in Mozambique, substantially limiting the sector’s capacity to create new and stable jobs. The sector deserves the attention of decision makers who need to create and implement policies to address several key sector weaknesses:

- Cashew tree orchards are very old and not being rejuvenated, which reduces average yield as yields decline after several decades.

- A high incidence of fungal disease suppresses productivity and quality if there is not adequate spraying.
Besides lack of spraying, inadequate tree care, including pruning, budding, and grafting; and poor harvesting techniques, such as drying and nut storage reduce productivity.

Uncontrolled fires destroy a portion of trees every year.

Farmers have limited access to planting material to rehabilitate plantations and reach profitable productivity levels.

Farmers lack information to correctly apply agronomic techniques and pesticides to engage in efficient, commercially viable cashew nut production.

Farmer training is unavailable. Training on how to market products and deal with other business issues, such as loans and plantation financial management, could take place through farmers’ groups.

Research programs to improve cashew production are weak.

Rural community and producers’ organizations are poorly structured.

Rural service provider networks are inadequate, erratic, and in many places discontinued, leading to lack of complementary services integration, such as maintenance, inputs, and packaging.

Farmers have little access to financial support to buy costly inputs such as pesticides, fungicides, sprayers, and spare parts. INCAJU’s subsidized program has helped some farmers, but most do not benefit and end up applying too few inputs at the wrong time, leading to substantial productivity losses.

Farmer access to technology to process perishable cashew fruit is limited, diminishing overall economic returns per tree.

Given poor access to inputs and knowledge that would make maintenance labor more productive, labor for cashew maintenance at key times is diminished by competition for family and hired labor from food and other cash crops.

### 4.3.2 Cashew processing

The cashew processing industry in Mozambique has a long tradition, with a reputation as being the first in the world to operate virtually all available technologies.

In Mozambique, cashew processing agro-industries despite difficulties, have contributed greatly to lifting a significant number of rural dwellers out of poverty through wage-earning jobs. The revitalized cashew industry brought cash into rural communities making them commercial centres. Businesses such as convenience stores, restaurants, hairdressers and bicycle repair shops sprang up to cater to expanding demand, creating more job opportunities and reinforcing the cycle of economic growth (Technoserve 2009).

Cashew processing technology is not complex and most operations are unskilled. Normally men perform initial steam-roasting and deshelling tasks in the process. When better skills are needed for peeling and grading, women typically perform better than men.

Before independence the processing industry in Mozambique was characterized by use of semi-mechanical and mechanical technology (such as that from Otremare, Italy, or Sturtevant Engineering Ltd., Germany) in medium-to-large factories (3,000 to 12,000 tons/annum RCN capacity). These mechanical technologies were used until the second half of the 1980’s, when the industry began to transition to more labor-intensive technologies, deemed more appropri-
ate for Mozambique’s social and economic context. At the same time, however, the processing industry dramatically decreased its capacity to add value to RCN through quality improvements and by-products, and, therefore, to promote growth.

Since 2001, Mozambique has experienced significant change in cashew business structure. In 2001, Mozambique adopted a new strategy, closing larger urban factories far from the RCN sources and locating new, small (RCN 500 to 2000 MT capacity) labor-intensive processing units in rural areas. These reforms aimed to reduce raw material costs, a significant part of total processing costs, and to provide more jobs in rural areas. In fact, rural processing units have helped to create many forward and backward linkages to manufacturing and agro-processing, contributing to domestic investment, employment, and output.

Around 2014, the main processors realized the need to more fully use existing processing capacity and further increase overall processing capacity to create economies of scale, as costs at small volumes limited profitability. Furthermore, domestic supply of RCN was increasing, and the kernel market had started to look promising. Processors decided to adopt a mix of manual and mechanical technologies to better balance employment creation goals with increased capacity and cost reduction based on a more stable workforce.

Processors also intended to conquer a more sophisticated export market concerned with work conditions and fair trade issues. The employment changes mandated by the changes in technology did not require dismissal of workers, as increased production allowed transfer of surplus labor to manual peeling and grading activities, but it did reduce need for medium to long-term hiring of new workers.

Figure 16, showing the evolution of production and uses of RCN in Mozambique over the last decade, reveals that despite this positive change, domestic processing is still operating under 50 percent of registered average annual capacity, suggesting new investments are needed to keep pace with the increasing production.

**Figure 16 – Production and usage of RCN in Mozambique 2008-2017**

(000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCN Production (1000 MT)</td>
<td>94</td>
<td>64</td>
<td>97</td>
<td>113</td>
<td>65</td>
<td>83</td>
<td>63</td>
<td>81</td>
<td>104</td>
<td>139</td>
</tr>
<tr>
<td>RCN Exported</td>
<td>31</td>
<td>12</td>
<td>28</td>
<td>42</td>
<td>6</td>
<td>12</td>
<td>7</td>
<td>6</td>
<td>22</td>
<td>48</td>
</tr>
<tr>
<td>RCN Processed</td>
<td>24</td>
<td>24</td>
<td>27</td>
<td>30</td>
<td>25</td>
<td>26</td>
<td>18</td>
<td>28</td>
<td>32</td>
<td>68</td>
</tr>
<tr>
<td>Informal consumption</td>
<td>39</td>
<td>28</td>
<td>42</td>
<td>41</td>
<td>34</td>
<td>45</td>
<td>38</td>
<td>47</td>
<td>50</td>
<td>23</td>
</tr>
</tbody>
</table>

*Source: INCAJU reports for 2017. Author analysis*

Despite new processing units, investment to increase installed processing capacity and steady growth in overall processing capacity, the latter is not keeping pace with the increase in raw nut availability. Processing is also gradually employing more workers, despite the the
introduction of new mechanized equipment for processes such as shelling and sorting, because of the ease of shifting labor in the cases concerned to other cashew processing tasks.

According to some operator estimates, mechanization can reduce processing costs by US$30/ton of processed nut. Mechanization also has large advantages in terms of reducing workplace health and safety risks compared to manual processes.

The rate of women workers in the processing industry is about 57 percent, a high rate when compared to other industries and cashew trading.

On average from 2008 to 2011, RCN exports were typically higher than domestic processing activity, and estimates that include “informal exports” (those that did not pay the export tax on RCN) suggest that as recently as 2015, RCN exports were about the same volume as domestic processing (Mishra and Martin, 2016). Since then, domestic processing volume appears to have overtaken the volume of total exports. This is a result of processor pressure to tighten export tax law enforcement, and supporting intermediary measures such as the Right of First Refusal (ROFR) and the temporary ban of exports during the first months of the buying season (October to middle of December).

According to AICAJU, at the end of 2018 Mozambique had 15 factories in operation (see Table 2 below), located primarily in rural areas of three Provinces: Nampula, with 91 percent of installed processing capacity; Cabo Delgado, with 8.7 percent; and Inhambane, with 0.3 percent. Together, these factories employ nearly 17,000 people, offering stable wage employment in areas where few such opportunities exist.

AICAJU has also announced the opening of two more factories: one in the Northern region’s Liupo District, Nampula Province, and one in the Southern region’s Massinga District, Province of Inhambane. These factories are expected to increase domestic capacity by around 10,000 MT, providing nearly 1,500 new jobs.

Table 2 – Processing units capacity, planned production and number of workers by gender

<table>
<thead>
<tr>
<th>Nº</th>
<th>Processing Units</th>
<th>Capacity</th>
<th>Prod. Plan 2017/18</th>
<th>Nº of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Nampula Province (91% of total installed capacity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Condor Nuts</td>
<td>10,000</td>
<td>10,000</td>
<td>760</td>
</tr>
<tr>
<td>2</td>
<td>Condor Caju</td>
<td>6,000</td>
<td>5,000</td>
<td>995</td>
</tr>
<tr>
<td>3</td>
<td>OLAM Ltd (4 Fab)</td>
<td>18,000</td>
<td>13,910</td>
<td>2,016</td>
</tr>
<tr>
<td>4</td>
<td>Caju Ilha Lumbo</td>
<td>4,500</td>
<td>2,460</td>
<td>800</td>
</tr>
<tr>
<td>5</td>
<td>Caju Ilha Angoche</td>
<td>4,500</td>
<td>2,605</td>
<td>800</td>
</tr>
<tr>
<td>6</td>
<td>Korosho Nampula</td>
<td>4,500</td>
<td>5,000</td>
<td>350</td>
</tr>
<tr>
<td>7</td>
<td>MOCAJU LTD</td>
<td>3,000</td>
<td>2,148</td>
<td>320</td>
</tr>
<tr>
<td>8</td>
<td>Indo Africa</td>
<td>1,000</td>
<td>350</td>
<td>320</td>
</tr>
<tr>
<td>9</td>
<td>Sunny M. Intern.</td>
<td>5,000</td>
<td>2,000</td>
<td>140</td>
</tr>
<tr>
<td>10</td>
<td>EMAJU</td>
<td>50</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>ADPP</td>
<td>40</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>DML CASHEW LTD.</td>
<td>1,500</td>
<td>-</td>
<td>300</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>58,090</td>
<td>43,509</td>
<td>6,185</td>
</tr>
<tr>
<td>Cabo Delgado Province (8.7% of total installed capacity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Korosho Cabo Delg.</td>
<td>5,500</td>
<td>4,000</td>
<td>320</td>
</tr>
<tr>
<td>14</td>
<td>JAB MOZ/Morrub.</td>
<td>200</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>Condor/Macia (*)</td>
<td>5,500</td>
<td>1,000</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>69,290</td>
<td>48,509</td>
<td>7,240</td>
</tr>
</tbody>
</table>

(*) Recently inaugurated will employ around 1000 workers when producing in plain capacity

Source: AICAJU 2018, Condor
Cashew processing systems
Mozambique has two kinds of cashew processing sectors: 1) formal legal processing factories licensed to pursue this activity using either manual or semi-mechanized processing, and 2) unlicensed informal processing using precarious technology.

