Benchmarking the Global Cashew Industry

Micro and Small Enterprise Trade-Led Growth Program in Brazil

May 2007

Client: Development Alternatives, Inc (DAI)

Team: Melissa Hall, Pareen Patel, German Sarmiento, Nikola Smith, Aimee Sostowski and Stephanie Waxman
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>1</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>2</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Market Based Development Theory</td>
<td>8</td>
</tr>
<tr>
<td>Brazil Background</td>
<td>10</td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Background and Industry Structure</td>
<td>13</td>
</tr>
<tr>
<td>I. Output Quantity and Quality</td>
<td>13</td>
</tr>
<tr>
<td>II. Differentiation</td>
<td>18</td>
</tr>
<tr>
<td>III. Diversification</td>
<td>19</td>
</tr>
<tr>
<td>IV. Access to Credit</td>
<td>19</td>
</tr>
<tr>
<td>India Conclusions</td>
<td>20</td>
</tr>
<tr>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>Background and Industry Structure</td>
<td>22</td>
</tr>
<tr>
<td>I. Output Quantity and Quality</td>
<td>24</td>
</tr>
<tr>
<td>II. Differentiation</td>
<td>25</td>
</tr>
<tr>
<td>III. Diversification</td>
<td>26</td>
</tr>
<tr>
<td>IV. Access to Credit</td>
<td>27</td>
</tr>
<tr>
<td>Mozambique Conclusions</td>
<td>28</td>
</tr>
<tr>
<td>Vietnam</td>
<td></td>
</tr>
<tr>
<td>Background and Industry Structure</td>
<td>28</td>
</tr>
<tr>
<td>I. Output Quantity and Quality</td>
<td>30</td>
</tr>
<tr>
<td>II. Differentiation</td>
<td>34</td>
</tr>
<tr>
<td>III. Diversification</td>
<td>34</td>
</tr>
<tr>
<td>IV. Access to Credit</td>
<td>35</td>
</tr>
<tr>
<td>Vietnam Conclusions</td>
<td>36</td>
</tr>
<tr>
<td>Policy Recommendations and Conclusions</td>
<td>37</td>
</tr>
<tr>
<td>Appendices</td>
<td></td>
</tr>
<tr>
<td>I. Charts and Graphs</td>
<td>40</td>
</tr>
<tr>
<td>II. SWOT Analysis</td>
<td>47</td>
</tr>
<tr>
<td>III. Matrix</td>
<td>51</td>
</tr>
<tr>
<td>Works Cited</td>
<td>65</td>
</tr>
</tbody>
</table>
Acknowledgements

We would like to express our gratitude to everyone who contributed to the project by disposing of their time and knowledge to make this project possible. It was an arduous but certainly rewarding and fulfilling process that enjoyed the receptiveness and collaboration of many people across three different continents. In particular, we would like to extend our appreciation to:

Our client, DAI, particularly Hugo Figueiredo and Alexander Darzé, who were decisive from beginning to end with their commitment, open and flowing communication, as well as moral and technical support. Lara Goldmark who designed and initiated the project.

Our advisor, David Kyle, who offered invaluable doses of enthusiasm, patience, as well as impressive leadership and guidance throughout the assignment. His creativity and resilient confidence in the team were definitive for the full realization of the task.

Jackie Klopp, Rebecca Dahele, and in general the Economic and Political Development Concentration for their support throughout the entire workshop process. Adam Barcan for all of his assistance.

Thank you to all the individuals and organizations in each of our targeted countries who welcomed us and shared their time, patience and expertise. These included representatives from government agencies, private processing firms, exporters, public and private credit providers, non-governmental organizations, cashew research centers, organic and fair trade organizations and farmers.

Specifically we would like to thank:

- In India to Tomy Mathew (Fair Trade Alliance Kerala), J. Rajmohan Pillai (Beta Foods) B.S. Shekhawat (National Bank for Agriculture and Rural Development). Vineeth Thomas and Rajiv Panthary at Rural Microbanking and Agribusiness Group of ICICI Bank. K. Sasi Varma and Sree Rajmohan at the Cashew Export Promotion Council of India.

- In Vietnam to Bradley LeLonde and everyone at Vietnam Partners LLC, Helle Weeke (VNCI DAI), Bas Rozemuller (ILO), everyone at IPSARD, and GTZ.

- In Mozambique to Jake Walters and Musa (Technoserve), Raimundo Matule (INCAJU), Elsa Marie (ADPP), Silvino Martins and Denise (Condorcaju), Ali Cherif Deroua (AIAJ), Rui Cardoso (BCI Fomento), Martin Mason (CLUSA) Lina Lince and Giovanni Lepi.

Thank you everyone for your invaluable support.
Executive Summary

Development Alternatives Incorporated (DAI) was contracted by USAID/Brazil in October of 2004 to implement the Micro and Small Enterprise Trade-Led Growth Program in the Northeast of Brazil. According to the World Bank, the poorest one-fifth of Brazil’s population accounts for only a 2.4% share of the national income and the Northeast region contains the single largest concentration of rural poverty in Latin America. Micro and Small Enterprises (MSEs) are essential for development of the Northeast because they constitute 49% of employment in the region. In response to these specific challenges, the primary objective of the Micro and Small Enterprise Trade-Led Growth Project is to promote export-led growth among MSEs in Northeast Brazil, ultimately resulting in increased incomes and employment. Project interventions are intended to i) improve the business environment; ii) promote commercial linkages; and iii) facilitate MSE access to financial services. DAI, in collaboration with the Foreign Trade Studies Center Foundation (FUNCEX), is presently conducting research and facilitating targeted interventions to increase competitiveness of MSEs in four sectors and increase MSE integration into the value chain through direct assistance to micro-producers as well as industry level policy recommendations.

DAI requested that the Economic and Political Development (EPD) workshop team complement the value chain analysis already conducted by DAI in Brazil by producing a benchmarking study of the global cashew industry and identifying best practices in competitiveness. The EPD Workshop team traveled to countries with successful cashew industries, India, Mozambique, and Vietnam, in order to examine competitiveness along the following four pillars: output quantity and quality, differentiation, diversification, and access to credit. Methodology included a matrix to juxtapose policy and industry indicators in each of the countries vis-à-vis Brazil, semi-structured interviews, and an extensive literature review. Final conclusions will be shared with USAID, FUNCEX, DAI, and relevant public and private institutions in Brazil. Findings will aid in advocating for policy changes on an industry level, which will increase competitiveness of the cashew sector in Brazil, as well as other sectors with similar competitiveness limitations.

As a historical leader of cashew production, Brazil has an impressive social and physical infrastructure to support the cashew industry. However, the Brazilian cashew industry currently faces a range of challenges regarding international competitiveness. Brazilian producers and processing firms face challenges including a declining price on the international market, stagnation of the local supply of cashew nuts due to the low financial attractiveness of cashew production, and competition from countries with lower costs and newer technology. To remain competitive and regain lost ground against India and Vietnam, Brazil must make its interventions sustainable and market-oriented. DAI must strive to assist the sector in achieving the right balance between public and private investment through strategically placed incentives. Interventions should focus on innovative measures to increase access to credit and quality of output. With successful implementation of these recommendations, Brazil, as the lead innovator of consumable by-product exports and most forward thinking in terms of traceable production, can increase integration of MSEs within the value chain and strengthen future potential as a major player in the global cashew nut industry.

---

1 World Bank, “Brazil Country Brief”
2 Brazil - From Bahia to Miami Beach (Note from the Field), Development Alternatives, Inc. 30 Nov 2005 USAID
Policy Recommendations for Brazil:

1) Pursue interventions that promote private sector engagement in the cashew sector, while at the same time incorporating strategic public sector support.

2) Innovative interventions to facilitate access to credit. For example in Mozambique there is a conglomeration of public and NGO support to meet private needs for cashew working capital. INCAJU, a public cashew promotion organization, USAID, and TechnoServe have created a loan guarantee fund which enables associated processors to access capital. The processors leverage the equity of their warehouse as collateral and take advantage of the loan guarantee to cover the liability of almost 100% of their financing.

3) Encourage quality improvements through differentiation and increased access to information in order to obtain premium prices on international markets. In particular, the partnership between cooperatives and Fair Trade in India and Mozambique are highly respected and generally esteemed more than organic certification. Brazil could investigate the possibility of creating linkages within the value chain between SMEs and cooperatives with Fair Trade.
Introduction

The Brazilian Context

Brazil’s economic growth has been unspectacular for several decades and there has been little ground gained in terms of reducing inequality. In response, the government and donors, including USAID, have pursued efforts to improve conditions for export-led growth. In particular, there has been a focus on increasing the integration of micro and small sized enterprises (MSEs) into the production-export chain as well as increasing their competitiveness. These strategies attempt to improve the livelihoods of poor Brazilians and to enhance the MSE share of aggregate country earnings. To aid in these endeavors, USAID contracted Development Alternatives, Inc. (DAI) in Brazil to conduct studies to increase competitiveness of MSEs in four targeted sectors and increase MSE integration into the value chain through direct assistance to micro-producers and industry level policy recommendations.

Agriculture represents a promising sector for MSEs in Brazil. It accounts for 10% of GDP, employs about 20% of the labor force, and comprises 40% of Brazil’s exports. However, certain structural factors currently hamper MSE participation in foreign markets. Domestic concerns include heavy taxes, high financing costs, poor transportation infrastructure, and customs expenses. In addition, small firms often have difficulty financing improvements to their businesses that would help them comply with international standards.

Despite these constraints, the cashew nut sector holds great promise for future growth and has the potential to benefit a large number of microentrepreneurs and small producers. Global demand for cashew nuts has grown more than 50% since 2000, reaching 345,000 MT in 2004. Along with India and Vietnam, Brazil has positioned itself as one of the world’s major suppliers. Together, these three countries account for more than two thirds of global cashew nut production. In Brazil, the state of Ceará in the Northeast of the country accounts for 90% of cashew nut processing capacity and 80% of total production and income from cashew exports. Thus, it has been identified by DAI as a primary location for an export promotion project.

Project Background

DAI was contracted by USAID/Brazil in October of 2004 to implement the Micro and Small Enterprise Trade-Led Growth Program in response to challenges that MSE face integrating into export markets. Designed to run two years and three months, the project’s primary objective is to promote export-led growth among MSEs in Northeast Brazil, resulting in increased incomes and employment. Project interventions were intended to i) improve the business environment; ii) promote commercial linkages and iii) facilitate MSE access to financial services.

The first phase of the Project involved the identification of promising sectors in the Northeast with a high concentration of MSE participation. Cashew in Barreira, Ceará was one of four

---

4 Ibid.
5 Ibid. p 15.
6 Ibid.
sectors chosen for its potential and readiness to export, its strong value-chain, and its involvement of large numbers of the poor as microproducers and employees. A series of interventions were designed to improve the position of MSEs within the relevant value chain based on the findings of the selection process. These interventions addressed: i) product upgrading and package adjustment; ii) productivity enhancement; iii) increased access to financial services for individual firms; iv) product marketing, and v) market linkages. Detailed sector analyses were also planned to identify challenges to long-term competitiveness.

The first phase of the project ended on December 20, 2006. In October of the same year, DAI was awarded another two-year contract with USAID to focus on policy issues. Although the title of the project is the same, there are major differences in the content and administration. The project is primarily administered by FUNCEX (Foreign Trade Studies Center Foundation), an organization in Brazil that works on export policy. DAI Brazil is transitioning into a local consultancy called ARCO, which has many of the same staff. ARCO has been subcontracted by FUNCEX to provide Chief of Party and policy research services.

The continuation of the project is intended to build on DAI’s MSE-targeted direct interventions in Phase One. The second phase focuses on larger policy issues to promote public and private sector led advocacy for policy reforms that can improve the conditions for microenterprise development, consolidation and thus competitiveness of MSE products in international markets. Research during this phase will determine targets for needed reforms. Through comparison with best practices in relevant competing markets, this second phase intends to highlight a number of alternative policies or complementary strategies that would strengthen MSE involvement in export-led growth.

*The Role of This Study*

The first phase of the USAID contract provided a situational analysis of MSEs in the cashew sector, describing their production processes and identifying the challenges and obstacles (financial, organizational, transport, etc.) that impede improved performance. Concrete assistance was provided to a number of firms aimed at enhancing their processes. The second phase involves transitioning from targeting a limited number of MSEs to an industry-driven value chain upgrading process that includes private sector-led advocacy for policy reforms.

DAI sees great potential for agriculture in the Brazilian economy, but does not believe that the country is taking advantage of international best practices. For this reason, DAI initiated this study to expand the scope of analysis to global markets and compare Brazil’s policies to those of its competitors. The goal was to conduct international research to benchmark the status and progress of Brazilian policy and practice in the cashew nut sector against other leading exporters in areas such as compliance with international agricultural standards, finance, and marketing.

DAI approached the Economic and Political Development Program at Columbia University’s School of International and Public Affairs to conduct this analysis. Team members include graduate students in the final year of a master’s degree program who have academic and field experience in microfinance and micro-enterprise development, as well as expertise in Latin American studies, value chain analysis and economic policy and analysis was conducted between October 2006 and April 2007.
**Methodology**

The team’s first task was to identify points of analysis and select countries that would be a focus of the benchmarking exercise. India, Brazil and Vietnam are the three leading producers and processors of cashew nuts in the world. India leads the sector by producing 25% of all raw nuts, followed by Vietnam (19%) and Brazil (16%).

![Total Raw Nut Production](image1)

![Revenue from Exports](image2)

As Brazil’s primary competitors, India and Vietnam were chosen as key points of focus for benchmarking. India is also the world’s largest consumer, processor and exporter of cashews. However, Vietnam is an increasing threat to both India and Brazil, since it has been growing at

---

7 Technoserve estimates
10% per year as compared to the average growth rate of 4% annually. We also selected Mozambique, which was once a leading producer, and is currently working to revive its previously vibrant industry. Our research indicated that strategies underway in Mozambique to strengthen the cashew sector, particularly among MSEs, could inform interventions with similar objectives in Ceará.

Consultation with ARCO and Planner Consultoria, a USAID sub-contractor specializing in cashew sector research in Brazil, revealed that targets of intervention had already been identified as a result of the extensive value chain analysis that had occurred in the first phase of the project. These target areas were chosen because they addressed constraints that limited the integration of MSEs into cashew markets and Brazil’s overall global competitiveness. These areas became the pillars of our study, and created the framework of our analyses of India, Vietnam and Mozambique. These pillars include:

**Output Quantity and Quality**
- Strategies that enhance the quantity and quality of output at the farm and processor levels. This includes the effectiveness of research and development and agricultural extension to address tree yields, planting techniques and land use practices. At the processor level, policies are assessed that relate to phyto-sanitary standards, equipment upgrades and efficiency of processing techniques.

**Differentiation**
- Analysis of how countries are setting themselves apart to attract buyers, including through organic and fair trade markets.

**Diversification**
- Discussion of the extent to which producers diversify income through production and marketing of cashew by-products.
- Analysis of the domestic markets for cashew consumption and future potential to increase internal demand.

**Access to Credit**
- Assessment of provision of finance from the private and public sectors to fund start-up costs and business improvements for producers and processors. This is a key constraint to competitiveness and determines a firm’s ability to respond to changing market trends.

**Research Process**

After the framework of the study was established, the team conducted an extensive literature review focusing on policies related to the above pillars in Brazil, India, Vietnam and Mozambique. We were asked to focus the depth of our analysis on the latter three countries, since understanding of their sectors and policies was of key interest to stakeholders in Brazil. We conducted field visits to deepen our comprehension of the cashew value chains in these countries, as well as to analyze the impact of government policies and private initiatives on the competitiveness of their industries. Field research consisted primarily of semi-structured interviews with representatives from government agencies (Ministries of Agriculture, export promotion councils, etc.), private processing firms, exporters, public and private credit providers,
non-governmental organizations, cashew research centers, organic and fair trade organizations and farmers.