Figure 17 below illustrates both channels, formal and informal. As shown in Table 2, the formal sector can still be considered labor-intensive despite the trend to use semi-mechanized and mechanized technologies. In semi-mechanized factories, processing is supported using calibration, cutting, and peeling machines, but manual labor is still required for scooping, grading, and machine operation. While quality and efficiency of machines have improved greatly in recent years, breakage rates are still lower with manual processing, and many facilities choose to process the largest, most valuable nuts by hand to ensure maximum profit.

The international cashew kernel market has become more demanding. To meet international food safety and hygiene rules, Mozambique’s cashew processors are much more committed to sustainable sourcing, implementation of traceability systems in facilities, and compliance with food safety certification programs such as HACCP and BRC Food Safety.

Some factories have agreed to adopt ACA international certification for their products. Factories mainly use basic batch processing systems and paper-based tracking forms. But these practices are quickly being replaced by higher-tech solutions that use bar codes and computer-based tracking systems to chart the kernels’ path from farm to final outlet. MozaCaju\textsuperscript{18} has also helped Mozambican processors to install batch-processing systems and become food safety certified by HACCP standards. As a result, five processing facilities in Mozambique have implemented batch processing systems, thus laying the groundwork to make processed kernels traceable down to the district level or beyond in the future.

Factories purchase raw nuts from farmers during the harvest season, which lasts from October to February, with most purchases occurring in November and December in the main producing

\textsuperscript{18} MozaCaju Impact Report, December 2017
Northern region. Processors must buy all quantities needed to operate the entire year, meaning large amounts of working capital are needed. This also increases storage and handling costs, a weakness in competing with main foreign processors in India and Vietnam who can buy supply throughout the year (see Figure 8, RCN purchases from Africa).

Constraints hindering development of cashew processing

The comparative costs of processing cashew raw nut are very high in Mozambique due to several factors: low quality RCN, low utilization of installed capacity and operating individual mills at small scale, high energy costs, low worker productivity including high absenteeism, and somewhat inefficient use of technologies, and sometimes inefficient management.

Mozambique RCN nuts are clearly below average quality. Yields measured in kernel out-turn ratio (KOR) are between 42 to 46 lbs. per 176 lb. bag of RCN. Low quality RCN not only garner lower prices in international markets, but also reduce processing yields, and consequently domestic processing revenue per ton.

In rural areas, workers for labor-intensive processing are not available sufficiently and continuously throughout the year. Processing in those areas competes with other sectors where work is easier or pay better, or even with seasonal farm activities that are important for family food security.

Obtaining reliable raw material for increasing the scale of industrial processing operations is also a significant problem. Government policies to protect industry through the export tax arguably discourage cashew producers by lowering the price they receive even further than would be the case because of low quality. As it is, Mozambique has one of the lowest RCN producer prices anywhere (Mishra and Martin 2016).

Barriers to entry into small-scale cashew processing are also very high for local farmers, either as individuals or organized in associations or cooperatives. They have no experience in the processing business and lack technical know-how, as well as administrative, marketing, and financial capacity. Complying with hygienic standards in manual processing poses a challenge, particularly to small and recently established processors.

The domestic cashew market is limited to the kernel, with no efficient value chain for producing and marketing various by-products such as apples and CNSL, among others. So most by-products remain commercially unexploited, leaving much of the job creating potential of the cashew tree unexploited.

Finally, processors’ access to financial support is very limited. For reasons that remain unclear, INCAJU intention to allocate 20 percent of export tax revenues to start-up processors has not materialized. Some medium and larger processors have benefited from development promot-

---

19 According to the Centre for the Promotion of Imports from developing countries of the European Union (CBI), the outturn of cashew nut kernels is equal to the amount of usable kernels after shelling the cashew nuts. Kernel outturn ratio (KOR) is measured as the weight of kernels in lbs per bag of cashew nuts (80 kg or 176 lbs). See: https://www.cbi.eu/sites/default/files/market_information/researches/tailored-information-cashew-nut-west-africa-product-characteristics-west-africa-europe-processed-fruit-vegetables-edible-nuts-2014.pdf
er schemes, such as through USAID, but these efforts have met with limited success. Small processors have no access to loans to acquire raw cashew nuts at harvest and then to stock enough quantity to maintain continuous processing over the year.

4.3.3 Cashew Marketing

Figure 14 above illustrates the present flow of cashew products from producers, intermediaries (retailers), and wholesalers to RCN exporters and processors. In turn, the latter export white kernels; some roast and flavor kernels for sale in the domestic market or abroad. As shown in figure 14, many traders and buyers commercialize only the main product, raw cashew nut, while the cashew apple is not commercialized. There are two main RCN buyers: 1) domestic processors (kernel exporters), and 2) exporters who ship the RCN for processing abroad.

RCN is totally processed either domestically or abroad. Figure 14 identifies four types of RCN processors:

- Legal Small/medium/large factories, partially processing the RCN to produce kernel to be roasted abroad or in very few quantities by domestic roasters. A few of them began to produce CNSL from the nut shell to export.

- Formal small domestic roasters who buy RCN to supply flavored kernel to domestic and foreign markets, usually neighboring countries. Frequently, this group buys partially processed kernel from processors or organize a group of people to roast and de-shell nuts.

- Informal roasters, who can be farmers, intermediaries, or individuals who own small premises to roast kernel. These buy directly from farmers or organize a group of suppliers with whom they negotiate an agreement to fulfil their needs.

- Foreign roasters importing a substantial portion of Mozambique RCN production to produce flavored kernel for international markets. Most of them are multinationals with large commercial presence around the world.

Cashew apple processing is still a very small activity with little involvement of large firms. Some small, informal processing units produce cashew wine and spirit for sale.

Constraints on cashew marketing process

In the domestic market:

- Many unlicensed actors (nationals and foreigners), some of them with no permit, generate an aggressive climate that harms licensed actors and makes it hard to regulate prices of the nut to the producer, often to the harm of domestic processors.

- Lack of a clear legal framework establishing rules to control RCN commercialization creates a climate conducive to illicit activities, such as the use of clandestine capital and poor nut handling affecting raw nut quality and bag weighing.

- Industrial processors investment in producers is discouraged greatly affected by the easy possibility of sales to third parties outside signed contracts (side sales), and thus the difficulty of recouping credit advances.
• Marketing of the few by-products—mostly CNSL, testa and shells—is not consistent. Remains of the cashew apples are not collected and marketed as there are no buyers.

In the international market:
• World price volatility harms Mozambican exporters who themselves cannot influence world prices.
• Fiscal policies, especially the export tax and its regulation which imposes delays, makes it hard for exporters to obtain the high international prices in the peak season for international cashew (Oct-Dec), when the harvest campaign begins in Mozambique 20,
• The low quality of the nuts prevents exporters from obtaining better prices.
• The high port transaction costs also reduce the operator margins.

4.4 CASHEW VALUE CHAIN FINANCING ISSUES

Lack of capital for investment in fixed assets and mainly for working capital is a critical issue throughout the cashew value chain, drastically reducing the sectors potential to create new jobs. Smallholder producers traditionally do not have access to financial support for their agriculture activities.

The financial system in Mozambique is not prepared to support the agriculture activities in which a significant portion of the Mozambique rural population are engaged. RCN processors also face a great shortage of financial support. Raw materials are purchased during the harvest season in Mozambique, lasting roughly three months, to provision processing factories for the entire year. This implies the need for huge amounts of working capital, which is difficult for most processors to access, especially small-scale processors who cannot meet financial institutions’ demands for things like guarantees, financial reports, periodical audits, and revenues predictions.

4.4.1 Financial constraints within the cashew value chain

The main constraints to cashew in Mozambique are related to financing issues, as outlined in the discussion that follows. Financing is important for the cashew business as an agri-industry. Every segment needs financial support. Trading is based on working capital to buy product in advance. However, no credit institutions are willing to operate with smallholders or small/medium traders, viewed as too costly and being high default risks.

A large amount of financing, currently scarce, is needed for investment in fixed assets and working capital to ensure current processing units’ operation. Working capital is the key financial factor to ensure sound process management. Costs of RCN can account for 75 to 90 percent of the total running costs.

Virtually every processor, no matter the size of business, has faced financial constraints and has experienced extreme difficulties in finding financial support. A few processors have received commercial loans through financial schemes facilitated by development promoters such as USAID, AFD, and others. Seldom available financial support comes in the form of grants,

20 The economics of cashew in Mozambique, USAID 2018.
Normally between US$ 1,000 to US$ 50,000. These are for small businesses and often directed to cashew producers or small processing units.

Only larger processors have access to commercial loans because they operate activities in addition to cashews, giving them more solid standing to financial institutions. Research to ensure viable cashew tree replanting is crucial to support the whole value chain. Dedicated budgets are too small to support activities.

The box below outlines the specific constraints faced by the operators in each segment of the value chain.

---

**Box 1 - Financing constraints at each stage of the value chain**

<table>
<thead>
<tr>
<th>Value chain player</th>
<th>Financial Needs / Challenges at Firm level</th>
<th>Barriers to Accessing Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cashew Seedling Producer (Nursery)</td>
<td>Need working capital for land preparation, inputs for seedling production, logistics costs to deliver seedlings, and labor.</td>
<td>Lack of foreign investors interest to invest in this area due to high initial investment compared with the rate of return. Demand not yet proven to be sustainable.</td>
</tr>
<tr>
<td>Smallholder Cashew Producers</td>
<td>Need long-term investment finance to plant new trees and support other crops to guarantee food security and income until cashew matures.</td>
<td>No funding from formal financial system because of long-term investment period, lack of assets for collateral, and absence of FSPs in locations where farmers are located. FSPs do not offer appropriate products. Finance policy biased against production agriculture. Producers not set up as a business.</td>
</tr>
<tr>
<td>Emerging cashew producers (+1000 trees)</td>
<td>Need long-term investment finance to plant new cashew trees, mainly use own funds Not very interested in debt.</td>
<td>Long-term nature of investment makes difficult to access funds.</td>
</tr>
<tr>
<td>Chemical Sprayers</td>
<td>Needs capital investment for spraying equipment and protective gear as well as transport / operational costs (bike or fuel).</td>
<td>Lack of enforceable contracts with producers make it difficult to transact. Need credit for spray equipment purchase, and to date most subsidized by various actors.</td>
</tr>
<tr>
<td>Traders</td>
<td>Need working capital to buy RCN and for transport and</td>
<td>Traders are often informal businesses. Could be suitable</td>
</tr>
</tbody>
</table>

---

21 Adapted from ACI Report on Value Chain finance assessment of the cashew nuts sector in the province of Nampula, Mozambique, April 2011
logistics at farm gate. Finance provided on very strict terms not customized by banks. Could require concessional investment capital for a specialized window targeted to this purpose.

<table>
<thead>
<tr>
<th>Producers’ Associations</th>
<th>Depending on the role they play, could require working capital for cashew purchase and consolidation. Capital investment not required at this time. Weak management could constrain access to finance. Lack collateral.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial institutions normally do not have products geared to associations. Specialized development finance institutions may be the exception.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local Cashew Processing Firms</th>
<th>High working capital requirements for purchase of RCN during harvest season of several million US$ per processor. Investment finance for factory expansion not noted as a pressing need. Prefer USD financing. Most had adequate collateral including USAID guarantees, factory buildings and equipment, RCN inventory, other business or personal assets, although requirements of banks are high.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Most banks still lack interest and ability to evaluate the sector (BCI is exception). Processors lack extra capital and are skeptical of entering into long-term relationships with farmers. Processors are not interested in expanding their own cashew production capacity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exporters</th>
<th>These are mostly multinational companies or foreign individuals that do not depend on local finance.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Most banks still lack interest and ability to evaluate the sector (BCI is exception). Processors lack extra capital and are skeptical of entering into long-term relationships with farmers. Processors are not interested in expanding their own cashew production capacity.</td>
</tr>
<tr>
<td></td>
<td>N.A.</td>
</tr>
</tbody>
</table>
5. CROSS-CUTTING ISSUES IN CASHEW VALUE CHAINS

5.1 GENDER ISSUES

Traditionally in Mozambique, men are responsible for generating and managing household income, while women are responsible primarily for domestic affairs. In most African countries, feminization of poverty is a characteristic of their poverty profile. In Mozambique, while 48 percent of the total population lives under the poverty line in Mozambique, 85 percent of all poor in Mozambique by this definition live in rural areas and the clear majority of these are women, mainly small-scale farmers.22

Currently, about 95 percent of cashew nuts produced in Mozambique are grown by small producers, and the sale of RCN provides income to approximately 1.3 million rural households made up of approximately 6.5 million people. Around 30 percent of rural households are headed by women23.

Processing of raw cashew nuts is predominantly carried out by six to eight medium-to-large factories, but also by some small factories in rural areas. Both raw cashew nut and processed kernels are sold in local and global markets.

Around 57 percent of the workers in processing are women involved in peeling, sorting, and classification. The working conditions in processing units are not good: Cashew nut shells contain caustic oil which burns the skin and produces harmful fumes, and it is difficult to peel the kernel without breaking and getting harmed. Worker pay is on a piece-rate basis and usually well below national minimum wage, placing the mostly women in this work at a disadvantage compared to men.

It is believed that high concentration of women in the cashew industry despite low pay and exposure to harmful products—in addition to lack of childcare facilities in factories—is due to the fact that women cannot find better jobs usually performed by men. Family duties such as raising children and caring for domestic affairs limits women’s mobility and consequently the possibility to access the same opportunities that men have.

In the cashew industry, women are mainly involved in the lower segments of the value chain, mostly involving collecting (50% of total) and mechanically crushing cashew nuts (90 percent of total), while men are responsible for farm management and all other tasks (see Figure 14 and 17).

Gender inequality limits women farmer’s access to agricultural inputs, credit services, and markets. In fact, despite the fact that 57 percent of employees in the industry are women,

23 Anuário de Estatísticas 2015, MASA, Web: www.maza.gov.mz
there are no known instances in Mozambique of women occupying factory leadership positions.

Despite constraints faced by women, the cashew industry offers significant economic opportunities for them. All segments of the value chain, as described in this report, have potential to increase gender equality. Increasing women’s participation in the sector can improve female economic empowerment and at the same time contribute to general economic and social development of the country. According to a specialized study, improving women’s access to cashew trees and extension services to raise their productivity is important in two key ways (Kanji et al. 2004):

- It improves women’s cash income, improving welfare and food security of their families, especially given that women tend to invest a bigger share than men in basic needs and education, which in turn reduces poverty.

- It improves opportunities for women to climb the value chain into small-scale cashew processing and marketing, which can also contribute to poverty reduction, especially for female-headed households.

The report further states: “The contribution of the cashew sector to poverty reduction is enormously dependent on the extent to which women can engage with and benefit from the sector” (page 26).

Considering the specific constraints faced by women in the cashew sector, the gender mainstreaming strategy for LWP should focus on supporting its partners to promote increased women’s access to program activities well as increasing women’s participation in implementation, community representation, and decision making. To achieve that, massive capacity building should be encouraged for women to access these activities, as well to access financial support at the same level of the men.

### 5.2 ENVIRONMENTAL ISSUES

#### 5.2.1 Climate change

As in any other natural resource-dependent country, Mozambique is facing increased pressures linked to global climate change. The country has a long history of natural disasters, and vulnerable populations face of ever-increasing exposure to droughts, storms, cyclones, and extreme floods.

Climate affects the entire agricultural sector, and cashew production is no exception. As stated above, cashew tree productivity declined rapidly in Mozambique’s after independence. This is not only the result of Mozambique’s social, political, and economic challenges, but also partly due to the cyclones, droughts, and floods that have reduced cashew plantations over the last few decades. Although cashew is more resistant to drought than most crops, and highly adapted to the ecosystem—climate, soil, and weather conditions—the crop is still vulnerable to severe storms.

For instance, in 1994 cyclone Naida destroyed 40 percent of cashew plantation areas in Nampula Province. In 2008, in Mogincual district of Nampula, the Joke cyclone destroyed one-third
to one-half of cashew plantations. In 2018, in coastal Inhambane province, another cyclone caused significant damage to cashew plantations and processors.

These natural phenomena associated with climate change are expected to occur cyclically, and storms and cyclones will likely occur more often and will be stronger than in the past, continuing to damage the agricultural sector.