While research focused on the four pillars described above, we also collected data on the overall cashew industry structure in these countries. Information was compiled into a matrix to be used as a benchmarking tool. The matrix was divided into the following units of analysis:

*Industry Structure*
- general data regarding production, processing, export volume and prices

*Research and Development*
- seed technology, tree varieties, disease and pest resistance, service providers

*Farmer-Level*
- access to land and credit, labor and transport costs, storage, irrigation practices

*Farm to Port*
- traders and intermediaries, quality control, processing

*Port to Export*
- HACCP and ISO certification, access to markets, major importers

This benchmarking exercise resulted in informative comparisons that guided policy recommendations for Brazil, given its position in the global industry (see Figures 1-4 in Appendix I and the complete matrix in Appendix III). Findings are also incorporated into country case studies, which synthesize the strengths, weaknesses, opportunities and threats faced by each competitor. Transferable lessons learned in these case study countries are applied to Brazil in our policy recommendations.

The market-led value chain approach to development applied in this analysis is described below. Next is a brief background on the Brazilian cashew industry, followed by the analysis from each of the three case study countries. In the final section, policy recommendations are outlined.

**Market Based Value Chain Development Theory**

DAI has pursued a market based value chain methodology in its work with the cashew sector in Brazil. DAI requested that the benchmarking analysis follow the same approach that has guided their assessment and interventions. In this section, the theory behind this approach is described to provide the background and rationale for the development and implementation of this project.

After years of following top down, donor driven development theory, practitioners have discovered that a more effective and sustainable way to create positive change for micro and small enterprises (MSEs) and reduce poverty is by actively engaging private sector actors and allowing markets to determine and implement necessary interventions. Working on demand driven projects with the private sector and following market trends ensures that project activities and impact will be sustainable after project completion.
Benchmarking the Global Cashew Industry

Within a world of increasing globalization and economic interdependence, MSEs are exposed to global competition. In order to compete, countries must increase efficiency and quality both at the firm and industry levels. According to Michael Porter, a value chain is defined as the full range of activities and services performed in order to bring a product from inception to consumption. The goal of market based development projects is to focus on identifying opportunities and constraints to growth within an industry’s value chain in order to increase the competitiveness of the entire chain. The approach allows development practitioners to understand the environment within which MSEs must function and find ways to increase their integration into the chain. Not only do MSEs benefit from increased integration, but they also gain from increased competitiveness and success of the entire chain.

There are many ways to affect change within the value chain approach. According to the USAID Report entitled Value Chain Approach to Poverty Reduction: Equitable Growth in Today’s Global Economy, there are four key factors that impact competitiveness within value chains. The first is inter-firm cooperation and coordination which is critical to increasing efficiency and quality of output. Particularly among MSEs, cooperation increases opportunities to reach economies of scale and creates decreased risk and greater stability of income. Second, strengthening relationships among firms within a chain can increase learning between firms, thus promoting innovation and the sustainability of the chain. This includes vertical and horizontal linkages which are mutually beneficial for the actors involved and greatly enhance overall competitiveness of the industry. Third, the distribution of benefits among actors within the value chain creates incentives or disincentives for performance. This includes understanding power dynamics between different actors of the value chain because it is crucial to ensure equitable distribution of benefits, particularly to MSEs. The final factor is that learning and innovation are essential for sustainability and competitiveness. Upgrading and branding require innovative skills and methods that increase competitiveness and revenue. Access to market information enhances the learning process and allows those within the value chain to better understand the end market and thus gain access to previously inaccessible markets. These are just a few reasons why innovation and access to information can significantly impact the competitiveness of an industry in the global market.

In addition, development projects must demonstrate appreciation for the environment surrounding the chain itself. Many policies and government strategies have great implications for the way that value chains function and for their competitiveness in national and international markets. Those policies surrounding industries are known as the enabling environment. The enabling environment refers to the conditions that affect the business and investment climate, regulatory structures, legal systems, and governance issues that impact a value chain. It is imperative that development practitioners understand what policies are assisting or hindering competitiveness of a specific sector and how they affect MSEs. Therefore, enabling environments also play a large role in market based development theory.

Development projects are more effective when they promote and facilitate the use of private institutions rather than seek to replace their services. Private sector development must be driven by entrepreneurs themselves. Subsidies and direct technical assistance should be used carefully

---


Benchmarking the Global Cashew Industry

and sparingly, with more emphasis placed on developing capacity within the private sector to provide necessary business and financial services. Creating a market for these services ensures it is demand-led, sustainable, and that competition increases quality and efficiency. A focus on indirect provision of technical assistance that develops private sector markets for business services and assists the public sector in improving the business environment is the basis of market-based development. These indirect methods of intervention use markets to guarantee efficiency and sustainability.

Brazil Background

According to the World Bank, the poorest one-fifth of Brazil’s population accounts for only a 2.4% share of the national income and the Northeast region contains the single largest concentration of rural poverty in Latin America. Regional inequality is exemplified by the disparities between the Southeast and Northeast regions, where the GDP per capita in the Southeast is 2.5 times that of the Northeast. The poor, rural Northeast also contrasts sharply with the modern agribusiness sector in the Center-West region, where much of the Brazil’s economic growth and foreign trade has come from in recent years. MSEs are essential for development of the Northeast because they constitute 49% of employment in the region.

There are 4.7 million registered businesses in Brazil and approximately 9.5 million informal enterprises. Out of these businesses, MSEs employ over half of the economically active population. According to the Brazilian Service for the Support of Micro and Small Enterprises (SABRAE), the lack of access to credit is one of the principal obstacles to the growth and development of small enterprises in Brazil. Although they account for 20% of the GDP and 60% of employment in the country, MSEs receive just 10% of the credit provided by state and private banks. And only a small base constitutes exports with just .4% (18,000 of the 4.7 million) of the registered businesses in Brazil currently exporting. SABRAE estimates that MSEs only contribute to for 2 - 3% of the total value of exports.

The Brazilian Cashew Industry

The Brazilian cashew industry currently faces a range of challenges to its international competitiveness. In particular, the challenges that small enterprises face in accessing investment and working capital are particularly relevant to the cashew sector, which is primarily constituted of small producers and small firms in supporting markets. Although it is a sector that generates significant employment and export revenues in the Northeast, Brazilian producers and processing firms face declining prices on the international market, stagnation of the local supply of cashew nuts due to the low financial attractiveness of cashew production and underexploited domestic market. The industry is concentrated primarily in Ceará, Rio Grande do Norte and Piauí with the remainder produced in other states in the Northeast region. There are approximately 195,000

10 World Bank, Brazil Country Brief
11 DAI Brazil Terms of Reference document
12 Ibid.
13 Brazil - From Bahia to Miami Beach (Note from the Field), Development Alternatives, Inc. 30 Nov 2005 USAID
15 Serviço Brasileiro de Apoio às Micro e Pequenas Empresas/Brazilian Service for the Support of Micro and Small Enterprises (SEBRAE) website (www.sebrae.com.br)
producers cultivating cashews on 680,000 hectares, a production area which has remained unchanged for the past ten years. The most recent agricultural census conducted by the Brazilian Institute of Geography and Statistics (IBGE) in 1995/96 revealed that the sector is characterized by large fragmentation of production with 95% of producers being small and medium enterprises. Small producers are defined as those with less than ten hectares of land and medium producers hold between 10-100 hectares. Together, small and medium sized producers account for 64% of the total volume produced.16

Currently the substitution of older and less productive trees with the higher yielding dwarf cashew variety is stagnant at around 9% of total trees planted. The existing trees have a yield of 150-300 kg/hectare, while the dwarf cashew has the potential to produce up to 1000 kg/hectare. The dwarf variety also has greater yield in the extraction process and is less expensive to maintain as these trees are closer to the ground. A lack of access to financing, high labor costs and low product prices are disincentives for this type of investment. In fact, average prices paid for semi-processed cashews from Brazil have been found to be 30% less than those from India because Brazil achieves a lower average percentage of whole nuts.17 Technological transfer to rural areas, plant care and management and extension services have also been cited as reasons why this more productive variety has not been more widely adopted.

The failure of many small producers to engage in process and product upgrading is closely related to limited access to finance, which could be explained in part by the governance of the value chain. Although Brazilian processors offer a minimum price, the majority of the small producers sell their raw cashew nuts through intermediaries. Producers either sell to small local traders in exchange for their merchandise (food, consumer goods and agricultural supplies) or to professional traders who buy from both producers and small traders. There is evidence of value chain finance in the forms of trader credit (pre-harvest finance), especially for more financially precarious small producers that receive advances for the sale of their cashews before the harvest. Trader credit, which is made possible through established trust-based relationships and the middleman’s knowledge of the sector, is used by producers to care for their cashew trees and meet basic household needs. Official credit often does not reach small producers because of these financial arrangements between value chain actors. It is difficult to provide formal credit if the collateral has already been sold or if there is information asymmetry between the producers and creditors. In cases in which producers are able to access formal financial services, Banco do Brasil and Banco do Nordeste are the institutions with the greatest presence.

In contrast to other cashew producing countries, most of Brazil’s processing is mechanized, which results in lower quality nuts because automated production yields fewer whole kernels and nuts are generally darker in color. Despite these shortcomings, it is essential for Brazil to develop increasingly sophisticated technology for mechanization as relatively higher labor costs preclude more labor intensive manual processing. These characteristics limit the access of the Brazilian cashew industry to value-added markets and the low price earned for the final product prevents processors from providing higher remuneration to producers (for raw nuts). This low yield of whole nuts (50-55% for large processing firms in Brazil compared to over 70% in India) further

---

16 Insertion of Micro and Small Enterprises into the International Market, Volume 1: Analysis of the Cashew Industry, USAID 2006, p. 44 (Translated from Portuguese)
17 Volume 4: Consolidation of the Experiences of the Cashew Case, USAID 2006, p. 7 (Translated from Portuguese)
inhibits competitiveness in production capacity. However, despite low yields of whole nuts, Brazil’s cashews are larger, whiter, and considered to be of a higher quality than its competitors.

While production is fragmented between many small producers, the processing stage is concentrated in large mechanized plants. There are 33 processors in Brazil, of which 22 are active mini-mills and 11 are large processing plants. Over the past two decades there has been a growing concentration of large processors. According to figures compiled by EMBRAPA and the Union of Cashew Producing Industries of the State of Ceará (SINDICAJU), in 1987 there were 27 processing units, with 80% of the cashews processed by eight companies. Today there are only eleven plants with 80% of the cashews being processed by just six companies. Mini-mills account for only 10% of the industry’s total processing capacity. The state of Ceará holds 90% of industrial capacity and port infrastructure and 80% of cashew exports are processed in this state. Cashew kernels and Cashew Nut Shell Liquid (CNSL) from Ceará represented the second largest export product from the state in 2005.

Small processing facilities are limited by access to finance which prevents them from adopting new technology as well as meeting international standards (HACCP, ISO 9000, American Food Institute) and market access due to disadvantages of scale. The competitiveness of mini-mills is also threatened by a tendency to have limited access to information, lower management capacity, and less financial records which makes access to credit more difficult. Labor costs are higher in mini-mills, which translates into the cost of production of $30 USD per 50 pound box compared with $20 USD from the large mechanized producers. The increased cost is compensated for by the higher production of whole cashews (75-85% for the mini-mills compared with 50-55% for the large processors), the better appearance and better taste of the nuts that implies a higher price and a higher margin for the producer. However, as only 2% of the export volume comes from mini-mills the other 98% are processed by a few large firms. The recent appreciation of the Real has affected the profit margins of both mini-mills and large processors.

The domestic market is considered to be an area for potential growth as currently only 20% of Brazilian cashews are consumed domestically and the other 80% are exported. Mini-mill production in particular goes to domestic consumption as these nuts often do not meet international export standards. USAID research found differentiated brands for the domestic market to be limited, with only two products marketed by processors and two created by packaging companies. Because Brazilians have a higher per capita income than India and Vietnam it has been suggested that they should be in a position to consume more cashews. The use of byproducts, particularly the cashew apple, is another area of for growth, as 90% of fruit pulp is currently unutilized. At the present time, more than 100,000 MT of products derived from

---

18 Insertion of Micro and Small Enterprises into the International Market, Volume 1: Analysis of the Cashew Industry, USAID 2006, p. 45 (Translated from Portuguese)
19 Consolidation of the Experience of the Cashew Case, USAID 2006 (Translated from Portuguese)
20 “Encontro Fortalece Cadeia Produtiva da Cajucultura,” Diario do Norte, October 18, 2006. (Translated from Portuguese)
21 Insertion of Micro and Small Enterprises into the International Market, Volume 1: Analysis of the Cashew Industry, USAID 2006, p. 21 (Translated from Portuguese)
22 Ibid. p. 65
23 Volume 4: Consolidation of the Experiences of the Cashew Case, USAID, p. 16 (Translated from Portuguese)
24 Insertion of Micro and Small Enterprises into the International Market, Volume 1: Analysis of the Cashew Industry, USAID 2006, p. 60-61 (Translated from Portuguese)
25 supra note 23
the cashew fruit such as juice, sweets, jellies, and animal feed are produced for domestic consumption and this is an area that has potential for further development.26

India

Background and Industry Structure

India is the world leader in cashew production, processing and exportation. However India is at an important juncture in the development of its cashew industry due to increased international competition. At the present time only half of the cashews processed in India are produced domestically, reflecting that production has not kept pace with its growing processing capacity. While Kerala has been the center of cashew production and processing for over fifty years, both activities are now moving out of the state due to high labor costs and land shortages. Production is now more fragmented and the states of Tamil Nadu, Maharashtra, Karnataka, Andhra Pradesh and Orissa have emerged as leading producers of raw cashew nuts. (See Appendix I Figure 5 for a map of India.) It is important to note, however, that there are significant differences in the way each state within India has supported its cashew industry. The potential benefits to small producers and workers are highly dependent upon the type of cultivation (individual homestead farms vs. plantations) and processing system (cooperative, cluster, private and government factories). Technological innovation has been concentrated in the development of new varieties and planting techniques and in the final packaging phase, but there appears to be little interest in the mechanization of processing. Due to the long history of the sector, India has the strength of highly skilled labor in all stages of manual processing and therefore is committed to the continuation of this “hand-crafted” approach. This involves the use of mallets to remove cashews from their shells, as opposed to a more mechanized technique that results in a higher percentage of broken nuts. India’s low labor costs have enabled it to sustain this method and maintain a quality advantage in the industry.

Given the fact that India is simultaneously pursuing a range of strategies including public sector plantation development, cluster-based approaches and organic production there is the opportunity to gain multiple insights from this case. Lessons that can be drawn from India include its high level of national and state level government support for research and development and technical assistance. There is also a strong financial infrastructure due to India’s social banking regulations, which has ensured widespread branch coverage and access to credit through a range of commercial banks and cooperatives. As both the government and the private sector explore ways to make the cashew sector more competitive, fair trade and organic production appear to be a promising but unexplored option. Although fair trade and organic production are limited to date, there are a few interesting models in Kerala that could be replicated elsewhere in India and provide lessons for the Brazilian context.

The following discussion of India’s cashew industry, particularly focusing on the state of Kerala as the site of our field research, is organized according to the four thematic pillars:

I. Output Quantity and Quality

The quantity of raw cashew kernels exported from India grew steadily in the early 1990s (from 48,000 to 77,000 MT) and then continued to grow at more moderate rates in the later part of the decade. More recently, export quantity reached 114,000 MT in 2005-2006, although this marked a slight decrease from the previous year.

Because India’s processing capacity exceeds its production, approximately 50% of all raw nuts are imported. Domestic production reached 460,000 MT in 2005 while imports increased from 95,000 MT in 2001 to over 252,000 MT in 2003. Government institutions have recently focused attention on enhancing domestic production to lessen dependence on imports from other cashew producing countries. This is primarily motivated by a desire to increase self-sufficiency rather than to ensure traceability, which was not identified as a threat to India’s industry by the processors and exporters we interviewed.
Cashew production in India is dominated by smallholder farmers. Between 80-90% of cashew holdings are on less than two acres of land that are of poor quality and/or multi-cropped.\textsuperscript{30} In Kerala, this is partly due to a land ceiling law which was repealed in 2006 that limited individual land holdings to five acres for cashew production as well as other designated crops. Government-run plantations, however, are exempt from this regulation, which has led to the recent development of cashew estates on government-owned lands. State-level plantation corporations are estimated to manage 10% of all land under cashew cultivation. Both public and private production is shifting out of Kerala to more land-abundant states including Maharashtra, Tamil Nadu, Karnataka, Orissa and Andhra Pradesh. This is also due to lower value added taxes in these states (2%-4% as compared to 12.5% in Kerala).\textsuperscript{31}

The state of Maharashtra is an interesting case study in successful public and private sector support for cashew development, particularly in the Sindhudurg district, which is near the border with Goa. Between 2002-2005, UNIDO helped initiate a strategy to support cashew production in the region following government efforts which had increased the total area under cultivation by 2.5 times between 1990-1998.\textsuperscript{32} The intervention targeted small and marginal farmers, microentrepreneurs and women. Strategies continue to be implemented, and are intended to address technical constraints, quality improvement, access to credit, marketing and greater coordination between banks, NGOs and public institutions. In 2002, the Department of Agriculture initiated a District Rural Industries Project thorough NABARD and an NGO (Gopuri Ashram), which included technical assistance in marketing and production, as well as financing of local cooperative and commercial banks for extending credit to microenterprises. Sindhudurg also has active support centers for processors and other small industries, which help register SMEs, facilitating their access to credit, and provide subsidies for equipment upgrades. Several NGOs, some of which are funded by the Indian Council of Agricultural Research, provide training to farmers and processors, including specialized services to enhance fruit processing and organic production. Technical assistance is intended to help standardize production processes throughout the region in order to improve the marketability of nuts and fruit products. Although public funds have helped initiate many of these projects, interventions also help strengthen linkages between commercial banks, farmers, processors and NGOs to enhance capacity in the private sector.

**Research & Development/Agricultural Extension**

The government is attempting to enhance domestic production through investment in research and development and agricultural extension. The Indian Council of Agricultural Research, an apex body responsible for the organization and management of research under the Ministry of Agriculture, supports the National Research Centre for Cashew. This center serves as the headquarters of the All India Coordinated Research Project on Cashew, an initiative with a presence in each of the eight cashew producing states. Through this network of research centers based at state agricultural universities, the project seeks to increase cashew production and productivity by developing higher yield trees, creating efficient disease and pest management practices and promoting more efficient planting techniques. Between 30 and 40 cultivars have

\textsuperscript{30} ICICI interview
\textsuperscript{31} NABARD interview
been released by these institutions with maximum yields of 18-20 kg/tree. Soft-wood grafting is the most widely-supported method of propagation. The Cashew Research Station at Kerala Agricultural University is a leader in research and development and has focused on the development of high yield varieties, bigger nuts and nuts with a higher shelling percentage. Of the fourteen varieties that have been developed in Kerala, eleven were created at the station through hybridization. These varietals are shared with affiliated institutions in other states.

Agricultural extension is primarily conducted by these publicly-funded research centers and universities, although NGOs do provide services in some areas. Farmers can purchase grafts directly from research stations. The Department of Agriculture also buys grafts in bulk and distributes them on the local level at village centers. These efforts have had mixed success, primarily due to the high cost of replacing trees. Farmers who choose to replace their trees risk losing income for 7-8 years while they wait for the grafts to reach their full yield. Some farmers in Kerala expressed dissatisfaction with the fact that the grafts, while producing higher yields, created smaller nuts that fetched a lower price, and also required more intensive fertilizer and chemical use. Utilization of high-yielding varieties has been most successful in Maharashtra, where new plantation development is more common. This may help explain the higher yield per hectare in that state (1300 kg as compared to the national average of 815 kg per hectare).

Processing

India is the global leader in cashew processing, and Kerala is the most productive processing state in the country. Kerala processed nearly 50% of the country’s total capacity of one million metric MT of raw nuts in 2000 and exports the highest share of cashew kernels. However, rising labor costs and strengthening labor unions have resulted in the development of processing units elsewhere. It is estimated that there are 1,700 processing units nation-wide. Dexterity of labor is one of India’s comparative advantages due to its three-generation history of processing. It is estimated that India’s perfected manual processing technique results in only 20% broken nuts, as compared to about 50% broken nuts in Brazil.

Processing in Kerala is somewhat unique due to the influence of the communist government. In reaction to the poor working conditions in the sector, the government incorporated the Kerala State Cashew Development Corporation (KSCDC) in 1969. The KSCDC owns and manages 30 factories, and its Managing Director also heads the Kerala State Cashew Workers Apex Industrial Co-operative Society (CAPEX), which operates ten worker-owned factories. A primary purpose of these institutions is employment creation. KSCDC and CAPEX workers earn benefits including healthcare and pension that are estimated to add value to the minimum wage by 68%. The minimum wage before benefits is comparable for both public and privately-owned processing facilities and is set annually by a committee designated by the state government. Wages vary by activity (shelling, peeling, grading, etc.) but average approximately 100 rupees (approximately $2) per day in Kerala. The minimum wage in neighboring states is a mere 30

33 Cashew Research Station at Kerala Agricultural University interview.
34 Directorate of Cashewnut and Cocoa Development
36 Statistics vary on the proportion of nuts that are broken in India. This figure was cited by USAID in a presentation entitled "What Drives Competitiveness in the Mozambique Cashew Value Chain?" drafted by Jake Walter, October 2006. Other leading Indian exporters quoted rates as low as 5% and 2.5% in Kerala.
rupees ($0.68) which has caused privately-owned processing companies based in Kerala to open processing units elsewhere.

In Panruti, Tamil Nadu, small processors have formed a cluster in order to increase incomes. The average daily wage for the shelling and peeling stages is 50 rupees (approximately $1) and skilled workers employed in grading earn about 70 rupees (about $1.50) per day. In Panruti, cashew farmers supplement their own incomes by operating small units in which they process their own harvests as well as nuts purchased from export houses that source raw materials from other parts of India or abroad. Although these processors have the independence of owning their own raw materials, premises, and machinery, they are part of a network linked to specific export houses. They purchase nuts from exporters, but are not obligated under contract to sell the finished product back to them. There is evidence of variations to this arrangement in which groups of small processors share the expense of transporting a truckload of raw nuts from another state instead of buying them from export houses. Along with shared transport, small processors in Panruti are able to rent machinery and other infrastructure within the cluster, resulting in low barriers to entry. The Panruti case is unique because it is one of the few examples in which rural people are involved in both the production and processing phases of the cashew industry and participation in both activities generates employment for almost the entire year. Cluster members have also devised risk sharing schemes that protect them from the daily prices fluctuations. Because it typically takes 10-15 days for a batch of raw nuts to be processed into kernels, processors in Panruti avoid these price changes that would affect their margins by carrying out only one production sub-process and then selling the semi-finished product immediately. Landless people are involved in the Panruti cluster through wage labor and as collectors of ‘free’ nuts that become available at the end of the harvest when farm boundaries are no longer enforced. This cluster experience demonstrates how producers with limited resources and even landless people can benefit from primary production and processing when the relationships within the value chain are renegotiated.

The involvement of farmers in processing in Panruti is very innovative and distinct. Overall, privately-owned firms dominate processing in India, and traders serve as important middlemen between farmers and factories. The government plays a crucial role in trying to enhance the capacity of private processors and exporters. The Cashew Export Promotion Council of India (CEPC) was established by the central government in 1955 to promote the export of cashew kernels and cashew nut shell liquid (CNSL), as well as to serve as a liaison between foreign importers and member exporters. Membership is open to any exporter, regardless of size or affiliation. CEPC also supports processors by managing a Quality Upgradation Lab and Technical Consultancy Centre in Kollam, India’s processing hub. In addition to certifying quality, the lab provides training to processors. Drum roasting and steam-cooking are the most commonly promoted processing methods.

CEPC also manages the Department of Commerce’s Integrated Scheme for Cashew Quality. These schemes consist of consecutive 5-year plans that include various components. The current plan includes a one-time subsidy for the installation of processing equipment that conforms to international standards and quality requirements of importers. Subsidies are also offered for improvements to facilities to make processing units ISO or HACCP compliant. Finally, the plan provides subsidies to exporters who adopt the flexi-pouch vacuum packing system, which is the

---

packing method most commonly demanded by importers in the U.S. and the U.K. (importers in the Middle East require tin packaging, and this method is commonly adopted by processors specifically for that market). Overall, the rate of subsidies offered by CEPC is 25% of the cost incurred by exporters and the total amount for all subsidies granted cannot exceed 800,000 rupees (approximately $18,000) per exporter during each 5-year period. The scheme’s focus on quality is indicative of the challenge processors face in meeting international phyto-sanitary standards. These standards are usually seen as a greater constraint on business growth than traceability requirements.

II. Differentiation

The Indian cashew industry differentiates itself primarily on quality, as described above. The labor-intensive “hand-crafted” manufacturing process results in a higher percentage of wholes, and avoids blanching that can occur with foot pedal machines (although the latter are also used). The market for value-added products is not considered extensive, although flavoring is common. Roasted and salted nuts are the most popular varieties. Different flavor preferences by region (Middle East vs. UK/US vs. domestic) make specialization difficult. The confectionary market, however, is growing considerably, and cashews are increasingly exported for use in chocolate, biscuits, ice cream and other sweets. Most domestic biscuit companies have a cashew variety.

Organic

The marketing of organic cashews has not been a focus, and one large buyer estimates that certified organics are less than 0.5% of total production. This is primarily due to the difficulty of certification, particularly since the majority of cashews are grown on small, fragmented farms together with other crops. Ironically, most cashews in India are naturally grown organically, but cannot adhere to the stringent requirements of international standards. Proving compliance with standards is difficult in regions that have been growing cashews for nearly a century. In Mangalore and Goa, where newer plantations are being developed, standards may be easier to achieve. Despite these obstacles, the government has recently become interested in exploring organic production, given the estimated 25% price premium. KSCDC hopes to develop a model organic plantation that can serve as a demonstration site, but plans are still in early stages.

Fair Trade

The cashew fair trade market is relatively small in India, but has considerable potential. TransFair USA’s database of Indian fair trade organizations dealing in nuts or nut products includes only one agency, Fair Trade Alliance Kerala (FTAK). This organization has existed for three years and has been certified organic for one year. It works with 3,000 producers. FTAK is affiliated with the Ethical Nut Company, a UK-based initiative that brings together producers from developing countries and alternative trading organizations. It is trying to move away from NGO models that depend on intermediaries by making farmers directly involved in governance, decision-making, and quality monitoring. FTAK’s governance structure includes committees at the village, district and state levels, and mandates that one-third of representatives are women. The state committee vets all contracts and decides on the farmgate price. Farmers also operate the 19 collection depots in the state. FTAK hires a truck to transport nuts from these depots to

---

38 Beta Foods interview
processing units. A strict traceability system is maintained, and each bag can be traced according to date, depot origin and the machinery in which it was processed.

The price that FTAK producers receive is nearly a third higher than the market price (45 rupees per kg of raw nuts as compared to 35-38 rupees per kg). Farmers are paid R. 43 at the depot, and R. 2 in the off-season, to help them smooth income over time. On the retail market, nuts sell for $3.3/kg as compared to the $2.15/kg standard price. Most of FTAK’s buyers are in the U.K. and the E.U., and business is growing. In 2007, FTAK expects to sell 50,000 kg, which is 2.5 times higher than the previous year’s sales. Splits were also sold in advance to the Ethical Nut Company and an Italian buyer at a fair trade price. FTAK is working to attract even more buyer interest, as it would like to involve even more producers. The U.S. market is currently unexplored, and FTAK hopes to attract the support of TransFair USA.

III. Diversification

The market for cashew by-products in India has focused on Cashew Nut Shell Liquid (CNSL). Its sale is strongly promoted by CEPC as a renewable material that can be used to make specialty chemicals and polymers including insulating varnishes and resins. CNSL-based polymers are resistant to cold, water, microbes and termites. There is a high demand for these polymers in India’s coastal states, where they are used to seal boats. India’s largest international buyer of CNSL is the U.S., followed by Korea and Japan. Quantities exported have ranged from 6,923 MT in 2003-2004 to 7,474 MT in 2004-2005 and 6,405 MT in 2005-2006. 39 (See Appendix I Figure 6 for a time series graph of CNSL exports from India over the past decade.)

Marketing of cashew apple byproducts is not extensive. This is partly due to the vulnerability of the apple, which does not have a protective skin, and must be processed within eight hours of harvesting. Despite extensive research at government centers and universities that have attempted to optimize use of the apple to diversify farmer incomes, jams, jellies and juices are not considered marketable domestically or internationally. Four grades of cashew liquor have been discovered, but the highest, Feni, is only produced in Goa due to government restrictions on commercial sale. Some large private firms, including Beta Foods, have attempted to market by-products including jams, but found it difficult to change consumers’ tastes. The Cashew Research Station has done extensive research on productive uses for the cashew apple and offers training on its processing. The Research Station is not aware of the market demand for cashew apple products, but reports that its commercial production of cashew apple syrup has been profitable. The alternative uses of the fruit have not been popularized and are primarily used for household consumption. Farmers who seek to diversify their incomes usually cultivate other crops, such as rubber, which can be sold-year round, is not subject to the same price fluctuations, and can provide additional earnings through the sale of its timber.

IV. Access to Credit

India’s credit products are among the most innovative worldwide. State and federal laws support financing for both the rural sector and small enterprises. The Government of India through the Reserve Bank of India has mandated that all commercial banks advance 40% of their Adjusted Net Bank advance to the “Priority Sector”, which includes agriculture, small scale industries, and

Benchmarking the Global Cashew Industry

microcredit, among other underserved areas. Out of this total 13.5% is to be extended directly to farmers for agriculture and allied activities and 4.5% supports indirect agribusiness, including lending to processing units and small scale firms engaged in agriculture activities. ICICI Bank is a leading commercial lender to the agriculture sector. Its Rural Micro-banking and Agribusiness Group (RMAG) offers a range of integrated products for production, upgrading, post-harvest needs, marketing and export credit. Its services are designed to address constraints in value chains, and are planned following sector analyses that identify key obstacles. ICICI minimizes costs through its use of technology and by working through intermediaries like MFIs, NGOs and cooperatives to deliver services. Its goal is to provide touchpoints (through a branch, kiosk or affiliate) every 10 km in rural areas. ICICI has developed special low cost ATMs and biometric smart cards with pre-loaded loan limits. Interest is calculated from amounts withdrawn on a given date to avoid the burden of flat interest rates calculated on the entire loan from the initial disbursement. Insurance products for farmers are designed to target specific risks, like rain, to help reduce premiums.

ICICI’s products for the cashew sector focus on commodity-based financing. ICICI funds accreditation for warehouses whose records are digitized and interlinked. Farmers’ access to credit is based on their deposit at the warehouse, which is verified for volume and quality by an independent agency. Cashew prices are monitored daily and distributed to warehouses to advise clients when to buy and sell.

The leading publicly-funded agricultural credit institution is the National Bank for Agriculture and Rural Development (NABARD) which provides funds to 30 commercial and cooperative banks that offer branch services in rural areas. Products include capital investment loans to finance inputs, land and infrastructure until the yielding stage. These term loans are disbursed over the gestation period, usually for 3 years. During the yielding state, short-term (1 year) loans are available. Funding for processing units is offered year-round.

NABARD and ICICI dominate the market for financial services in the agricultural sector. NGOs play a secondary role, and serve more isolated areas. Some farmers in the cashew producing districts of Kerala complained that interest rates for NABARD-funded loans are set too high, and are not well-matched to current cashew prices. Others complained that ICICI is too profit-oriented and should charge lower rates or serve poorer clients. Overall, the broadest range of services may not trickle down to the poorest producers. Most government subsidies, including those offered by CEPC, do not reach these farmers. For example, ICICI’s RMAG estimates that only roughly 10% of farmers, primarily from tribal groups, receive subsidies. As a result, some farmers prefer to borrow from moneylenders when credit is needed. Traders may also be sources of informal credit. Many of them run additional businesses in communities, and offer sales to farmers on credit in the off-season.