While difficult to predict the effect of worsening climate change, some activities must be carried out within the value chain to prevent cashew orchards from being damaged by these phenomena, such as:

- Replacing tall-growing trees (common trees), mainly with seedlings with a short trunk (half-trunk) as half-trunk cashew trees are less prone to being uprooted by strong winds, especially when grown as part of a plantation. (Große-Rüschkamp; Seelige, 2010).
- Planting in organized cashew plantations to help minimize cyclone damage.
- Increasing use of polyclonal seeds produced and used by INCAJU, which according to MozaCaju\(^24\) are far superior to grafted seedlings and conventional seeds.
- Promotion of the establishment independently-owned community nurseries in strategic geographic locations.
- Training farmers on good agricultural practices, planting, integrated cashew management, and post-harvest care.

### 5.2.2 Disease and pest management

The old age of cashew trees in Mozambique predisposes orchards to diseases, such as anthracnose, a powdery mildew disease, and pests such as helopeltis bugs, coconut bugs, and mealy bugs. Combined, they are rapidly reducing tree productivity and cashew fruit quality. It is therefore necessary to undertake pest and disease control measures at cashew plantations.

Despite the long use of pesticides in Mozambique, producers, transporters, and the communities in general are still not acquainted with safety practices involving handling and applying these chemicals. Poor application of pesticides (whether over-doses or under-doses) causes severe effects. For example, applying lower rates than recommended causes the pathogen to build resistance against the fungicide (Sijaona and Mansfield, 2001). On the other hand, excessive use of inorganic pesticides can lead to unsafe high levels of the chemical above authorized limits in the kernels, leading to environmental pollution and additional costs to smallholder farmers.

Cashew production in Mozambique is scattered around the country and some trees are abandoned. As stated above, tree ownership is sometimes unclear and nobody cares for them outside of the harvesting period when even abandoned tree nuts may be collected. Use of chemicals in this context must be very well controlled.

INCAJU is subsidizing private operators to apply chemicals all over the country through nurseries directly managed by INCAJU, as well as others managed by private individuals including farmers or farmers’ organizations. These nurseries use significant quantities of agrochemical pesticides, which increase risks of polluting surface water, groundwater, and soil.

\(^{24}\) MozaCaju impact report, December 2017
Agrochemical use is dangerous for sprayer operators and workers if not handled with care and contamination occurs. It can also affect the surrounding environment, for instance by killing insects, birds, and natural elements important to ecological balance. Extension service providers must be trained to handle these chemicals, and INCAJU and its partners must ensure that chemical handling and applying rules are strictly observed.

5.2.3 Cashew processing effluents
As mentioned above, the cashew industry in Mozambique uses different processing unit operations and methodologies, depending on variety of raw material, location, level of technological mechanization, and availability of energy supply. Of the two most common methods, roasting processing and steam cooking, the latter is more used in Mozambique since it is better for larger processing units.

The roasting process releases a thick black smoke, which falls to ground level to produce an irritating odour, creating a public nuisance. However individual large units do not generally emit a large amount of dangerous effluents. The most common cooking process discharges wastewater from the steam cooker and emits air-polluting steam through the boiler. If not treated properly, these can cause environmental problems.

In general, the cashew industry is not among the most polluting processing industries. However, while pollution load from individual units is relatively low, the magnitude of pollution can be significant where there are clusters of processing units. In Mozambique, with the exception of Nampula city, processing units are scattered around the country. Currently no conventional and techno-economically cost-effective pollution abatement systems prevent negative environmental effects of effluents. It is important to study the entire cashew nut processing industry and introduce a set of economically and technologically feasible environmental regulatory standards to avoid dangerous emissions.
6. THE CASHEW POLICY ENVIRONMENT IN AFRICA

6.1 OVERVIEW OF AFRICAN CASHEW POLICIES

Africa has seen a tremendous change in cashew policies over the last 15 years\textsuperscript{25}. At the beginning of the new millennium, East African cashew producers adopted some policies to govern the cashew value chain and formed dedicated state agencies to supervise their implementation. West Africa countries joined recently by introducing new policies and mechanisms to control regulatory implementation, such as interprofessional organizations.

Policies intended to influence the development of each segment of the cashew value chain, from production and harvesting to processing and marketing, have had a positive effect on the African cashew value chain, which today has a visible and influential effect on the world cashew business.

Some of the policies adopted in each segment by African countries competing with Mozambique on the international market are discussed below.

6.1.1 Production policies

By the time Mozambique began to reformulate its cashew policies, Tanzania had already completed a large cashew research and rehabilitation program that renewed the countries cashew orchard sand improved the quality of RCN. The country had also adopted cashew industry protection policies by introducing export tax levies on RCN and kernel exports, later discontinued in exchange for increasing its export tax.

Until 2006, West African countries with no tradition in growing cashew trees, and no consistent cashew policies, also experienced fast growth in production (Cote d’Ivoire, Guinea Bissau), apparently due to need to diversify agriculture crops.

In 2006, the African Cashew Alliance (ACA) was created and based in Accra, Ghana. This association of African and international businesses has since promoted a globally competitive African cashew industry. With the support of ACA, West Africa countries began to adopt development programs similar to those in Tanzania and Mozambique, creating new institutions to manage the cashew value chain.

Meanwhile, Tanzania formed a Cashew Development Trust Fund (CDTF), through its 2009 Cashew Act to support development of the cashew industry. The fund established a 15 percent levy collected from the export of raw cashew nuts.

The Melinda and Bill Gates Foundation also funded creation of the African Cashew Initiative (ACi), based in Ghana and managed by the Dutch development organization Gesellschaft für

\textsuperscript{25} Source: Technoserve database, compiled by Shakti Pal 2017, adjusted by the author
Internationale Zusammenarbeit (GIZ), to support development of the cashew sector throughout Africa.

In 2011/12, INCAJU in Mozambique kept supporting seedlings production and spraying programs. It adopted a US$ 4 million programs run by ACi to support farm organizations and cashew production by training farmers through field school programs.

West Africa began to introduce new cashew policies to protect their industry and incentivize national production, such as subsidizing some activities through cashew transaction levies.

Not much intervention took place in 2013/2014 in Mozambique’s cashew value chain, but Cote d’Ivoire authorities adopted sector reforms and a strategy to promote domestic cashew production and processing. The strategy was prepared jointly by the Ministry of Industry and Mines, the Ministry of Agriculture, the Ministry of Finance and the Ministry of Environment.

6.1.2 Processing policies

In 2006, Mozambique, which once had a sound industry equipped with the most advanced cashew processing technologies, suffered a collapse. Cashew processing changed from urban, capital-intensive to labor-intensive processing units located in rural areas. At the same period, Tanzania, facing similar problems, privatized Government factories and increased installed capacity.

In 2006 and 2007, other cashew producing countries in West Africa, motivated by Mozambique’s success, began to look strategically at cashew value-added activities. Tanzania and Kenya experienced strong processing successes, and West Africa developed multiple cottage processing units. African processors started trying new technologies in a mix of capital and labor-intensive strategies.

Several cashew producer countries in 2008/2009 pursued private processing unit consolidation with the support of Government policies, such as financing through guaranty funds supported by export tax revenues. Tanzania’s warehouse receipt system was an example, as it started encouraging consolidation of processing.

However, most small-scale West Africa cottage industries failed as the model did not ensure the critical economies of scale needed for the market. In 2010 and 2011, based on the failed experience with cottage industries, Ghana, Benin, Burkina, and Cote D’Ivoire (CIV) embarked on new cashew processing investments using more adequate technology on units with installed capacity able to ensure economies of scale. West Africa shifted from cottage to commercial-scale processing, but limited access to finance and skills inhibited growth of most processors, preventing them from investing on medium-to-large processing units.

2012/2013 saw more of the same problem, with new processing start-ups from 2011 not succeeding. On the other hand, Asian countries began to modernize their industry; almost all Vietnam processors adopted 100 percent mechanization and India starting investing in mechanization.

---

26 A cottage industry is a small-scale, decentralized manufacturing business often operated out of a home rather than a purpose-built facility. Investopedia
In Africa, Tanzanian processing almost collapsed due to scarcity of skilled labor, lack of working capital subject to high interest, and difficulties for small units of 300 to 2000 tons capacity to achieve viable economies of scale. Mozambique, betting on economies of scale to increase processing unit capacity, began adopting new semi-automatic technology.

New investments in West Africa processing continued (Benin, Ghana, Cote D’Ivoire) in 2014/2015. Market volatility highlighted the need for technical assistance and access to finance for new processors. New investments on cashew apple processing models were introduced, but proponents of this initiative made few efforts to promote the models.

Vietnam and Indian intensified buying in Africa, supported by favorable policies in India and competitive costs in Vietnam. Vietnam became the major RCN importer from Africa.