India Conclusions

While India has a legacy of leadership in the global cashew industry, it is clear that it must continuously reassess its comparative advantages in order to remain competitive. In particular, India should focus on increasing domestic production and explore rising demand for organic products in the United States and the U.K. Efforts to increase productivity could be supported by enhancing private sector involvement in agricultural extension, which could result in greater competition and diversity of services to improve output.
India’s cashew industry is characterized by the participation of a dynamic private sector. Moving forward, it is essential that public and private stakeholders collaborate in order to determine how to best address the impending challenges faced by the industry. Cashew producing states like Kerala which have a long history in the sector are facing declining competitiveness as older trees become less productive. It is an ongoing challenge to determine how to provide the right incentives and support that will encourage farmers to invest in replanting higher yield varieties, especially in the face of more lucrative alternatives such as rubber production. Although the government has tried to increase output by establishing new publicly owned plantations with high-yield trees, this does not address the needs of smallholder farmers. Greater productivity at the farmer level could be supported by increasing the number of agricultural extension providers, particularly in the private sector.

Although productive capacity remains a challenge, India continues to distinguish itself in the market by producing high-quality nuts through a labor-intensive manual process. Because India has prioritized nut quality over by-products to differentiate itself, this “hand crafted” approach should be a greater focus of marketing campaigns. India also maintains an edge over its competitors by having an exceptionally strong credit market. This will help Indian producers and processors continue to upgrade and respond to changing market trends. Fair trade and organic production are promising but unexplored options and should be more fully developed to benefit small producers and firms.

Overall, India distinguishes itself in the cashew sector by maintaining high quality and large export volume. If it manages to increase domestic production, diversify agricultural extension services and explore alternative markets, including fair trade and organic, it has the potential to lead the industry for many years to come.
Mozambique

Background and Industry Structure

When analyzing Mozambique’s current cashew industry, it is fundamental to keep in mind that the country went from being the number one producer and exporter of processed cashews in the world during the early 1970’s, approximating 240,000 MT per year, to becoming an exporter of insignificant volumes of raw unprocessed nuts. In 2001 Mozambique’s processing capacity had disappeared completely as a consequence of a combination of factors during a long lasting decline: civil war, price controls and a raw nut export ban, the spread of Powdery Mildew Disease, inadequate industrial policies opting for large plants and mechanical processing technology and forced price and trade liberalization by the World Bank. (See Appendix I Figure 7) After such a devastating breakdown of the industry very few expected to witness a comeback of cashew processing in Mozambique. However, today the industry has rebounded with production levels of approximately 70,000 MT of which roughly 30,000 MT are expected to be domestically processed during the 2006-2007 campaign.40

Beginning in 2001 the Mozambican cashew nut industry embarked on a remarkable recovery phase due to impressive leadership roles played by Technoserve, a US based nonprofit international development organization, and USAID. The industry entered a period of new growth by following a privately led strategy that identified small and medium scale processing plants and use of labor intensive manual technology as a more suitable approach to the specific country conditions of Mozambique. After six years, the results attained suggest that the strategy has been effective, as demonstrated by the strong resurgence in processing capacity.

40 Technoserve (Irish Aid), slide 38, sources: ICAJU, Technoserve Dataset
The recovery process began with Antonio Miranda, who was the first local entrepreneur to install a small scale processing plant in the year 2001 with support from Technoserve. This startup attempt received intensive technical assistance from Technoserve in aspects such as business planning, plant and quality system design, establishment of linkages with buyers and access to financing for working capital and investment purposes. In time the factory was making a profit. Encouraged by his success, other motivated entrepreneurs joined the industry. Therefore, Jake Walters, director of Technoserve in Mozambique, credits the growth to the entrepreneurial nature of the entrants who were motivated individuals, with strong managerial experience, an extensive entrepreneurship trajectory, and a spirit for innovation.\footnote{Interview with Jake Walters, Director of Technoserve, Mozambique}

In addition to the selection of motivated entrepreneurs, identifying the optimal factory size and technology has been crucial. Opting for small and medium scale processing plants and use of manual technology has proven effective given Mozambique’s conditions of labor costs, human capital resources, access to credit, and decentralized cashew nut production among thousands of smallholder farmers. Today through this approach there are 23 functioning plants in the country with a combined installed capacity to process of approximately 41,050 MT.\footnote{Technoserve (Irish Aid), slide 41 (source: Technoserve Dataset)} Even more significant is the fact that by 2005 processors were buying nuts from approximately 110,000 smallholder producers and generating jobs for approximately 6,293 workers in the processing factories. For this year’s campaign the processing industry was expected to provide jobs for approximately 9,915 workers.\footnote{Ibid.}

The appropriate plant design smooths over the difficulty presented by the low levels of human capital and requires a considerably smaller initial capital investment (approximately 25% that of a large scale plants.) This is fundamental given the underdevelopment of the financial system. Moreover, small processing factories are more able to employ at full capacity and are also easily adaptable for expansion. Most of the new factories have been built with initial capacities to process 1,000 MT and are designed so that capacity can progressively be increased to 2,500 MT in 5 years. The range of processing capacity among the new factories varies between 500 and 5,000 MT per year.\footnote{Interview with Ali Cherif Deroua, President of AIA}

In addition, most of the Technoserve supported interventions have targeted the northern province of Nampula which “has approximately 42% of the country’s cashew trees and accounts for approximately 60% of national cashew nut production”\footnote{Artur, Luis and Nazneed Kanji. “Satellites and Subsidies: Learning from experience in cashew processing in Northern Mozambique”, November 2005}. The southern provinces of Gaza and Inhambane are other important centers of production. The new approach has been designed and carried out in such a way that the small and medium size processing plants are located in the proximity of areas with a high concentration of trees. By intentionally placing the plants near the farmers, intermediation between farmers and the processors is minimized. Ergo, there is a stronger relationship between the two actors and transport costs are reduced. This design has also benefited buyers, who have greater control over the quality of the nuts. Figure 8 in Appendix I

\footnotesize{41 Interview with Jake Walters, Director of Technoserve, Mozambique  
42 Technoserve (Irish Aid), slide 41 (source: Technoserve Dataset)  
43 Ibid. slide 40  
44 Interview with Ali Cherif Deroua, President of AIA  
45 Artur, Luis and Nazneed Kanji. “Satellites and Subsidies: Learning from experience in cashew processing in Northern Mozambique”, November 2005}
Benchmarking the Global Cashew Industry

illustrates the concentration of production and processing in Nampula as well as the positional arrangement of factories across the province.

Last, but not least, it is worth mentioning that throughout the field work, the team was constantly told by those involved in the industry how much the overall experience has been about “learning by doing.”46 From Technoserve, to the processors, to the managers, to the officers of INCAJU, this was the general perception. It has been inevitable to run into mistakes such as errors in plant design, inappropriate management practices, underestimation of financial challenges, or wrong selection of entrepreneurs. However, impressive leadership by key players (Technoserve and increasingly the processors) coupled with consistent business planning and monitoring of the process, lends to taking opportune corrective actions when necessary, thus facilitating the consolidation of the enabling environment. Replanting initiatives, the conformation of an alliance of processors –Agro Industria Associadas (AIA) – in 2004, the establishment of a loan guarantee program, training of farmers, joint branding by members of AIA through the brand Zambique created in 2005, and perseverant persuasion for government participation are all initiatives that characterize the flexible, energetic and business minded approach that has driven the recent recovery of the industry. The importance of all of these will be analyzed in greater detail through the lens of the four pillars that were prioritized by our study. The role played by AIA as well as the joint branding efforts under Zambique will be crucial along the pillars; as means of achieving economies of scale across several services, for the protection of quality standards throughout the value chain and for expansion purposes onto unexploited markets.

I. Output Quantity and Quality

Smallholder farmers are responsible for 95% of cashew production and thus production is fragmented among thousands of small subsistence farmers that do not perceive themselves as part of the “cashew business.” Given this reality it is difficult to incentivize farmers to invest time and income in the treatment of trees, which hampers the quality of the nuts and reduces tree productivity. Thus far, INCAJU (Institute for Cashew Promotion), the government’s cashew promotion entity, has been unable to drive the necessary interventions (replanting, disseminating information to farmers on best practices of tree treatment, research and development, etc.) needed to secure the rehabilitation of the industry.

In addition, there is an urgent need to renovate Mozambique’s old stock of trees which were planted during colonial times. These trees are gradually producing less and lower quality nuts, which affects the competitiveness of the industry throughout its value chain. Farmers are losing potential income, factory employees receive lower wages as they are paid on a piece-rate basis, and operating costs are higher for processors. In general terms, due to this reality, the situation will be unsustainable in 10-15 years against international competition. Average outturn in Mozambique is of 42-46 pound quality, lagging well behind the most competitive industries of the world. India and Vietnam have 50-56 average outturns, while Brazil is at 50-55 average outturn.47 As problematic as this threat is for the prospects of industry consolidation and future sustainability, insufficient action has been taken to renovate the existing stock of trees. INCAJU has favored short term maintenance of trees over an aggressive strategy to replant.

46 Interviews with Technoserve, Processors, Plant Managers and BCI Fomento
47 What drives competitiveness in the Mozambique cashew value chain? Presentation given by Jake Walters, October 19th, 2006
In response to this threat, processors have opted to move forward and develop medium and large plantations of their own. In addition, they have initiated training for farmers in sampling and measuring outturn as well as in educating them in practices for proper tree care. Training in sampling is the starting point that will hopefully lead to the payment of premium prices to farmers based on the quality of the raw nuts produced and sold to processors. Overall improvement of raw nut quality will remain central as the industry moves towards consolidation.

Furthermore, in a crucial departure from the previous failed approach that was dominated by large scale factories and use of mechanized technology, Mozambique principally makes use of manual cutting technology. Manual shelling and cutting technology takes advantage of the low costs of labor of rural Mozambique. In addition, this labor intensive technique is significantly superior in terms of achieving a higher percentage of whole kernels compared to the mechanized technology that dominates the Brazilian industry. For example, factories are achieving on average approximately 73% of whole kernels whereas old factories achieved a mere 60%. However, the productivity of Mozambique’s factory workers is well behind India’s and Vietnam’s as well as that of other African processing industries such as Tanzania and Ivory Coast. This problem has three causes: first, the low outturn of the nuts due to decaying trees, secondly, the poorer skill of workers throughout the different cycles of the factory process (cutting, peeling and selection) and thirdly, high rates of absenteeism at around 20%. (See Appendix 1 Figures 9 and 10 for a comparative view of Mozambique’s position in terms of tree outturn and workers’ productivity in cutting, peeling and selection cycles of processing.)

Finally, due to lack of infrastructure for electricity in many distant rural areas where the factories have been installed, there are factories that must rely on a less efficient steaming technology that slows down processing time. However, some of these factories have eventually been provided or are in the process of receiving access to electricity and better roads.

II. Differentiation

The entrepreneurial lead strategy put forward by Technoserve has been extremely attentive to the demands made by the market on the subject of quality standards. As part of the medium and long term plan, it became crucial to achieve economies of scale across a range of services for competitiveness purposes, including the need to supervise the quality of the nuts, as well as the standards of factory operations and facilities. Following the plan, Agro Industrias Associadas (AIA), a consortium of processors in the Nampula province was created in 2004. After a thorough deliberation process it was decided that AIA would concentrate efforts in the following activities and services: centralized warehousing, transportation to port, shipping and customs, acquisition of equipment, and as mentioned above, quality control monitoring and consolidation of brand reputation. In addition, in 2005 a brand by the name of Zambique was launched under which all member processors of AIA began exporting their finished product.

The existence of AIA constitutes a significant step in terms of protecting and strengthening the Zambique brand. With all processors exporting under the Zambique brand, there is a strong incentive to regulate and standardize the quality of its pooled production through proper
monitoring practices. Processors understand the consequences that a single container of poor quality kernels has on the reputation of the Zambique brand and thus have been compliant and respectful of the valuations that AIA has applied to the factories so far. Furthermore, AIA has been working on the refinement of a standardized evaluation for quality control that if consolidated over time has the potential of becoming a powerful tool for generation of individual factory diagnosis. Such a tool could facilitate and improve the decision making processes for factory management as well as for the conglomerate.

In addition, for future brand strengthening purposes, AIA is visioning the possibility to expand Zambique through a franchising mechanism where factories can buy the rights after complying with rigorous quality requirements. For this to happen, the consortium will require that further developments be made in terms of quality certification. Although the business plan for AIA envisions that by 2010 its network of processors will meet 60% of HACCP standards, the progress on this matter has been limited to very few factories, particularly the larger ones.50

It is important to note that the industry has concentrated most of its efforts on the European market and thus has been particularly attentive to its specific quality demands. A strong link with a Dutch broker that buys the entire production of the conglomerate has been established. The South African market is so far an unrealized opportunity, which all the key players (processors, INCAJU, Technoserve) agree must be explored. Expectations of further growth will be determined by AIA’s capacity to protect the quality of its product as a means of expanding its services and brand onto other industries and potential unrealized markets. For 2010, AIA has targeted the following goals: 30,000T nut processing by AIA network, 6,150T of kernels (20.5%), ten or more AIA factories in network, an additional 7,000 jobs created, for a total of over 12,000 direct jobs and 10,000 hectares of raw cashew crop under ownership or with sole buying rights. Ultimately, AIA will be pivotal for the self sustainability of the industry as the idea is that it will eventually replace Technoserve as a reliable source of technical assistance on a for-profit basis.51

Finally, the industry has not entered into organic production due to the insufficient reach of extension services, and the complexity of complying with organic certification. On the other hand, there is interest in exploring options within the Fair Trade market. CLUSA (the Cooperative League of the USA) has supported two communities in forming a relationship with Fair Trade in northern Mozambique. Stakeholders in Mozambique would like to promote a further integration of communities with these organizations. This results in a high percentage of pesticide free production, which can be conducive to the introduction of organic cashew nut production.

III. Diversification

Currently Mozambique does not have the technology to meet the specificities required to develop byproducts. There is little institutional support or capacity to initiate the development of byproducts, and the factories have not reached the high volumes of processing that is necessary to produce the Cashew Nut Shell Liquid (CNSL). As such, the industry is not ready or prepared to take advantage of the innumerable industrial applications exploited by other nations. In

50 Technoserve (AIA Business Plan), slide 59
51 Ibid. slide 32
addition, despite recent growth, Mozambique does not have the production capacity to dedicate a portion of their trees for cashew fruit exploitation. Furthermore, the cashew juice that is commercialized and sold in Maputo is imported from Brazil, a perceived leader in by-products in Mozambique.

Finally, the narrowness of the local economy and low consumption rates due to the country’s structural poverty condition indicate that byproduct development will not be driven by the domestic market. In essence, this constitutes a structural weakness for Mozambican processors given that they cannot rely, as competitors do, on extra profit derived from commercialization of byproducts and opportunities offered by larger and more vigorous domestic markets. Mozambique’s domestic market is extremely small and thus the amounts of cashews sold internally represent insignificant proportions. According to a study done in 2005, the domestic demand for kernels at the time was of an insignificant 20 MT per year.52 Given this, the industry has been predominantly conceived for exportation and little or no effort has been done to develop a domestic market for cashews or by-products.

IV Access to Credit

The lack of accessible credit at is one of the most constraining factors threatening the viability of the industry, and it is particularly challenging to the small and medium size processors who have been the main drivers of the recent growth. The cashew industry is perceived to entail enormous risk given its volatility, thus credits are granted under very costly conditions which limits processors’ capacity to enter the market and reinvest in expansion.