Pressed by market quality demands, and supported by ACA, processors in Africa began to be concerned with hygiene and safety issues and decided to adopt quality systems such as Hazard Analysis Critical Control Point (HACCP) and the ACA seal.

2016/2017 saw a great boom in the West Africa cashew industry. Cote d’Ivoire, Ghana, and Benin made multi-million-dollar investments; and several other countries such Guinea-Bissau, Burkina Faso, and Togo saw small to medium-scale plant establishment as drivers for cashew value chain development. Tanzania started the slow process of increasing utilization rate, aiming to achieve better balance between RCN exports and processing. Processors throughout Africa experimented with various mechanization models, and processors began to understand the importance of management information systems and their use for decision making.

The Government of Cote d’Ivoire (GoC) recognized the need to expand domestic cashew processing due to its potential to drive cashew value chain job creation and value added. GoC included development of the cashew sector and cashew processing as national priorities in its National Development Plan (NDP) 2016-20 and its National Agricultural Investment Plan (NAIP).

Expectations for 2018 onwards on African processing include:

- Africa will increase in-house processing capacity; however, a significant portion of RCN will still be exported to Asia.
- Technical Assistance and access to finance to increase as it is the single most critical factors for new processors success.
- Better international and regional balance between right mechanization and labor-intensive processing models to enhance productivity to achieve economies of scale.

### 6.1.3 Marketing policies and value chain organization

Before 2006, the cashew industry was characterized by flat markets and fall in kernel prices. African prices were often set at a discount to global prices.

Aware of the need to organize, cashew value chain producer countries started setting up cashew bodies, like Mozambique’s INCAJU, to supervise the cashew business. Some countries, such as Guinea-Bissau, developed programs linking various actors to promote exports, including with USAID and GIZ support.
In 2007, kernel prices began increasing, and global buyers showed more interest in African kernels.

Mozambique policies successfully increased sector salaries, benefiting workers in the cashew business. The minimum salary for agriculture was increasingly attracting new employees and motivating existing ones to maintain their jobs.

The African Cashew Alliance (ACA) created a system to share information on best practices, prices, and opportunities, as well as to foster networking for those operating in the cashew sector in Africa.

In 2008 and 2009, kernel price continued moving upward. Buyers stopped signing forward contracts, preferring to make spot purchases, due to market uncertainties and contract failures from major suppliers. The warehouse system was established in Tanzania. In West Africa, donors coordinated to promote processing.

Prices recovered from a small dip in late 2009 in the following two years, when a short crop led to unmet demand disturbing the world cashew market.

To reinforce its cashew value chain, Kenya banned export of raw nuts and ACA became part of the International Nut and Dried Fruit Council (INC) to promote investment in the African cashew sector to the worldwide nuts industry.

In 2012/2013, kernel prices tumbled after a record high in 2011, stabilizing at US$ 3.5/ lb. Cote d’Ivoire started discussing sector reforms to promote local processing to reinforce its cashew value chain.

The years of 2014/2015 were characterized by high price volatility associated with weather and political shocks in high-producing countries. African kernel prices reached parity with global prices.

6.1.4 Food safety and traceability policies

Cote d’Ivoire announced multiple sectoral reforms, such as creating more traceable supply and organizing sector players. The reforms were intended to reinforce organization of its cashew value chain in coordination with the cacao and cotton value chains. The Government of Cote d'Ivoire discussed its vision for local processing, but did not provide much direct support, and the rate of domestic processing remains low.

In 2016/2017 a significant production deficit due to changing weather patterns depressed crop production in the Northern hemisphere. RCN price volatility continued, and kernel prices increased rapidly. Increased demand for broken cashew kernel became a new market trend.

To consolidate its cashew value chain, Cote d’Ivoire and Guinea-Bissau introduced new investment incentives. Nigerian processing, on the other hand, collapsed with removal its export expansion grants (EEG). Meanwhile, several knowledge-management platforms emerged in African cashew producer countries.
Prospective issues for 2019 and onwards include:

- Barring economic melt-down in Asia, it is expected that RCN prices will reach an all-time high due to insatiable global demand, and the increasing price trend is expected to continue for some time. China will emerge as the fastest growing consumer, substantially enlarging the world market. World consumers will reinforce demand based on the health benefits of cashew nuts.
- All governments in major African cashew producer countries are directing necessary public and private investments within the sector; some have started reaping early benefits.
- Most governments in major African cashew producer countries are adjusting policy frameworks to help companies in their country address competitive weaknesses without violating trade agreements.

6.2 MOZAMBIQUE EVOLUTION AND EFFECTIVENESS OF CASHEW POLICIES

Two decades ago, Mozambique introduced a new cashew Law 13/99, and later its corresponding regulatory Decree 33/2003. The legislation aimed to facilitate industrial development through value-added activities, grow export revenue, and create jobs in the cashew nut processing industry.

The law, on which cashew stakeholders provided significant input before it was approved by the Mozambican Parliament, made several changes to support domestic processing: it established a tax of between 18 and 22 percent to be applied on exports of RCN; gave domestic processors the right of first refusal (ROFR) to purchase raw cashews from domestic growers, and later established a temporary RCN export ban at the beginning of each season until processors were completely supplied. This later regulation was enacted after cashew processors complained about the ineffectiveness of the first two measures on their RCN nut supply.

The main intent of Law 13/99 was to protect the cashew processing industry in Mozambique and enhance its competitiveness in the global marketplace. These goals were achieved to a certain extent. Despite some difficulties, the processing industry was able to reestablish itself and provide formal sector jobs. This strategy, expected to remain in place as long as needed for processing units to survive, created several restrictions still in force, namely the export tax, right of first refusal of RCN by domestic processors, and the ban on export of RCN during the peak harvesting season.

The fact that RCN production in Mozambique did not grow as expected suggests the current policy regime both hinders Mozambique's global competitiveness by protecting inefficient cashew processing and discourages investment by producers, a side-effect of the export tax that gives processors access to RCN at levels below international market prices. Smallholder farmers that account for most cashew production are forced to accept below-market prices. Failure to compensate producers has in-turn contributed to declining quality and quantity of
RCN in Mozambique, as farmers do not have the monetary incentive to invest in new trees or maintain existing trees.27

Recently, to correct asymmetries in the value chain, the Government of Mozambique approved new Decree 78/18, of December 6, 2018 attached to Law 13/99, still in force. The new regulation proposes new measures to control cashew products and by-products quality, and introduces new rules for operators to be in the cashew business, such as mandatory registration, definition of operators who can export RCN, and how to export to ensure the domestic processing industry will first be completely supplied. The new regulation also mandates setting of farm gate referential prices at the beginning of each harvesting season to ensure fair remuneration for cashew nut producers. The Government of Mozambique has decided to maintain law 13/99 in force for a few years to come, along with the new regulation.

6.3 THE IMPACT OF POLICY ON THE CASHEW BUSINESS

The effectiveness of these policies has been debatable since effects on RCN production have not been desirable. Peak cashew production of 50 years ago is yet to be achieved; seedling production and distribution to smallholder producers has not been effective despite INCAJU efforts and the help of donors; and productivity in old orchards of two to four kg/tree is falling rapidly, notwithstanding INCAJU pesticide spraying efforts.

27 The economics of cashew in Mozambique USAID 2018
7. CASHEW VALUE CHAIN POTENTIAL FOR JOB CREATION

Even though post-independence Mozambique has witnessed a deep decline of cashew nuts quantity and quality, it still occupies a prominent position within the world cashew business. Its position as the largest African cashew processor despite processing only around one-third of its national RCN production, leaves plenty of room for growth, not only for processing but also for the whole value chain.

For Mozambique, returning to its cashew business glory days may simply be a matter of overcoming main constraints to take advantage of opportunities. In this regard, addressing cashew policies to meet cashew business requirements is probably the most important challenge the Mozambique authorities and partners face. These policies must address the main constraints outlined below.

7.1 CONSTRAINTS DETERRING EXISTING JOBS FROM BEING BETTER PAID OR THE CREATION OF NEW JOBS

7.1.1 In production

Few agricultural policies are in place to deal with the challenges faced by rural populations.

According to the national population census, most working-age men are moving from rural to urban areas. Cashew trees and other crops are left increasing in the care of women or elder men. Most of these people do not have the physical capability nor resources to improve cashew nut production. Attracting young people to agriculture is difficult as few are interested in growing cashew nuts or performing other agricultural tasks. They do not have access to land nor other mechanisms to support involvement in agriculture activities and migrate in search of better living conditions.

Subsistence agriculture is characterized by scarcity, with little cash available to pay labor. This prevents farmers from hiring people from outside their own families. The agricultural minimum wage is one of the lowest in Mozambique. Subsistence agriculture has its own set of rules, and to the extent that farmers pay for labor force and most of the time do so in local coins (specie).

As relates to cashews, the pluriannual period of tree maturity in cashew production is not attractive to people pressed by daily needs to survive. They prefer to invest in annual cycling crops with predictable short to medium-term income.

Moreover, as stated in this report, cashew policies demotivate rural families from participation in production. Farmers have difficulties in accessing inputs, seeds, seedlings, fertilizers, and adequate finance. Virtually no irrigation systems exist, and access roads are very precarious, among other obstacles.
7.1.2 In processing

Rural factories have difficulties hiring labor, not only due the exodus of young people from rural areas but also due to competition from other crops. In coastal zones, fishing competes for workers with the cashew processing industry, and others activities such as road construction also competes for labor.

The minimum government-set wage for processing, equivalent to that of agricultural workers, is one of the lowest salary in the country. Cashew processing workers (shelling, sorting, classification) are paid based on productivity (kg per day).

Processing units are relatively new in rural zones, where most people are not used to formal sector jobs and do not have the experience or skills to take advantage of the opportunities without considerable training and acculturation to the formal workplace. They are at the beginning of the learning curve. Earning wages that match entry level productivity is hard to live on, and only the more skilled can achieve the minimum monthly remuneration needed.

Meanwhile work conditions in shelling (known as the “dirty job”) in cashew processing is also one of the main reasons for high absenteeism and worker reluctance to join and stay in the cashew industry.

High rates of illness (endemic diseases, Malaria, HIV among others) diminish the availability of workers. Factories do not typically provide healthcare to workers. There is no official government intervention to monitor worker sanitary and health conditions or enforce the periodic medical inspections foreseen in Mozambican labor law.

There are few efforts to exploit market opportunities in cashew by-products as the market for such products—snacks, beverages, fuels, wood treatments, for example—are not well-understood by the industry at the domestic, regional, or international levels. There is also relatively little knowledge in Mozambique on how to process and package these by-products. Cashew processing of by-products could be an important job generator.

7.1.3 In trading

One of the main barriers to entering trading is the difficulty of accessing finance. Acting as a business intermediary requires financial support, but few candidates in Mozambique can find it. Intermediaries also need logistics, such as transport and warehouse capacity. Margins are thin, so profitability requires transacting in large quantities to cover fixed costs and getting a reasonable profit. Commercial infrastructure in rural areas, such as warehouses, are inadequate, and the cost of handling RCN are high. Bad access to roads and high cost of port handling, among other things, increase transfer costs.
7.2 OPPORTUNITIES TO CREATE NEW AND BETTER PAID JOBS

Despite the constraints described above, plenty of opportunities within the cashew value chain in Mozambique are available to propel growth. Current policies have created an imbalance within the value chain by benefiting large-scale processors to the detriment of other stakeholders in the sector, most notably nut farmers. Combined with other broader unfriendly business environment factors, and a somewhat inefficient institutional framework, these policies have contributed to the poor competitiveness of the Mozambique cashew business. Fortunately rapidly growing global demand has somewhat offset these problems, but production woes do not augur well for the long-term of the sector unless a new approach is adopted.

7.2.1 Opportunities at different stages of the value chain

The promising world market is undoubtedly the main driver of growth. Main cashew consumer countries are expected to increase imports from developing countries in the next few years. In fact, the cashew world market is characterized by:

- Worldwide market growth. The huge market for nuts worldwide of about two million tons, of which 25 percent is for cashew kernels. Although North America and Europe still are the main markets, representing about 40 percent of world total, country markets such as India, Saudi Arabia, China, United Arab Emirates, and Mexico, among others, are emerging.

- The European market for cashew nuts is expected to experience steady long-term growth. Growth is likely to be driven by European changes in consumption patterns, including rising demand for vegetable sources of protein to replace meat. Asian market will also continue to grow fast, led by India and China.

- Steady increase in world prices accompanying global demand growth for both RCN and kernel. Regular fluctuations in sales from Mozambique will continue to be influenced by fluctuating crop harvest outcomes rather than changes in world demand.

- Increasing middle class income substantially enlarged the market and create premium price niches to be explored.

Some opportunities per segment are discussed below.

Cashew production

The nature of cashew production, being dispersed and carried out by millions of households, is not conducive to technical assistance and specific service delivery. Furthermore, cashew plantations are not lucrative, and investment takes more than five years to achieve breakeven if an individual farmer decides to pursue it on a small scale. It is not surprising that smallholders will not involve themselves in a medium long-term investment, choosing instead short-term ones with higher return, such as annual cycling cash or food crops. Considering this, any investment in this area must focus on the wellbeing of rural families by providing alternatives for the time the trees are growing to maturity. Consequently, policy makers and investors must take into consideration the following issues:
• Cashew farms are predominantly subsistence enterprises. Over a million families are involved in cashew production, and great potential to generate jobs and increase rural families’ income exists to contribute to significant poverty alleviation in Mozambique.

• Any support to renewing cashew orchards through seedlings, clones, or even seed distribution should consider also delivering seeds and other inputs for other annual cycling crops traditional to the zones being targeted.

• Adequate agro-climate conditions. Cashew tree physiology allows the plant to survive adverse climate conditions better than other crops. The long tradition in handling cashew crops makes rural families more acquainted with production and processing.

• Farmers normally produce juice and alcohol at home to sell. However, this activity is inconsistent, and efforts should be made to encourage production of healthy new products that are tasty and nutritious to aggregate more value into this chain, improve the welfare of rural families, and generate more jobs.

• Scattered cashew tree orchards imply high maintenance and exploitation costs. Investment in organized plantations will create economies of scale and more efficient exploitation of the cashew nut and derivative products.

• Rural families have a great opportunity to use cashew plantations as a safe income source and to safeguard old age retirement.

Potential business and job creation for different production and servicing activities

| Box 2 - PRODUCTION |
|------------------|------------------|------------------|------------------|------------------|
| Activities       | Private operators | Potential to grow | Income generator | Job creation | Gender balance impact |
| Tree spraying    | Atomizers opera-tors | Medium | Medium | Medium (hundreds) | Medium/high |
|                  | Agri-dealers, in-puts distributors | Low/Medium | Low/Medium | Medium (around 1000) | Low/Medium |
| Tree replacing   | Seedling nurseries | High | Medium/high | Medium (hundreds among farmers) | High |
|                  | Seedling distri-butors | Medium/high | Medium | Medium/High (thousands) | Medium/high |
|                  | R & D Private demons-tration plantations | Low/medium | Low | Low (less than 10 centers) | Low |
|                  | Agriculture exten-sion services | Medium/high | Low/Medium | Medium/High (thousands) | Medium/high |
**Cashew processing**

Cashew processing can be highly profitable given current world market attractiveness. However, cashew processing must compete with other businesses (both within and outside the cashew sector, including outside agriculture). Investors will doubtless consider relative costs and profitabilities, the optimal mix of labor-intensive and capital-intensive technologies, and various risks such as market, climate, policy change, and so forth. This section raises some issues for private investment in processing.

Installed domestic processing capacity is growing much slower than RCN production overall. Furthermore, the industry is geographically unbalanced. Some producing provinces, such as Nampula, have large factories with less than full capacity utilization, while in others, such as Zambezia, Cabo Delgado, and those in the South, installed capacity is short of need and far short of potential.

Processing based on capital and labor-intensive technologies provides a balance between growth at the high end and job creation at the low end of skills. Workers productivity (and thus wages) can be enhanced and negative nutshell handling effects can be mitigated by investing in capital-intensive technologies without jeopardizing overall jobs in lower-skill processing operations, such as labor-intensive peeling and grading.

More decentralized processing units can buy cashew nuts directly from producers, reducing or eliminating intermediaries, and can also promote improved cultural practices and cashew tree replanting to producers. This alternative must also consider hygiene and food safety issues.

Increasing roasting and flavoring processing to supply domestic and eventually foreign markets can increase sector capability to add value. This part of processing, considered the “state of art” of the cashew business, has been dominated by multinationals.

Artisanal roasting processing, also a very popular activity, is carried out mainly by women in suburban and urban areas to sell in the streets. It is indeed another opportunity to create sustainable jobs, provided that hygiene and food safety rules are met to protect consumers.