The fact that there is only one commercial bank (BCI Fomento) offering credit to the processors demonstrates narrowness of financial opportunities available to the industry. In the face of this obstacle and with the purpose of facilitating access to working capital for processors, Technoserve assisted with the design of a loan guarantee program that has been jointly funded by INCAJU and USAID in 2001. The fund covers approximately 50% of the loan granted to an AIA member and is given at a TBOR +4 rate. Even though the fund has become the most important source of financing for processors, many loans are diverted to unintended purposes. There is also nervousness among processors about the perceived threat of USAID eventually discontinuing its contribution to the program.

In addition, processors use their warehouses as collateral to cover the remaining 50% of their loan. However, warehouses must be properly monitored to ensure an affective control and in excellent sanitary condition to have a significant collateral value. The incidence of stolen inventories and inability to meet warehouse standards has undermined the confidence of banks in this type of loan guarantee. To complicate matters, given that land is owned by the state and a tenure system exists, mortgaging the land is not an alternative.

Finally, overly tight cash flow results in an inability of processors to meet the terms to pay back loans as well as the salaries of factory workers. Paradoxically, this problem has resulted from increased demand and export quantity. At the beginning when export volumes were small

enough and the broker only had to do business with few sellers, he was in a position where he
could pay for his orders up front. As the volumes augmented, the broker was no longer able to
pay up front and had to be given as much as 45 days to do so. An important structural pressure
on processors relates to the correspondent times for buying the raw material. The harvest is sold
during the last three months of the year (October, November and December) when processors
have to buy sufficient raw nuts to make their plants operational all year long. This sizeable
annual investment (working capital represents about 50% of sales cost) is in itself a vital reason
for credit.53

Although processors are generally optimistic about the potential of their businesses and satisfied
with the positive social impact that they generate, in the interviews that we conducted the
processors repeatedly voiced their concern about the need to find better, more appropriate, and
more affordable sources and mechanisms of financing.54 Particularly to solve the ongoing
problem of obtaining access for investment capital; the loan guarantee program has somehow
solved the working capital issue.

Mozambique Conclusions

It is impossible to deny the extraordinary recovery of Mozambique’s cashew industry in the past
6-7 years. It has certainly been thanks to the execution of a well planned market driven strategy,
strongly led by private processors and supported by a committed and well prepared international
development organization. This growth has been attained in a surprisingly short period of time
and there is potential for the continuation of this trend looking forward in time. Despite the fact
that Mozambique will not be a global competitor in the cashew industry in the short-run, its
method of rapid growth provides interesting policy options.

As we moved through the four pillars, the sense of success but at the same time of inevitable
fragility was something that seemed present throughout different aspects of the industry.
Developments in areas such as access to credit and improvement of the quality of the nuts are
definitely in need of further work. On the other hand, there is a clear vision in terms of
invigorating its industry through marketing and branding. The establishments of AIA in 2004,
followed by the creation of Zambique in 2005, are two positive steps that solidify the grounds for
further development. In the end, the enforcement of proper regulatory mechanisms for the
purpose of protecting and improving the quality of Mozambique’s cashews will result in the
possibility of commercializing the product at a higher price. In overall terms, the industry has a
strong sense of direction.

Vietnam

Background and Industry Structure

Vietnam is currently the second largest exporter of processed cashew nuts in the world. What is
significant about this feat is that the country was able to reach this position within the last twenty
years. This success began in 1986 when a group of liberal socialist party leaders implemented a
series of intense economic reform policies entitled *Doi Moi*. These policies initiated a shift

53 Rui Cardoso, personal interview, Tuesday, March 13th, 2007
54 Interviews with Ali Cherif Deroua (Alexim Ltd) and Silvino Martins (Condorceju)
towards a market-oriented economy through decentralization, privatization, outward orientation of economic activities, easier access to external markets for trade, and a drastic change in the agricultural sector in terms of land and tax policies. *Doi Moi* was a reaction to the more extreme socialist policies under which the economy had stagnated during the previous decade.

*Doi Moi* played a key role in the success of agricultural exports from Vietnam and helps explain some of the challenges still faced by agricultural industries today. These reforms focused on securing agricultural prices, linking production and industries, and increasing off farm activities (processing capacity) to reduce underemployment in agriculture and rural areas. In the early 1990s, when international cashew prices were rising, Vietnam recognized the potential use of cashews as a poverty reduction or cash crop. Both public and private sectors began to invest in cashew research and development, agricultural inputs, and processing facilities. The combined efforts of farmers, the government, and increasingly, the private sector led to rapid growth in the quantity and quality of cashews produced and exported from Vietnam. The government eliminated export taxes, which further contributed to rising exports. Due to changes implemented during *Doi Moi*, farmers gained access to land use rights, which enabled them to choose how to capitalize on their land. Prior to this shift, the state had complete ownership and control over land, including the right to tell farmers which crops to grow. Farmers also benefited from the elimination of taxation on land used for agricultural production. In comparison to the past, when hard work only benefited the state, now farmers see the incentives of working hard to improve their own income. Since 1990, production of raw cashew nuts has increased by thirteen times and now amounts to 400,000 MT/year. Processing capacity grew at an even faster rate, now at 700,000 MT per year.55

Vietnam has undergone several major economic and trade reforms, culminating in its accession to the World Trade Organization on January 11, 2007. Vietnam is also a member of the ASEAN Free Trade Agreement (AFTA). Since *Doi Moi*, Vietnam has transformed from an importer of food products to one of the world’s major exporters. This shift is illustrated by Vietnam’s tremendous growth in world market shares of cashews. In 1990, the export volume of Vietnamese cashew kernels only amounted to 260 MT and 14 million USD. In 2005, Vietnam

---

55 Dr. Khai, Institute of Policy and Strategy for Agriculture and Rural Development
exported 103,000 MT of processed cashew kernels, yielding revenue of 480 million USD.\textsuperscript{56} The graph below demonstrates how growth occurred in both the processing and production capabilities, with processing now exceeding production.

Approximately 98% of Vietnam’s processed cashews are exported, with only 2% sold in the domestic market. The primary market is the United States (capturing 41% of Vietnamese exports) followed by China (20%), the UK and the Netherlands (12%), and Australia (10%). Vietnam’s cashew industry has greatly benefited from China’s export market due to proximity and less strict quality standards; Vietnam is its largest supplier of cashews.\textsuperscript{57}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{export_derivatives.png}
\caption{Export destinations of Vietnamese cashew kernels}
\end{figure}

As Vietnam’s processing capability exceeds its production capacity, the country must import raw cashews to be processed. Currently, processors import approximately 300,000 MT of raw cashew nuts. Imports come primarily from Africa and Indonesia (with little or no import tax) at the end of the year when domestically harvested cashews have been exhausted. Competition for domestically produced cashews has driven many inefficient processors out of business, and has coincided with an increasing trend towards privatizing state-owned processing facilities.

As international cashew prices have been falling over the past few years, cashew production in Vietnam faces new competition and challenges. The industry is currently very successful, but must improve its competitive advantage in order to ensure continued success in the future. An analysis of the Vietnamese cashew sector along the four main pillars that guided this research illustrates the opportunities and constraints faced by all players within the value chain. A market based value chain analysis is discussed below, along with current and past policies that impact the cashew nut sector and its competitiveness in global markets.

\textbf{I. Output Quality and Quantity}

Productivity in any agricultural industry emerges in two fundamental ways: 1) areas with more suitable soil and climate conditions are more productive and 2) proper use of high yield varieties,

\textsuperscript{56} Ingrid Hultquist, \textit{Binh Phuoc Cashew Value Chain}, ILO PRISED Project, 2005
\textsuperscript{57} Adam Branson, FAS Office of Agricultural Affairs at the U.S. Embassy in Beijinq, China. http://findarticles.com/p/articles/mi_m3723/is_4_16/ai_117773761/print
irrigation, fertilizers and pesticides can further augment productivity. In the first instance, Binh Phuoc Province’s most paramount competitive advantage is its favorable climate and suitable soil. All interviewees in Vietnam commented on the high quality of nuts produced in this region, and in Vietnam as a whole. Industry players in Vietnam claim that their cashew nuts are larger, whiter, and taste better. In addition, it is claimed that cashews from Binh Phuoc have a higher nutritional value. Finally, Vietnam has been remarkably successful in increasing both the quantity and quality of production by focusing on expanding technologies to increase yields of cashew trees. (See Appendix I Figure 11 for a map of the cashew producing regions in Vietnam.)

As exemplified by data given above, Vietnam has succeeded in increasing output significantly since 2000. This growth is despite the fact that the agricultural sector has been less protected than other economic sectors in Vietnam, and subsidies have continually decreased. Instead, indirect policies by the state, such as research and development and agricultural extension, are used to encourage and facilitate agricultural production.

Although interviewees at the Ministry of Agriculture and Rural Development and the Institute of Agriculture Science stated that there were no agricultural subsidies in the cashew sector, secondary research shows that there have been a few programs in which seeds or varieties are provided to farmers at subsidized rates, although only at the producer level. There have been no subsidies in processing/exporting cashew products from Vietnam since 2000. At the national level, Program 225, which was created to upgrade research institutes that develop plant seeds and subdivide seed imports and multiplication, provides about VND 100 billion per year (6.25 million USD). The Institute of Agricultural Science, with public funding, has developed five new varieties of cashews, the best of which can yield 4-5 MT per hectare.

The government also invests heavily in transferring these new technologies to farmers through state-run Agricultural Extension Centers (AECs), which successfully disseminate new plant varieties. The National AEC, which operates under the Ministry of Agriculture and Rural Development (MARD), was established in 1993. There are provincial AECs in each of the 64 provinces, which are under the administration of the National AEC. Each provincial AEC supervises an AEC station in each district. The AECs at different levels provide farmers with information relevant to agricultural production, agribusiness, and policies related to agricultural and rural development. Through AECs, the government also provides a subsidy of VND 30-50 billion (approximately 2-3 million USD) each year; seed assistance accounts for 60% of these funds, with 60% of the seed prices in mountainous areas subsidized and 40% in plain areas. Recently, funding for the National AECs has been increasing by about 5% each year.

---

58 Ingrid Hultquist, *Binh Phuoc Cashew Value Chain*, ILO PRISED Project, 2005, p. 1. The province of Binh Phuoc is the largest cashew producing province in Vietnam with 115 000 MT of raw cashew and 116 000 ha in 2005, representing almost one third of the country’s total production. For this reason, research was conducted primarily concerning this province.
60 Dr. Ton, Institute of Agricultural Science, Interview, 14 March 2007
61 Ibid, p. 26. This program began on December 10, 1999 under the Prime Minister’s Decision No. 225/1999/QD-TTg, and it was renewed in January 20, 2006 to continue through 2010 under Decision No.17/2006/QD-TTg.
62 Prime Minister’s Decision No. 13/CP 1993.
64 Dr. Ton, Institute of Agriculture Science, Email Correspondence, 14 March 2007
Information and training is provided at local AECs as well as through television broadcasts and field visits. Additionally, the AEC uses demonstration plots to disseminate information. In the opinion of Dr. Ton of the Institute of Agricultural Science, “On average, AECs have fulfilled about 80% of the requirement of rural communities.” Total growing area of cashews in 2006 was 330,000 ha in which 120,000 ha were replaced with new and high yielding varieties, mainly by grafted seedlings, particularly in Binh Phuoc. While average yield across Vietnam is 1.24 MT per hectare, in Binh Phuoc it is 2-4 MT per hectare. This increase in yield is paramount to Vietnam’s competitiveness in global cashew markets, and illustrates the success of government supported research and development as well as extension.

Although Vietnam has no private extension centers, private companies are involved in fertilizer, pesticide, and seed provision. Use of these inputs, particularly fertilizer, has grown steadily in Vietnam in the past decade. In 1999, fertilizer consumption amounted to 263 kilograms per hectare of cropland, which is high compared to the Asian average consumption of 149 kilograms per hectare and a worldwide average of 94 kilograms. Although these agricultural inputs are easily accessible on the market, lack of capital to buy such inputs is sometimes an impediment. As such, the government has had a history of subsidizing prices. According to the Vietnam Fertilizer Association, the national demand for subsidized fertilizer usage for 2005 is estimated to be approximately 6-6.5 million MT. Most of this fertilizer is imported and subsidies are provided indirectly through subsidized credit programs for importers of fertilizer. Although one would conclude that farmers may not benefit from such indirect subsidies, studies show that benefits do in fact trickle down and lead to slightly lower prices for farmers.

Another issue is the lack of proper knowledge on how to use fertilizers. About 30% of farmers apply fertilizers every year, but the remaining 70% use fertilizer sporadically, which hinders productivity. The Department of Industry stated that they are working on the standardization of fertilizers, but they could not reveal the policy due to its sensitive nature.

Government policies have focused on increasing yield due to the limited land in Vietnam and competition with other cash crops for that land. Many farmers in the past few years have replaced cashew trees with other cash crops, such as rubber, which are more lucrative given current pricing trends in international markets. As other cash crops become more profitable, and competition for land increases, the private sector has also taken initiatives to increase competitiveness the quality and quantity of output. Processors in Vietnam have begun to assist with cashew production in Cambodia. Cambodia shares a border with Binh Phuoc province, so the soil quality is similar and therefore suitable for cashew production. Additionally, Cambodia has higher land availability and lower labor costs. There is thus high potential for cost-effective imports from Cambodia to fulfill processing capabilities.

Vietnam has been adversely affected by labor shortages in the cashew industry. This constraint has been caused on one end of the value chain by low international prices for cashews and on the other end of the value chain by “fraudulent behavior” by farmers and collectors. Farmers

---

65 Dr. Ton, Institute of Agriculture Science, Email correspondence, 6 April 2007
67 Vo Thuy, US Commercial Service
69 Mr. Cahn and Mr. Minh interview, Department Of Industry, Binh Phuoc, Vietnam, March 15, 2007
and collectors engage in placing rocks and/or water in sacks of cashew nuts sold to processors in order to increase the weight and price obtained.  

70 These two constraints on either end of the value chain have squeezed processors and resulted in uncompetitive wages compared to other industries. Processors thus have difficulties retaining employees. In response, some processing facilities have moved to areas of Vietnam populated by ethnic minorities, where labor costs are lower. Some of these processing facilities are located in the North of the country, far from the central and southern cashew producing regions. However, given labor constraints, it has been profitable to relocate factories to such areas.

To further address labor shortages, Vietnam could benefit from mechanizing their processing capabilities. Some processors have tried mechanized deshelling techniques, but have found the percentage of broken nuts to be too high.  

71 Another large processor, Calofic Company, invested in higher quality machines, but the factory has since ceased processing cashew nuts until international prices rise. The Department of Industry of Binh Phuoc stated that there is not enough investment in manufacturing these machines and would like foreign investors to aid in bringing this technology to Vietnam.  

The introduction of open markets and economic freedom produced a quick response from farmers seeking to capitalize on their land. Due to historical land laws in Vietnam, farmers have small size farms of about two hectares;  

72 this factor, coupled with land use rights, proved favorable towards open market orientation. However, there is very little cooperation to increase quantity or quality among players within the cashew value chain. According to value chain theory, horizontal and vertical linkages are critical for MSEs in order to obtain economies of scale, increase efficiency, and augment income. The lack of such linkages in Vietnam is once again a reaction to the more socialist period in Vietnam, and the reactive shift towards a more individualized work ethic. Farmers lack the trust necessary to form cooperatives and work with traders and/or processors. Small farm sizes also act as a disincentive for processors to work directly with farmers as transaction costs for the processors would be too high.

This lack of cooperation is also evident in Vietnam’s Cashew Association (VINACAS). According to many sources, VINACAS is having internal political difficulties amongst the governing members. Additionally some sources noted that VINACAS has not been effective in representing the cashew industry in order to make more preferable demands, politically and otherwise, to benefit actors along the value chain. On the other hand, Vietnam is currently a leader in the International Pepper Community, which has been a valuable opportunity for the industry in terms of obtaining new technology, controlling prices, and increasing access to information; this organization could serve as an example to the cashew association and demonstrates potential for international cooperation within the global cashew industry. Discussions of cooperation between the Vietnamese, Brazilian, and Indian cashew associations have been initiated; however seem to be very preliminary. Most sources said it would be a beneficial relationship, but expectations of success of this cooperative effort were not high.