Cashew apple processing represents a great opportunity so far squandered. Despite producing more than half of world cashew production, African countries throw away the cashew apple or leave to rot as a by-product of the harvest. Promotion of cashew apple processing plants can contribute significantly to gross domestic product and can generate a great number of jobs.
**Specific processing activities’ potential for business and job creation**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Private operators</th>
<th>Potential to grow</th>
<th>Income generator</th>
<th>Job creation</th>
<th>Gender balance impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cottage processing</td>
<td>Farmers Associations/individuals Small scale processing</td>
<td>Medium/high</td>
<td>Medium/high</td>
<td>Medium/High (thousands)</td>
<td>High</td>
</tr>
<tr>
<td>Good practices of food safety and hygiene</td>
<td>Support creation of National Cashew Quality Standards, provide training</td>
<td>Low/Medium</td>
<td>Low/Medium</td>
<td>Low/Medium</td>
<td>Low/Medium</td>
</tr>
<tr>
<td></td>
<td>Processing unit introduction of international quality norms (HACCP, GMP)</td>
<td>Medium/high</td>
<td>Medium/high</td>
<td>Low (Less than 50)</td>
<td>Low</td>
</tr>
<tr>
<td>Workers welfare conditions</td>
<td>Support creation of child care facilities</td>
<td>NA</td>
<td>NA</td>
<td>Low - Reduce absenteeism (Less than 50)</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Support coaching on health, food safety and nutrition issues</td>
<td>NA</td>
<td>NA</td>
<td>Medium - Reduce absenteeism</td>
<td>High</td>
</tr>
<tr>
<td>Cashew derivatives processing</td>
<td>RCN shell residual to produce energy</td>
<td>Medium/high</td>
<td>Low/medium</td>
<td>Low/Medium</td>
<td>Medium/high</td>
</tr>
<tr>
<td></td>
<td>Cashew apple processing</td>
<td>High</td>
<td>High</td>
<td>High (Thousands)</td>
<td>High</td>
</tr>
</tbody>
</table>

**Cashew trading**

The growing international market for cashew nuts offers a great opportunity for Mozambican producers to capture a larger or higher-value share of this market. Some measures needed along the value chain to achieve this include:

- Supporting formal and informal traders operating along main roads and villages. They play an important role in the trading system as they are directly linked to cashew producers and collectors and buyer groups, such as processors and exporters. This segment has great potential to generate jobs and income.

- Promotion of commercial associations to integrate small to medium-sized traders will enhance business knowledge and strengthen local trading in rural areas.

- The commercial association can also be used to spread other type of information important for communities, such as about nutrition and food security, health care and other social events relevant for the community.
## Cashew trading potential for business and job creation

<table>
<thead>
<tr>
<th>Activities</th>
<th>Private operators</th>
<th>Potential to grow</th>
<th>Income generator</th>
<th>Job creation</th>
<th>Gender balance impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Build Traders capacity</strong></td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Medium</td>
</tr>
<tr>
<td>Support creations of Traders Professional Associa-tions and improve efficiency of existing ones</td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Medium</td>
</tr>
<tr>
<td>Train trainers for small/medium traders to improve business skills</td>
<td>Medium/High</td>
<td>Medium/high</td>
<td>Low (Less than 100)</td>
<td>Medium/high</td>
<td></td>
</tr>
<tr>
<td><strong>Support small business (Artisanal kernel roasting processing and flavoring)</strong></td>
<td></td>
<td>High</td>
<td>Medium/high</td>
<td>Medium/high</td>
<td>Medium/high</td>
</tr>
<tr>
<td>Cashew tree owners, collectors, intermediaries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial support to the rural traders</strong></td>
<td></td>
<td>High</td>
<td>Medium/high</td>
<td>Medium/high</td>
<td>Low/medium</td>
</tr>
<tr>
<td>Attract financial services providers to the rural areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Activity still dominated by men</td>
</tr>
</tbody>
</table>
8. MOZAMBIQUE CASHEW REGIONS AND MAIN MARKETS TO TARGET

8.1 Regions to look at for developing the cashew industry

Any strategy to develop the cashew value chain in Mozambique must consider two main producer regions: the Northern regions of Zambezia, Nampula, and Cabo Delgado, and the Southern regions of Gaza and Inhambane. Cashew is cultivated by thousands of rural families in each region, and the crop plays an important role in their way of living.

While cashew production in Mozambique is dispersed countrywide, distribution of cashew plantations is not balanced, and crop quality differs from province to province. According to INCAJU (Fig. 15 above) around 43 percent of RCN is produced and commercialized in Nampula, followed by Cabo Delgado 15 percent, Zambezia 13 percent, and Inhambane 10 percent. RCN quality is higher in Northern provinces, especially in Nampula and Cabo Delgado. AICAJU data also shows that 91 percent of industry processing capacity is concentrated in Nampula and 8.7 percent in Cabo Delgado.

In cashew producing areas in Nampula province, cashews account for nearly one-fifth of total household income and approximately two-thirds of total cash income. However, Mozambique accounts for less than three percent of African RCN production, and has the lowest quality in Africa due to old acreage and recurrent disease outbreak.28

However, though Nampula has been historically the most important cashew producer and processor province, this does not reflect the whole story of Mozambique’s cashew industry. Zambezia and the Southern Provinces of Gaza and Inhambane have played an important role not only in cashew production but also in processing. While old factories have shuttered, at least one more large factory will be opening in Inhambane’s Massinga district, and a new factory began operations in 2018 in Gaza Province’s Macia district.

---

Comparative indicators of regional suitability for effective investments are presented in Box 5.

**Box 5 – Regional indicators of suitability for cashew development**

<table>
<thead>
<tr>
<th>Region</th>
<th>Northern</th>
<th>Southern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>71% of total RCN production (2016).</td>
<td>19% of total RCN production (2016)</td>
</tr>
<tr>
<td>Processing capacity</td>
<td>Presently almost 100% of the operational installed capacity.</td>
<td>Most factories closed. New ones coming will again place the region on the Mozambique processing industry map.</td>
</tr>
<tr>
<td>Market access and size</td>
<td>Very tiny domestic market. Based on informal sales along main roads. Very low urban consumption. Massive exports of partially processed kernel and RCN.</td>
<td>Reasonable domestic market due to proximity of Maputo, tourist zones, and South African border, which absorb a significant portion of nuts. Some RCN exported, but limited by availability and quality (hygiene and food safety conditions).</td>
</tr>
<tr>
<td>Product quality</td>
<td>Higher out-turn and nut size</td>
<td>Below KOR average – average small size</td>
</tr>
<tr>
<td>Marketing infrastructure</td>
<td>Reasonable marketing infrastructures, stronger commercial network served by several warehouses, Nacala port and reasonable access roads</td>
<td>Weak market network and infrastructures, relatively far from Maputo port, less effective road network.</td>
</tr>
<tr>
<td>Gender involvement</td>
<td>Comparatively less households headed by woman. Matriarchal system gives women stronger position in society, but still far from controlling means of production and product commercialization.</td>
<td>More households controlled by women due to men migrating mainly to South Africa. More commercialization and production control by women, involved in artisanal processing and trade.</td>
</tr>
<tr>
<td>Food security Contribution</td>
<td>Important for famine relief but with crop alternatives due to agriculture conditions. Easier to access other food crops.</td>
<td>Very important as an alternative for famine periods. Less agriculture alternatives than Northern region.</td>
</tr>
<tr>
<td>Climate conditions</td>
<td>Region prone to floods and cyclones which have done most of the damage on cashew orchards.</td>
<td>Region prone to regular droughts, floods, and cyclones. Cashew orchards have suffered.</td>
</tr>
<tr>
<td>Level of poverty</td>
<td>According to last report, Nampula and Zambezia are among the poorer areas but ratios of poverty have declined in the last few years.</td>
<td>Inhambane, once one of the poorest, has recovered compared to other Provinces. Gaza maintains a good poverty ratio, enjoying better agricultural conditions.</td>
</tr>
</tbody>
</table>
8.2 MARKETS TO FOCUS ON TO STIMULATE CASHEW VALUE CHAIN GROWTH

As shown in Figures 14 and 17, the most developed commercial channels in Mozambique relate to RCN and kernel exports to international markets. The highest revenue-generating products from cashew in Mozambique are RCN and partially processed kernel. CNSL commercialization has resumed in low quantities. However, through these channels, RCN and kernels are processed abroad to reach the final consumer. These final steps of RCN processing and kernel roasting and flavoring are where half of final value-added occurs in the cashew value chain (Mishra and Martin, 2016). Mozambique, as any other African country, is missing out on this part of the business, and consequently is limiting an opportunity to add value to domestic cashew production and to create thousands of new jobs. Cashew processing remains essentially a labor-intensive industry, even with growing automatization in RCN industrial processing.

A growing international market for cashew products is the driver for developing the cashew value chain in Mozambique. The domestic market is very tiny, though not completely exploited. Several by-products are not significant parts of the domestic market. Cashew kernel, a sophisticated and expensive commercial product, is sought after more frequently by consumers in comparatively wealthy markets.

Most kernel sold in Mozambique domestically is from informal roasters, and sold roadside by street vendors. The product most of the time does not meet basic hygiene and food safety rules. Roasted and flavored kernel, though found in supermarkets and other formal retailers, and sold in more commercial packaging, is also not following most food safety procedures.

Despite its size and constraints, the domestic market cannot be neglected in developing the cashew value chain. It is the only hope for thousands of small producers aiming to add value to their product.

In conclusion, it is important to consider both domestic and international markets to develop the entire value chain. But, for poverty alleviation, exploration of the domestic market is of crucial importance. However, even for the domestic and regional market going forward will require that procedures and quality standards be improved to ensure a safe product for final consumers.
9. THE NEED FOR A SOUND STRATEGY TO CREATE MORE AND BETTER JOBS

Cashew can be very powerful in alleviating poverty and enhancing rural development (Antonio et. al. 2017) due to its great potential to:

- Be commercialized. The world market for nuts is growing fast and cashew is becoming one of the most valued nuts.

- Contribute to nutrition and food security. This is especially true during the drought season. It is estimated around 20 percent\(^{29}\) of production remains for rural families without being commercialized.

- Create job opportunities. Cagriculture involves millions of rural families, and its products, especially raw cashew nuts (RCN), when processed can create thousands of better and sustainable jobs.

- Stimulate fiscal government revenue. Due to its capacity to generate income, the cashew business in Mozambique has great potential to expand value-added activities, which increases fiscal revenues through corporate taxes on business profits.

Attracting investment to generate new and better jobs requires an effective strategy addressing main constraints in each step of the value chain. To accomplish this requires:

- Readjustment of current cashew policies to incentivize stakeholders throughout the value chain.

- Improvement of the regulatory framework.

- Improvement of dialogue with business partners along the value chain.

- Improvement of productivity to make the processing industry internationally competitive and to extract more RCN, kernel, and cashew derivatives value from the international market.

- Supporting establishment of commercial structures, such as warehouses, transportation, and access roads, and promoting a network of service providers in cashew rural areas.

- Establishment of public private partnerships (PPP), mainly involving cashew processors, to support farm activities and establish commercial relations based on exchange of services for RCN production.

- Creation of method to achieve clear land ownership for famers. Farmers have a traditional right to use farmland to live on, but they do not have legal ownership of the

---

\(^{29}\) Estudo sócio económico do mercado informal de castanha, UEM 2013
land itself, which limits their willingness to invest in immovable assets such as trees and the ability to provide collateral for a loan.

- Associations can create platforms for service providers to coordinate with each other and with farmers in activities of several potentially synergistic rural programs in cashew producing areas.

- Helping smallholders organize in Production Organizations (POs), and help individual farmers become members, to explore production and marketing of cashew tree products and by-products. Support initiatives such as Connect Caju from TechnoServe, implemented since 2016 and targeting 100 farmers and counting with potential service providers.

- Delivering basic services to enhance farmer technical and business skills for transforming informal agricultural activities into businesses.

Some activities INCAJU is implementing in the above vein are given below, along with recommendations to improve INCAJU’s interventions to help develop the most relevant segments of the cashew value chain.

9.1 CREATING A BETTER ENVIRONMENT FOR JOB CREATION

9.1.1 At the institutional level

As part of the new regulations for implementing Law 13/99 that legitimized the export tax, INCAJU is aiming to introduce new mechanisms to control commercialization of cashew products as well as new measures to ensure quality and control prices (reference prices) to guarantee better payment to cashew producers.

The new strategy adopted by INCAJU is focused on the following vectors:

- Promote creation of a multivalent information system for production, processing, and marketing to ensure credible data collection to allow Government and other value chain stakeholders to manage activities more efficiently.

- Develop efforts to promote "lobbying" at the national and international levels to improve Mozambique's position in the international market and improve the cashew value chain business environment.

- Introduce an effective commercial licensing system and tighter control of cashew product flow, mainly RCN, to its destinations, and monitor the origins of the main capital flows involved in financing procurement at harvest.

---

30 ConnectCaju is a two-year project funded by the Royal Norwegian Embassy to the end of 2018 through Norges Vel and its partners IKURU and Byrnild Gruppen, implemented by INCAJU under the project management of TechnoServe in three northern provinces of Mozambique.
• Improve infrastructure to support the cashew business to reduce transaction costs, improve port handling efficiency, improve access roads to purchase locations, and promote strategically-located intermediate warehouses.

• Revitalize cashew R&D, in partnership with specialized agencies with dedicated funds, to carry out applied research for the cashew crop in the Provinces of Nampula and Inhambane. This will be directed on identifying a technology mix geared to optimizing inputs and crop management methods to improve producer options and income.

INCAJU is also planning to phase out seedling production and pesticide subsidy programs to allow gradual transfer of these activities to the private sector. It is envisaged that by 2025, seedlings production will be done by the private sector. To accomplish this, INCAJU will promote gradual privatization of seedling production and distribution, including promoting private nurseries among individual farmers or through associations, and creating small private commercial service providers. INCAJU will also privatize the cashew spraying program, eliminating subsidies and commercializing chemicals, equipment, and application labor.

INCAJU must also mobilize development partners to support cashew value chain governance, including more support to improve cashew nut production, agro-processing, and high-productivity services (e.g. infrastructure for small and medium-sized enterprise development and supporting linkages).

In short, INCAJU must adopt specific, combined strategies to address constraints in each of the three main segments of the value chain: production, processing, and marketing, as discussed below.

9.1.2 At production level

Cashew production is the backbone of the cashew business. To enhance capacity to generate sustainable jobs, it is necessary to address some crucial issues such as:

• Pursue R&D programs to handle genetic material and its distribution (commercialization) to producers.

• Reinforce POs to provide technical assistance and training to improve efficiency and reinforce commitment to cashew production.

• Establish public-private partnerships (PPPs) to pursue integrated cashew management programs and seedling production, including improving information on results from these activities.
9.1.3 At processing level

The Government of Mozambique has protected cashew processing for more than two decades to promote rapid growth of the industry. Nevertheless, processors in Mozambique have still not been able to lower processing costs to levels competitive with processors in the largest world processing countries, namely India and Vietnam (Mishra and Martin, 2016).

AICAJU, a processor organization, aims to defend their interests by dialoguing with the Government to ensure sound value chain governance policies. However, AICAJU has been showing some apathy in intervening on critical issues hindering development of the value chain. To develop the cashew business in Mozambique, public-private partnerships are needed to clearly define joint programs, such as:

- Promote active participation of processors in supporting development of the value chain in their regions by providing technical assistance and participating in seedling production and integrated cashew handling. This is, essentially, creation of private extension services.
- Conduct joint information collection on processor activities to promote greater efficiency and profitability and compete with the main processors countries, India and Vietnam.
- Promote partnerships between AICAJU processors and the Mozambique National Institute for Standardization and Quality (INNOQ), to create laws to improve processing industry food and safety frameworks for the purpose of enhancing capacity and penetrating more demanding international markets.
- Promote expansion of cashew by-products such as processing residuals from RCN (cashew shell) directly to be used for daily needs, such as cooking, lighting, and mobile charging; process cashew apple to produce legal beverages, helping to formalize the business environment by complying with the law.

9.1.4 At trading level

This value chain segment involves thousands of people and has tremendous potential to provide sometimes lucrative returns to small businesses. A huge network of small intermediaries linked (financed) to medium-to-large buyers (wholesalers) spread around cashew production regions, these intermediaries purchase RCN on behalf of financial supporters, or sometimes on their own. Despite its business potential, this segment is not well organized, and small traders typically are not supported by either the public sector (as producers sometimes are) or the private lending sector (as big processors are). One important activity in this segment is kernel roasting, which does not require sophisticated technology, and is mainly done by cashew raw nut collectors directly. The following actions should be implemented to improve activities in this segment:

- Discipline marketing by introducing mandatory standards, licenses, use of legal funds, payment of fees due, among others. Monitor implementation of standards.
• Produce periodic reports, making detected irregularities public and penalizing infringement.

• Control the licensing system during harvest procurement campaigns (origin of funds and operators), including registering merchants in each campaign to control origin and legality of funds used, thus ensuring marketing traceability.

• Enhance enforcement of regulatory provisions and the rule of law, such as in prices, quality standards, and honoring signed contracts.

• Support traders through professional associations to boost their skills and provide technical assistance.

• Help to build commercial infrastructures, such as roads and market facilities, within strategic cashew producing areas.
BIBLIOGRAPHY


Neves, E. 2013. Estudo sócio económico do mercado informal de castanha. Universidade Eduardo Mondlane. Maputo. Available at: https://www.academia.edu/13588109/Inqu%C3%A9rito_Sobre_o_Mercado_Informal_da_Castanha_de_Caju


NKALO Boletim de Mercado de Castanha November, 2016.

NKALO Boletim de Mercado de Castanha September, 2017.


Address: 1776 G St, NW, Washington, DC 20006
Website: http://www.worldbank.org/en/topic/jobsanddevelopment
Twitter: @WBG_Jobs