---

70 Mr. Huong, VCCI interview.
71 Mr. Cahn and Mr. Minh interview, Department Of Industry, Binh Phuoc, Vietnam, March 15, 2007
72 Ibid. March 15, 2007
73 The Land Law (1993) put a ceiling on the amount of land that can be allocated to households: for annual crops, the limit is two hectares in the central and northern provinces and three hectares in the southern provinces, and for perennials the limit on land holdings is ten hectares.
Access to information is a major impediment to increased production and incomes of farmers and small and medium sized processors in Vietnam. Information regarding market prices is critical to ensuring that all players receive a fair price and can plan future investments based on market trends. In addition, information about farming/processing techniques to increase output is also essential. The International Labor Organization (ILO), in collaboration with the Vietnam Chamber of Commerce and Industry, is currently implementing two projects in the Binh Phuoc region to target obstacles to information for players in the cashew industry. The first is a daily radio broadcast of market prices. The second is an easy to read brochure to be disseminated to farmers about production techniques. Once again, cooperation and linkages among actors in the cashew sector would be another technique to improve information flows within the value chain.

II. Differentiation

Currently Vietnam is not involved in any organic, fair trade, or traceability projects for cashews. The national government has plans to develop a model for organic production, but the high use of fertilizer and pesticides and lack of incentives for farmers to produce organically makes this very difficult. Information gathering and dissemination regarding profit potential from organic production may increase the incentive to initiate organic cashew production in Vietnam. However, incentives are further reduced by the proximity of the Chinese market, which does not demand high quality organic cashews. The benefits of organic production could be seen through increased exports to the U.S. and European markets at premium prices.

Binh Phuoc province has plans for branding their cashew nut as the highest quality nut in the world, but industry officials say that it is a long process and will not happen for a few years. Lack of coordination among farmers is also an impediment to this effort. Increased horizontal linkages would facilitate branding and would have a significant impact on farmer and MSE income in Vietnam.

III. Diversification

In Vietnam it is imperative that players in the cashew sector begin to employ methods to diversify income through the use of by-products, increasing demand in the domestic market, or intercropping. Diversification of income reduces dependency and risks such as extreme weather conditions, labor shortages, and susceptibility to international prices. Currently in the Binh Phuoc region, 50% of farmers are completely dependent on the cashew nut as a source of income, and more than 80% say the cashew nut is their main source of income.

Intercropping with coffee and/or cacao is done sporadically in one region of the country, but this method could be employed more widely to increase farmer income and reduce dependency on one crop. Other ways of diversifying income from farm activities are through intercropping with pepper, rubber, fruits (such as rambutan, jackfruit, apples, and cassava), and cattle breeding. Some farmers or their families may also perform work on other farms or work for processing companies.

Vietnam’s current efforts at cashew diversification center on producing the Cashew Nut Shell

Liquid (CNSL) for use in paints. The CNSL is mainly exported to China but is also commercialized domestically. Currently, ten companies are exporting CNSL but only in very minimal amounts. The quantity of CNSL currently produced is not sufficient to diversify and increase incomes of farmers and small and medium sized processing plants. Larger processors which are currently exporting CNSL can achieve a slight augment in profit, but the amount is fairly insignificant and therefore benefits do not trickle down to actors further down the value chain. If processors increase production and exportation of CNSL, this could potentially increase prices received by farmers in the future, thus increasing farmer income.

The cashew apple is not currently being used due to challenges of processing and preservation of the apple. Binh Doung region is starting to produce cashew wine from the apple, but it is not clear how successful this will be and if there is a market for the product. The government is looking into future potential development of apple byproducts such as juices or ethanol, but does not currently have the technology or market demand to do so. According to Dr. Duong at the Ministry of Agricultural and Rural Development, the 400,000 MT of cashews produced in Vietnam equates to approximately one million MT of wasted cashew fruit.

Domestic demand for cashews is very low. In each of the four processing plants visited, only 1-2% of cashews were sold in the domestic market, and these were only the poorest quality of nuts that were not able to be exported. Currently, there is also a 5% tax on cashew nuts that are sold domestically, creating less incentive for processors to sell locally. However, the government’s goal is to increase domestic demand by 20% by the year 2010. The government believes that as Vietnam develops and achieves greater levels of economic growth, incomes will rise, thus demand for cashews (a relatively expensive product) will increase; whether domestic tastes will change by the year 2010 remains to be seen.

There are minor efforts to differentiate products by adding value at the processor level. Thirty cashew factories have begun salting, roasting, or making candies with cashew nuts, but these products are almost entirely for domestic consumption. In order to export such products, processors must work on quality and effective packaging and marketing.

IV. Access to Credit

Although Vietnam’s financial sector offers credit through state-owned banks, such as the Bank for Agriculture and Rural Development and the Bank for the Poor, there are no special credit programs geared towards the cashew industry. And, challenges exist for both processors and producers in accessing credit. Difficulty arises from the land use certificates that are necessary collateral to acquire loans. Many farmers do not have these certificates and the process to obtain one is long and difficult. Processors generally do have certificates, but they receive less collateral as a result of the certificates labeling their land as agricultural land (agricultural land is worth less as collateral than industrial land). Switching land titles on the certificates is also expensive and time consuming. The Ministry of Agriculture and Rural Development is currently conducting a land survey of farmers to assist with problems related to certification.

There are some efforts to provide value chain financing. In some cases there are agreements between collectors and farmers, where collectors lend money to farmers to buy fertilizers and pesticides on the condition that during the upcoming harvest the farmer will sell only to that collector. In Binh Phuoc, some farmers have a longstanding relationship with the collectors of
up to four years, but many farmers also choose collectors that offer the best price or who are willing to buy immediately. The farmers do not have legally binding contracts with the collectors as commitments are often oral or relationship based.

**Vietnam Conclusions**

The success of the Vietnamese cashew sector can largely be attributed to a successful shift towards privatization and economic opening in the 1980s. From farmers gaining land use rights and profiting from high international cashew prices in the 1990s to the privatization of state-owned processing units, private sector success supports the market based value chain approach. Related interventions that encourage private sector investment in the cashew industry should be applied in order to increase competitiveness.

In addition to capitalizing on a rapidly market-oriented economy, government support for R&D and extension has been paramount in increasing cashew yields. Scientific research has produced high yielding cashew trees and through state-run Agricultural Extension Centers, the plants as well as seeds, fertilizers, and training are disseminated.

Constraints on the cashew industry include pricing, loss of labor, and lack of information. The pricing constraint arises from “fraudulent behavior” by farmers and collectors as well as low international prices. Pricing issues have squeezed processors, who cannot afford to pay workers competitive wages compared to less manually intensive industries. Finally, farmers suffer from lack of information regarding prices as well as best practices for cultivation.

Following a market-based approach, there has been an outstanding impact from private sector led growth. Although government investments in AECs and R&D have helped bring Vietnam to its current level of output, there is still a place for investment in information dissemination as well as more mechanized forms of processing to counteract labor shortages. Market based development theory suggests that the private sector should provide extension services, which the government could consider to ensure the sector’s future sustainability.
Policy Recommendations for Brazil

Brazil has long since established its name and reputation as a leading producer and processor of cashews. Despite being overtaken in terms of the quantity of processed nuts, Brazil still has unique comparative advantages that Vietnam and India do not possess. Brazil has the most convenient access to the US market, the most sophisticated by-product industry and has impressive industry knowledge that stems from significant historical cashew production and exportation. In addition, Brazil has a more sophisticated understanding of traceability and greater interest in organic and niche markets than India, Vietnam or Mozambique. These other countries do not have the resources, experience, or interest that appears to be exhibited by Brazil. However, responding to new competitors and new market demands is of utmost importance for Brazil to regain lost ground and remain a significant player in the cashew sector.

Creating an atmosphere of competitiveness within the cashew industry means that the sector must achieve efficiency along the value chain. Thus, an analysis of the cashew industries in India, Mozambique, and Vietnam focused on four pivotal points of the value chain provided great insight and lessons learned for increasing global competitiveness in Brazil.

One of the most salient primary conclusions of this benchmarking analysis is that competitiveness requires the right balance of public, private, and NGO involvement in the sector. Each of these players must have the proper incentives and opportunities to support and invest in the cashew industry. First of all, the necessary boost in competitiveness requires robust private sector involvement, based on the empirical evidence provided during the field investigations. In particular, Vietnam’s tremendous growth in capacity is credited to recent privatization efforts and India can in part attribute the strength of its industry to the participation of the over 1700 processors competing in their market. However, public or NGO participation is also necessary to incentivize increased research and development, extension, and encourage new entrepreneurs and greater competition into the sector. Together, these three players, public, private, and NGOs, must create an environment that induces private investment to increase quality and efficiency, thus augmenting competitiveness in global markets.

Most specifically, finding the right balance between public and private involvement in the key areas of facilitating access to credit and achieving increased quality standards could help Brazil regain a competitive edge vis-à-vis the new industry leaders.

Credit

In particular, the role of credit has been pivotal to the success of India and Mozambique in increasing production. Brazil could mitigate the effects of a complex and restrictive financial market by tailoring the approaches that have been used successfully by these countries. If replicated, the sustainability of credit schemes and credit organizations must be considered as well as a means to transition from public support to private substitutes.

- The strength and number of credit providers and innovative credit products in India opens up competition and availability of appropriate loan products which respond to the needs of a higher risk demographic in the agricultural sector.
Cashew Export Promotion Council of India (CEPC) offers investment to producers for the purchase of innovative technology and equipment. CEPC’s success is partly derived from the fact that it provides targeted subsidies that enable private processors to become more productive and quality-focused.

In Mozambique, there is a conglomeration of public and NGO support to meet private needs for cashew working capital. INCAJU, a public cashew promotion organization, USAID and TechnoServe have created a loan guarantee fund which enables associated processors to access capital.

Mozambican processors leverage the equity of their warehouse as collateral and take advantage of the loan guarantee to cover the liability of almost 100% of their financing. They receive loans with interest rates at approximately TBOR + 4 for working capital. This policy was enacted in 2005, thus there is no strong data on the default rate. However, if this procedure were to be replicated, a strategy should be developed to maximize the value of warehouses through fortification, better construction, etc. to increase the private responsibility for securing loans through collateral versus public/NGO support. Finally, a timeline for weaning processors off the loan guarantee is necessary for sustained competitiveness.

Quality Standards

The future of price-premiums for commodities exists in providing a differentiated product to savvy consumers. For cashews, countries must focus on international market demand for quality, the importing country’s standards, and breaking into niche Fair Trade or organic markets. Higher prices correspond to larger, whiter and whole cashews; and US and European markets are placing importance on receiving standardized quality certification for assured access to their markets.

Brazil faces competition from India and Vietnam based on quality because it relies heavily on a mechanized processing method which results in a higher percentage of broken kernels. In addition, the replacement of trees which produce a lower grade nut in Brazil will be important given the high priority it is given in all producing countries. Although India, Vietnam and Mozambique are not as prepared to aggressively capitalize on the demand for organic cashews, Brazil would still benefit from catalyzing more participation in Fair Trade markets and in inducing a higher quality production from farmers.

Encouraging Fair Trade buyers to partner with small producing and processing communities was of great interest to stakeholders in all the field visit countries. In particular, partnerships between cooperatives and Fair Trade organizations in India and Mozambique are highly respected and generally esteemed more than organic certification. Brazil could investigate the possibility of creating support between MSEs and cooperatives with Fair Trade buyers.

TechnoServe in Mozambique is beginning to implement a program that would train intermediaries to give price premiums to producers for quality. This system of incentives
could enable a shift towards better agricultural practices and adoption of latest R&D technology by the producer.

- In Vietnam, the Chamber of Commerce and Industry and the International Labor Organization are attempting to broadcast pricing information and best practices suggestions via radio and television to help farmers follow market demands. Both politics endeavor to reduce the information gap between the market and the farm. These activities raise the quality and ergo the competitiveness of the final product.

Conclusions

As a historical leader of cashew production, Brazil has an impressive social and physical infrastructure supporting the cashew industry. To remain competitive and regain lost ground against India and Vietnam, Brazil must make its interventions as sustainable and market-oriented as possible; with a particular focus on creating incentives for higher quality production. Furthermore, it must introduce more domestic competition for processing, perhaps by incentivizing more private participation within the industry and through careful analysis of credit extension schemes.

Brazil could improve inefficiencies along its value chain by extrapolating the innovations provided by India, Vietnam, and Mozambique. Additionally, by using public and NGO incentives, more private involvement and competition could spur industry growth. By enacting such changes, Brazil stands poised to maximize its potential to distinguish itself as a high quality producer and exporter in niche markets with a system of traceability. In addition, Brazil could consolidate the market as the power house in exportation of cashew juice and could aim to aggressively target new markets for cashew fruit products. In summation, based on several key renovations along the value chain, Brazil exhibits great potential in terms of regaining its position among competitors in the cashew industry.
Appendix I

Charts and Graphs
Introduction

Figure 1: Comparison of Farmgate Price by Country

![Farmgate Price Chart]

Sources: SINCAJU, Artur and Nanjji, Harilal et al. (current averages)

Figure 2: Comparison of Processorgate Price by Country

![Processorgate Price Chart]

Sources: USAID, Harilal et al, Technoserve (current averages)
Figure 3: Domestic Market vs. Exports

Percent of Cashew Processing Revenues

<table>
<thead>
<tr>
<th>Country</th>
<th>Domestic Revenues</th>
<th>Export Revenues</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>$510M</td>
<td></td>
<td>$510M</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$400M</td>
<td></td>
<td>$400M</td>
</tr>
<tr>
<td>Brazil</td>
<td>$270M</td>
<td></td>
<td>$270M</td>
</tr>
<tr>
<td>Mozambique</td>
<td>$15M</td>
<td></td>
<td>$15M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,195M</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Top Four Cashew Processing Countries

Sources: Olam International
Source: Technoserve (Irish Aid)

Figure 4: Cost of Credit

Interest Rate

Sources: Olam International
Note: Those Mozambican processors who access credit at lower interest rates are backed by guaranty funds
Source: Technoserve (Irish Aid)
India

Figure 5: Map of India

Figure 6: CSNL Exports

Source: Cashew Export Promotion Council of India
Mozambique

Figure 7: History of Production vs. Processing

*0 processed nuts*

<table>
<thead>
<tr>
<th>Year</th>
<th>Raw nuts exported from Mozambique</th>
<th>Raw nuts processed in Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>1975</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td>1980</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>1985</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>1990</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>1995</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Technoserve (AIA Business Plan)

Figure 8: Location of factories in Nampula province

Source: Diagram provided by Ali Cherif Deboua (President AIA)
Figure 9: Outturn of Raw Nuts (lbs quality)

<table>
<thead>
<tr>
<th>Country</th>
<th>Outturn</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>50-56</td>
</tr>
<tr>
<td>Vietnam</td>
<td>50-56</td>
</tr>
<tr>
<td>Brazil</td>
<td>50-55</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>48-56</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>48-52</td>
</tr>
<tr>
<td>Indonesia</td>
<td>48-52</td>
</tr>
<tr>
<td>Benin</td>
<td>46-50</td>
</tr>
<tr>
<td>Tanzania</td>
<td>45-52</td>
</tr>
<tr>
<td>Ghana</td>
<td>44-48</td>
</tr>
<tr>
<td>Mozambique</td>
<td>42-46</td>
</tr>
<tr>
<td>Nigeria</td>
<td>40-46</td>
</tr>
<tr>
<td>Kenya</td>
<td>40-46</td>
</tr>
<tr>
<td>Madagascar</td>
<td>40-46</td>
</tr>
</tbody>
</table>

Source: Technoserve (USAID)

Figure 10: Workers’ Productivity

Mozambican workers’ productivity levels lagging behind their counterparts in Africa

Sources: Olam International; Condorcaju Lda. (Q1-Q3 2006)

Source: Technoserve (Irish Aid)
Vietnam

Figure 11: Cashew Production in Vietnam (Metric Tons)

Source: EDE Consulting
Appendix II

SWOT Analysis
### SWOT: India

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Support for the cashew sector through a range of government institutions at the state and national levels. Institutions such as the Cashew Research Station, the National Research Centre for Cashew (NRCC), and relevant ministries have prioritized plantation development and organic production. The Cashew Export Promotion Council (CEPC), an organization funded by the federal government of India, coordinates nearly all of the exporters of cashews and allied products in its membership.</td>
<td>- Limited use of byproducts for food and beverage products. The general perception is that this is wasteful and a missed opportunity to diversify farmers’ incomes, but attempts to adjust consumers’ tastes to products from the cashew apple have not been successful.</td>
</tr>
<tr>
<td>- Both national and state level policies for the sector. This reflects political will, but could be problematic if these policies are not aligned.</td>
<td>- Cashew faces competition from other more lucrative crops such as rubber.</td>
</tr>
<tr>
<td>- Some of India’s largest exporters are leaders in the use of sorting and packaging technology.</td>
<td>- In the case of the Kerala State government, employment creation is more of a priority than the competitiveness of the sector.</td>
</tr>
<tr>
<td>- Growing domestic market with India’s emerging middle class.</td>
<td>- Dependence on imported cashews for half of those processed, so traceability could be a challenge (although traceability was not identified as a major constraint in our interviews).</td>
</tr>
<tr>
<td>- Strong financial infrastructure due to India’s social banking regulations.</td>
<td>- In Kerala, homestead farming is predominant and until recently cashew production fell under the land ceiling which limited plantation development. Cashew production is just one part of farmers’ income generation activities. This method of land use has also limited organic certification.</td>
</tr>
<tr>
<td>- Highly skilled labor in all steps of manual processing due to long history of sector</td>
<td>- Extension services—although there is reportedly an extension office in every village, there is inconsistent acceptance of the varieties, methods and use of chemicals that they promote. There is clearly a difference of opinion between many farmers and the agricultural establishment. The role of NGOs in the provision of extension services is limited.</td>
</tr>
<tr>
<td>- Availability of land for new cultivation (in states other than Kerala)</td>
<td>- As the economic life a cashew tree is 30-35 years many are becoming less productive in this well established sector. Especially a threat in Kerala where production was historically concentrated, but there are promising higher yields in other states such as Maharashtra where trees have been planted more recently.</td>
</tr>
<tr>
<td>- Good physical infrastructure (good roads, high population density, accessible ports)</td>
<td>- Although financing is widely available, smallholder farmers assert that the credit products do not meet their needs, that they are in debt because of high interest rates and that loans are tied to the obligatory use of fertilizers.</td>
</tr>
</tbody>
</table>

### OPPORTUNITIES
- Fair trade and organic production (Fair Trade Alliance Kerala as one interesting model)
- Given the manual nature of India’s processing the idea of “hand-crafted” cashews could be marketed. The Cashew Export Promotion Council has also proposed the branding of a “Made in India” cashew which could be another way to differentiate their product.
- Further market development for by-products

### THREATS
- Price fluctuations, vulnerability to weather changes, and the brief (1-3 months) yield are causing farmers to switch to rubber cultivation. Cashew farming is considered to have a lower social status compared to rubber production, so there is less incentive to invest in upgrading.
- Some processors are concerned that low wages in Vietnam are a threat to India’s competitive edge. India is trying to address this by moving production and processing out of Kerala.
### SWOT: Mozambique

#### STRENGTHS

- Tremendous growth of processing capacity in a matter of very few years.
- The private-led strategy introduced by Technoserve has certainly proven successful up to this point. Nonetheless, other complementary factors will have to come to place if the industry is to be sustainable in the long run.
- Processed cashews or the kernel sells at a higher price in the international market than raw cashew. This is beneficial for everyone throughout the value chain.
- Processing plants are located in areas of concentrated production, which strengthens the links between processors and producers and eliminates some of the intermediation between these two.
- Small and medium size plants:
  - Do not require as highly sophisticated managerial skills, which is crucial, given Mozambique’s lack of human capital.
  - Have substantially smaller initial capital requirements.
  - That use manual cutting technology usually result in better quality
  - If rightly designed are easily adaptable for expansion purposes
- Through association (AIA), processors have been able to gain scale for different purposes (commercialization, marketing, political leverage, etc). They need from one another in order be competitive. There is a very collaborative dynamic among processors.

#### WEAKNESSES

- Short-term solution of treating old cashew trees is not sustainable: the quality and efficiency of old trees is eroding the profitability of processing.
- Insufficient capital is available for processors to capitalize on profitable use of by-products. They are unable to extract oil from the shell and do not use the shell as fuel.
- Shallow nature of investment and finance in Mozambique
- Poor internal infrastructure raises the cost of transferring the product to the port.
- Limited processing capacity is insufficient to enter many markets who demand many containers (e.g. USA)
- Public extension is not efficient particularly given the newness of this government after many years of volatility
- High level of pests and diseases inherent in Mozambique’s climate

#### OPPORTUNITIES

- South Africa offers an enormous opportunity for further expansion. Open borders, excellent road system, large stores like shoprite with presence in various other African countries.
- As the government witnesses the growth of the sector it has started paying more attention to it while wanting to participate and gain some credit for its evident success. Zambique was launched in Baltimore with the presence of the president of the country. With increased scale comes and important degree of political leverage for the processors.
- The industry provides a great number of jobs in very poor areas where no other opportunities are to be found. Thousands of jobs, local economic development near the factories bring tremendous social impact to the lives of many. Thus, the opportunity to commercialize and sell the Mozambican cashews as an activity that is socially responsible and that contributes to alleviate poverty.
- Since the processing industry is relatively new, best practices in all areas of production can be more easily incorporated to the industry. (quality supervision, technological developments, marketing and branding, etc)

#### THREATS

- If new trees are not planted, the cashew industry will be unsustainable in 10-15 years.
- Processors are extremely debt burdened and have severe cash flow problems due to a lack of working capital resulting:
  - their production ultimately is less competitive (in pricing)
  - volatile commodity markets heighten the chance of processors withdrawing their investments/closing
- Government is very young and thus unpredictable: public support for the new cashew industry could be withdrawn
- The USAID fund that is currently acting as a loan guarantee for working capital for processors could be removed in the short-term making access to financing even more difficult
- Private entrepreneurs could be more mercenary and may see that another industry or country is more profitable, thus leaving Mozambique with a higher unemployment rate.
### SWOT: Vietnam

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
</table>
| - New sense of an individualized work ethic  
- No export tax and no tax on land used for agricultural purposes  
- Newer cashew industry, thus newer trees which have higher yields  
- High government investment in R&D and extension, and resultant high yield trees  
- High quality cashew nuts  
- Easy access to agricultural inputs  
- Increased involvement of the private sector, particularly in processing  
- Nearby market for lower quality cashews (China) | - Little organization among actors along the value chain.  
- Lack of access to information (price, production techniques, market information, quality standards)  
- Competition for land from other, more profitable cash crops (i.e. rubber)  
- No differentiation  
- VINACAS, the cashew association, does not provide the support necessary to increase growth and success of the sector  
- Lack of access to credit for machinery, agricultural inputs, and new tree varieties  
- Insufficient quality control, inconsistent quality  
- Shortage of domestic cashew production to fulfill processing capabilities  
- Both farmers and collectors engage in "fraudulent behavior" in an attempt to increase prices (i.e. putting rocks/water to increase weight of cashews sold to processors) |

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
</table>
| - Increased income in Vietnam and China may increase demand for better nuts, thus augmenting market potential for Vietnam  
- Branding of Binh Phuoc cashews will differentiate Vietnamese cashews and increase prices  
- WTO accession in January 2007International Cashew Association with Brazil and India. Vietnam is currently a leader in the International Pepper Community, which has been a beneficial opportunity for the industry in terms of obtaining new technology, controlling price, increased access to information | - Continued decreasing trend in international prices, fluctuating prices  
- Labor constraints for both processors and producers  
- Unstable and unpredictable weather |
Appendix III

Matrix
<table>
<thead>
<tr>
<th>Industry Information</th>
<th>Brazil</th>
<th>India</th>
<th>Vietnam</th>
<th>Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong># of producers</strong></td>
<td>195000</td>
<td>Approximately 450,000 farmers and 50,000 traders</td>
<td>Est. 400-500,000 farmers, 15,000 in services (input suppliers/collectors)</td>
<td>146,000 in 2007 (Technoserve)</td>
</tr>
<tr>
<td><strong># of processors</strong></td>
<td>22 active mini-mills and 11 large processing plants</td>
<td>Approximately 1700, about 50% of which are organized (The World Cashew Congress and confirmed with CEPC)</td>
<td>224 (IPSARD)</td>
<td>15 Processors (Source: Technoserve) 23 factories running</td>
</tr>
<tr>
<td><strong># employed in cashew industry</strong></td>
<td>170,000-200,000</td>
<td>1,000,000 in processing, production and trading (CEPC)</td>
<td>600,000-700,000, including farmers that intercrop (IPSARD)</td>
<td>110,000 producers sell to processors &amp; 6,293 employed in factories (2005 Irish Aid)</td>
</tr>
<tr>
<td><strong># employed in processing plants</strong></td>
<td>15000</td>
<td>500,000 (CEPC)</td>
<td>210,000 (IPSARD)</td>
<td>6,293 (Technoserve, Irish Aid) 2005 10,000 (Aprox, 2006-2007, Irish Aid)</td>
</tr>
<tr>
<td><strong># hectares</strong></td>
<td>680,000 (USAID 2006); 730,000 (FAO 2005)</td>
<td>433,000 (IPSARD)</td>
<td>50,000 (FAO 2005)</td>
<td></td>
</tr>
<tr>
<td><strong>kg produced per hectare</strong></td>
<td>268 (IBGE 2005)</td>
<td>815 kg/ha national average with a range of 640 kg/ha (Tamil Nadu) to 1300 kg/ha (Maharashtra) (Cashewnut and Cocoa Development)</td>
<td>1240 kg/ha (ILO 2005)</td>
<td>1160 (FAO 2005)</td>
</tr>
<tr>
<td><strong># metric tons produced</strong></td>
<td>170,000</td>
<td>460,000 (FAO 2005)</td>
<td>400,000 (IPSARD)</td>
<td>70,000 tons (Irish Aid 2006 est.;)</td>
</tr>
<tr>
<td><strong># tons processed</strong></td>
<td>280,000 tons/year</td>
<td>302,233 (FAO 2004)</td>
<td>700,000 (IPSARD)</td>
<td>330,000 tons (Irish Aid 2006 est.;)</td>
</tr>
<tr>
<td><strong># metric tons exported</strong></td>
<td>47,000 tons (2004, SINDICAJU); 80% of production is exported</td>
<td>114,143 (2005-2006, CEPC)</td>
<td>100,000 (ILO 2005)</td>
<td>FAO 2004: 40.91 (1000 tonnes) 2005: 95 (1000 tons)</td>
</tr>
<tr>
<td><strong># tons imported (raw nuts)</strong></td>
<td>0</td>
<td>252,605 (2002-2003, CEPC)</td>
<td>300,000 (IPSARD)</td>
<td>37,000 tons</td>
</tr>
<tr>
<td><strong>Revenue from exports (USD)</strong></td>
<td>145 million</td>
<td>571 million (2005-2006 CEPC)</td>
<td>500 million (IPSARD)</td>
<td>15 million (Irish Aid)</td>
</tr>
</tbody>
</table>

**Usage of By-Product**

- Only 20% of fruit in Brazil is used. (1) cashew apple for juice, (2) jams, (3) animal feed, (4) candy and desserts, (5) CNSL used in the chemical industry in the production of dyes, lubricants and cosmetics, (6) Tanin, extracted from the tree trunk and nut shells used in chemical compost
- Exported 6,405 M.T of cashew nut shell liquid (CNSL) in 2005-2006 (CEPC). Cashew shells and outer layer peel are sold to leather and paint industries.
- Cashew Research Station produces cashew apple syrup at an average of 200 bottles/year for local consumption.
- Cashew apple liquor (Feni) and cashew apple wine produced commercially only in Goa.
- 5-10% of nut shells are burned to fuel roasting or steaming process. CNSL is extracted from shells and later processed by paint industries. Currently 10 companies export, primarily to China.
- 1) Aguardente (alcoholic drink) 2) Juice (not for commercial purposes) 3) Unsufficient volumes of cashews to process CNSL
- *Commercialized Juice in Maputo is imported from Brazil.

**Future Targets**

- CEPC Vision 2020: 275,000 MT to be exported by 2020. Increase domestic raw nut production to 1.9 million MT. CEPC would like to ensure that 20% of cashews exported are value added and marketed with the "Made in India" brand.
- Target of 700 million USD in export revenue by 2007, 1 billion USD by 2010, and expansion of growing areas up to 500,000 ha by 2010. Increase domestic market to 20% by 2010.
- Targets for 2007: exports> US$ 10 million, jobs>4000 (AIA) projections
<table>
<thead>
<tr>
<th>Brazil</th>
<th>India</th>
<th>Vietnam</th>
<th>Mozambique</th>
</tr>
</thead>
</table>
| 1) Banco do Brasil  
2) EMBRAPA  
3) CENTEC (Instituto de Ensino Tecnológico)  
4) OCEC (Organização das Cooperativas do Estado do Ceará)  
5) UFC (Universidade Federal do Ceará)  
6) SEAGRI (Secretaria de Agricultura e Pecuária)  
7) SDLR  
8) INDI  
9) SETUR  
10) SEBRAE (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas)  
11) SESCOP/CE—Serviço Nacional de Aprendizagem do Cooperativismo do Ceará  
13) ASCAJU—Association of Cashew Growers of the State of Ceará  
14) FAEC  
15) SENA  
16) Centro Nacional de Pesquisa do Caju  
17) Sindicato de Exportação de Amêndoas  
18) Emater (Empresa de Assistência Técnica e Extensão Rural)  
19) Empace (Empresa de Asseio, Conservação e Propaganda do Caju) | 1) National Bank for Agriculture and Rural Development (NABARD)  
2) Cashew Export Promotion Council (CEPC)  
3) Department of Agriculture  
4) Indian Council of Agricultural Research  
5) Cashew Research Station of Kerala Agricultural University  
6) Directorate of Cashewnut and Cocoa Development  
7) National Research Centre for Cashew (KCC)  
8) Plantation Crops Research Institute (CPCR)  
9) Each cashew producing state has local affiliates of the national organizations listed above | 1) Ministry of Agriculture and Rural Development (MARD)  
2) Department of Agriculture and Rural Development (DARD)  
3) Viet Nam Institute of Scientific and Agricultural Engineering  
4) Institute of Agriculture Science of Southern Vietnam  
5) Department of Industry  
6) Institute of Policy and Strategy for Agriculture and Rural Development  
7) Institute for Scientific and Economic Research Policy  
8) Vietnam Chamber of Commerce and Industry  
9) Agriculture Extension Center  
10) Vietnam Cashew Association  
11) Department of Science and Technology  
12) International Labor Organization  
13) GTZ-SME Development Programme  
14) Vietnam Bank of Agriculture and Rural Development  
15) Vietnam Bank of Social Policy  
16) Center of Agricultural Policy (CAP) | 1) Instituto de Fomento do Caju (INCAJU, created 1997)  
2) Ministry of Agriculture and Rural Development (MADER)  
3) National Institute for Agronomic Research (INIA)  
4) Institute of Quality Standardization (INNOQ)  
5) Government Agencies  
6) NGO and Donors  
7) United States Agency for International Development (USAID), Agence Francaise de Developement, European Union  
8) World Vision, Technoserve, Adventist Development Relief Agency (ADRA)  
9) INCAJU is funded with the tax revenue |
<table>
<thead>
<tr>
<th>Pricing</th>
<th>Brazil</th>
<th>India</th>
<th>Vietnam</th>
<th>Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farm Gate Price</strong></td>
<td>Approx. .50 USD/kg raw cashews (USAID 2006); Due to an agreement between the Union of Cashew Producers of the State of Ceará (SINCAJU) and the processors' union (SINDICAJU), there is a minimum price of US$ 0.44/kg that must be paid for raw nuts delivered to processors.</td>
<td>Approx. .80 USD/kg raw cashews</td>
<td>Approx. .57 USD/kg raw cashews</td>
<td>MZM 10,000, USD 0.53 (2004-2005) (Luis Artur and Nazneen Kanji, 2005) 0.50 USD (2007) (Personal Interviews)</td>
</tr>
<tr>
<td><strong>Collector Gate Price</strong></td>
<td>.57 USD/kg from mini-fabrica (based on 2.25$R/USD exchange rate; USAID report)</td>
<td>Approx. .65 USD/kg raw cashews</td>
<td>little data on intermediaries; mainly purchased directly by processors</td>
<td></td>
</tr>
<tr>
<td><strong>Processor Gate Price</strong></td>
<td>1.01USD/kg mini-fabrica; .77 USD/kg for mechanized (based on 2.25$R/USD exchange rate; USAID report)</td>
<td>Approx 1.18 USD/kg (Harilal et al 2005)</td>
<td>Approx .80 USD/kg raw cashews (Technoserve)</td>
<td>.53 USD/kg</td>
</tr>
<tr>
<td><strong>Export Price</strong></td>
<td>4.7USD/kg mini-fabrica (USAID report)</td>
<td>Approx 5.45 USD/kg (Harilal et al 2005)</td>
<td>Approx. 4.3 USD/kilo</td>
<td>- Avg FOB price (Last 5 years, including tax): $454/ton - Peaked in 2004/05: $640/ton - Farmgate Price(Avg last 5 years): $272 /ton - 2004/05: $420/ton</td>
</tr>
<tr>
<td>Research and Development</td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
<td>Mozambique</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>R/D</td>
<td>EMBRAPA; National Center for Cashew Research, SEAG/CE</td>
<td>Regional Fruit Research Station (RFRS); Cashew Research Station at Kerala Agricultural University; National Research Centre for Cashew; University-based Research Stations in cashew producing states that are part of the India Coordinated Research Project on Cashew; Private firms</td>
<td>Center of Agricultural Policy (CAP); Institute of Agricultural Science; Institute for Social and Economic Research and Policy (ISERP); Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD)</td>
<td>National Institute for Agricultural Research</td>
</tr>
<tr>
<td>Seed tech</td>
<td>EMBRAPA has developed new seed varieties, but only large producers have benefited. Seeds from optimal progenies have been identified and promoted in Maharashtra - these are also researched at the institutions listed above</td>
<td>State institute has developed five new seed varieties. The best of those varieties can produce 4-5 tons/hectare.</td>
<td></td>
<td>Improved local strains as well as species imported from Brazil.</td>
</tr>
<tr>
<td>Genetic type tree</td>
<td>Only 9% of Brazilian producers have the dwarf variety</td>
<td>Between 30-40 cultivars released, 8-10 kg per tree output. 200,000 ha of government supported plantations are using high yielding grafts. 30% of cashew regions have adopted new tree varieties. Average yield in Binh Phuoc province is 2-4 tons/hectare (national average is 1.2 tons/hectare)</td>
<td></td>
<td>Avg tree yield lags behind other countries. - Outturn lags other countries. - Why? stock of cashew trees is old and poorly maintained - 42-46 lbs quality (TS Irish Aid)</td>
</tr>
<tr>
<td>Disease Resistance / Use of Pesticide</td>
<td>EMBRAPA has conducted extensive research on the development of disease resistant varieties and use of pesticides through its Integrated Cashew Production program. Primarily organic - Cashew Research Station at Kerala Agricultural University is exploring integrated pest management strategies. Tea mosquito bug is the principle pest but the Cashew Research Station has identified 20 insects as pests at its facility. Chemicals sprayed on government plantations in Northern Kerala controversial as they are considered the cause of rising birth defects in neighboring communities.</td>
<td>Pesticide available on open market. Commonly used. Some new varieties are also disease resistant.</td>
<td></td>
<td>1) Powdery Mildew Disease is a major problem. 2) Cost are too high for farmers to afford 3) Spraying is offered by INCAJU. The demand for this intervention exceeds the Institute's capacity. *Preference for spraying solutions to treat the trees over replanting. Short term vs. Long term impact</td>
</tr>
<tr>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------------</td>
<td></td>
</tr>
</tbody>
</table>
| **Types of Producers / % of Smallholder Producers** | 1) 94% of the 57,000 cashew nut producers in the country and are responsible for 52% of the harvest.  
2) 48% done by large-scale cashew plantations. They produce up to 40% of the cashews they process and buy the remaining supply from small and medium-sized producers. | 1) NABARD estimates that 90% of production is from small farmers who intercrop (with pepper, coconut, etc.)  
2) Remaining 10% is from government-operated plantations | 1) Smallholders: 95% of production.  
2) Approx. 1 million rural households (40% of rural population) have access to cashew trees.  
3) Cashews account for about 1/5 of total household income and 2/3 of total cash income. |

| **Production by Region** | 1) Ceara  
2) Maranhao  
3) Piaiu  
4) Rio Grande do Norte | 1) Maharashtra  
2) Andhra Pradesh  
3) Kerala  
4) Orissa  
5) Tamil Nadu (Directorate of Cashewnut and Cocoa Development) | 1) Binh Phuoc  
2) Binh Duong  
3) Dong Ngai |

| **Access to Land** | Land distribution a controversial issue in Ceara and Brazil more generally. Although land tenure systems have improved, agrarian reform has been implemented with variable success. | 1) The Department of Agriculture supports an Employment Guarantee Scheme to bring fallow lands under cultivation.  
2) The National Cashew Research Project has also prepared large tracts of land for new plantations.  
3) In the state of Kerala the existence of land ceiling until recently limited the establishment of privately-owned plantations  
4) Land access issues may vary by state according to land availability | Land tenure system, government owns all of the country's land.  
Land is assigned/allocated through a tenure system and men are generally the owners of land and trees. However women also own trees. |

**Directorate of Cashewnut and Cocoa Development**
<table>
<thead>
<tr>
<th>Brazil</th>
<th>India</th>
<th>Vietnam</th>
<th>Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financing</strong></td>
<td>Government-supported agencies include: 1) National Bank for Agriculture and Rural Development (NABARD) 2) Cashew Export Promotion Council (CEPC) 3) Microfinance Institutions and Self Help Groups 4) Cooperative and commercial banks finance SMES. 5) Value Chain Financing - trader credit, warehouse receipts and in-kind support such as shared transport and machinery (e.g. In Panruti, Tamil Nadu machinery is jointly owned or leased)</td>
<td>1) There is only one commercial bank that offers credit to processors at very high interest rates and requesting all sort of insurances. 2) A Loan Guarantee Fund is in place to support processors access to working capital. USAID and INCAJU are partners in this. 2) Some small NGO's offer microfinance services and prefer dealing with farmer associations (forming associations is extremely costly, bureaucratic, time consuming, $500) 3) Inability to use land as collateral makes credit difficult 4) Cashew processing is regarded as a risky business. Difficult to have access to loans to buy cashew and/or build storage facilities. Interest rates over 30% for this purpose (2003).</td>
<td></td>
</tr>
<tr>
<td>1) Banco do Nordeste is the main source of credit. 2) Credit offered for investment in starting mini-mills, rather than working capital for farmers (subsidies for fixed investment in ratio of 3 to 1 compared to working capital USAID 2006) 3) Value Chain Financing is common</td>
<td>1) Instituto de Fomento do Caju (INCAJU, created 1997) 2) Ministry of Agriculture and Rural Development (MADER) 3) National Institute for Agronomic Research (INA) 4) Institute of Quality Standardization (INNOQ) 5) United States Agency for International Development (USAID), Agence Française de Développement, European Union 6) World Vision, Technoserve, Adventist Development Relief Agency (ADRA) 7) National Strategy to promote the cashew sector (SNV) - ADPP and Technoserve</td>
<td>1) Ministry of Agriculture and Rural Development (MARD). One AEC in each province, 64 provinces, under provincial centers there are centers in every district. Reach approx. 80% of rural communities.</td>
<td></td>
</tr>
<tr>
<td><strong>Farmer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Ematerce (Empresa de Assistência Técnica e Extensão Rural do Ceará) 2) EMBRAPA 3) SEAGICE 4) Ministério do Desenvolvimento Agrário</td>
<td>1) NABARD 2) Cashew Exportation Promotion Council (CEPC) - Quality Upgradation Lab provides training on production techniques and quality standards 3) All India Cashew Research Project 4) Indian Council of Agricultural Research 5) District rural development agency 6) Cashew Research Station 7) Government extension offices located in most villages</td>
<td>National Agricultural Exention Centers (AECs) through Ministry of Agriculture and Rural Development (MARD).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
<td>Mozambique</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Inputs</strong></td>
<td>Data found in EMBRAPA publication is approx. 10 years old (so less accurate due to inflation and exchange rate changes) – To plant on hectar of dwarf cashew trees it is estimated to cost R$ 847,00, which is equivalent to the cost of 2,017 kg of cashew nuts. To maintain 1 hectar of dwarf cashew trees costs an estimated R$ 312,00, which is equivalent to 743 kg of cashew nuts.</td>
<td>National Cashew Research Project and the Indian Council of Agricultural Research train in use of planting materials and propagation methods. In some areas input sales are subsidized.</td>
<td>INCAJU focused on maintenance- offering fertilizer and care techniques rather than planting new trees. Too much demand for their services, not enough supply</td>
</tr>
<tr>
<td><strong>Quality Standards</strong></td>
<td>Quality standards are not strongly enforced through a price differential when purchased by an intermediary. Intermediaries will judge on color, size, etc. However, there appears to be little difference in price. (29)</td>
<td>1) India is the global benchmark 2)CEPC supports a Quality Upgradation Lab and trains processors. 3) Western India Cashew Co. has an accredited quality control unit.</td>
<td>There is currently a lack of universal quality standards. MARD is working on standardization of quality.</td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td>More farms are run by household members. In processing, low wages are a source of comparative advantage for India. Kerala has the highest wages in processing, which has caused firms to relocate their plants to other states.</td>
<td>Most farmers do not hire extra labor, however some need to during harvest season. Cost of labor per metric ton: Weeding: 17.8, Fertilizer/Pesticide: 47.31, Harvest/nut: 73.79, Other: 22.01, Total: 241.79 (USD, average cost over 30 years) (see Dak Lak Report)</td>
<td>1) High availability of low cost labour 2) Perception that working conditions have deteriorated in the liberalized environment 3)Factories assisted by Technoserve provide a free meal, have access to health services, and pay annual holidays.</td>
</tr>
<tr>
<td><strong>Seasonality</strong></td>
<td>Sept-Dec; employment drops after January</td>
<td>March-May</td>
<td>February - March</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Only 10% of production remains in storage and is sold between harvests. 30% of production is sold before the harvest and 60% is sold during it. (USAID 2006)</td>
<td>ICICI Bank finances digitized and interlinked warehouse storage facilities and offers commodity-based financing</td>
<td>Farmers do not have access to storage. Collectors collect nuts daily and processors store them.</td>
</tr>
<tr>
<td></td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Irrigation</strong></td>
<td>1) Avg cost of a microaspiration system for the irrigation of dwarf cashews planted in a space of 7 x 7 m, varies between US$ 1,150.00 and US$ 1,500.00 per hectare. For a drop system of cost varies between US$ 1,350.00 and US$ 1,600.00. (EMBRAPA 1996)</td>
<td>Irrigation not commonly practiced</td>
<td>Irrigation not commonly practiced</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Little information on gender issues</td>
<td>Farms are owned and operated by household but 95% of workers in processing facilities are women</td>
<td>Many farmers are women and ethnic minorities.</td>
</tr>
<tr>
<td><strong>Usage of By-products</strong></td>
<td>A range of food products for household consumption</td>
<td>Apple is used mostly for household use (fruit and juice)</td>
<td>Cashew apple is not used. Sometimes used as cattle feed.</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>A problem for small producers, which is why most sell their raw nuts to small or large traders</td>
<td>Modes of transport (carts, trucks) can be leased in Panur. Fair Trade Alliance Kerala coordinates transport of raw nuts from village depots to processing plants for its cooperative members</td>
<td>Competition for nuts results in collectors going to the farmers, therefore not an issue for farmers.</td>
</tr>
<tr>
<td><strong>Major Impediments</strong></td>
<td>1) Access to financing 2) Access to land</td>
<td>1) Price volatility is causing farmers to switch to rubber cultivation 2) Rising labor costs in Kerala 3) Difficulty of organic certification</td>
<td>1) Access to information 2) Access to land certificates 3) Lack of coordination and cooperation among farmers</td>
</tr>
<tr>
<td>Farm to Port</td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Intermediate Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petty traders</td>
<td>Small local traders receive raw nuts in exchange for their merchandise (food, consumer goods and agricultural supplies)</td>
<td>Most producers deal with 2-3 intermediaries</td>
<td>Up to 6 middlemen depending on distance</td>
</tr>
<tr>
<td>Main traders</td>
<td>Professionals who have financial resource and are knowledgeable about the producing regions.</td>
<td>Usually affiliated with larger processing units</td>
<td>Usually affiliated with larger processing units</td>
</tr>
<tr>
<td>Direct farmer to mill</td>
<td>Only documented in case of Pa-Rural coop system; or medium sized producers who can wait for payment</td>
<td>In Kerala there is significant distance between producers and the processing facilities. There are reports of a growing cottage industry in the nation as a whole due to rising labor costs.</td>
<td>Very little direct sales from farmer to processor. Easier for processors to work with a collector - efficiency of scale.</td>
</tr>
<tr>
<td>Commission</td>
<td>High interest rates and lack of transparency</td>
<td>Low in comparison to other countries (cultivators capture 16% of supermarket retail price while traders capture 2%)</td>
<td>Lack of transparency; middlemen make high margins because farmers are unaware of fair market prices. (Producers capture 30% of profit, Collectors 20%, Processors 30%, Exporters 20%)</td>
</tr>
<tr>
<td>Relationship middlemen/farmer</td>
<td>Abusive/power imbalance</td>
<td>Some traders provide informal credit in the off season</td>
<td>Still young, not established ties</td>
</tr>
<tr>
<td>Quality control</td>
<td>Traders determine prices; Price based on the perceived quality of the product and trustworthiness of the order rather than the size of the nuts, so standards vary from trader to trader.</td>
<td>Some traders and processors test quality of raw nuts. However, quality is determined by buyers in most cases.</td>
<td>Based on trader; methods are very informal and not technical; farmers may try to skew prices by weighing down cashews, which causes price depreciation</td>
</tr>
<tr>
<td>Transportation</td>
<td>Difficult to travel from farm to mini mill</td>
<td>Overall India has very good infrastructure</td>
<td>Transportation is not a major impediment for traders. Processors that move to more distant regions pay for transport of nuts, but this does not offset the higher profit margin due to cheaper labor.</td>
</tr>
<tr>
<td>Farm to Port</td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Processing Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of processor</td>
<td>Large firms and mini-mills</td>
<td>Public and private. Private dominates the industry. The cottage industry has grown recently.</td>
<td>Micro, small, medium, and large processors. Most state owned processors have been fully or partially privatized.</td>
</tr>
<tr>
<td>Financing</td>
<td>EMBRAPA, SEBRAE and CONAB</td>
<td>Commercial banks and district rural development agencies. In some regions processors are registered by district industries centers which facilitates their access to credit.</td>
<td>Financing provided by state-owned banks. Difficulties acquiring credit due to land use certificates.</td>
</tr>
<tr>
<td>Processing capacity</td>
<td>Some do not operate because of lack of supply; approximately 270,000 tons a year; all from Northeast of country</td>
<td>Exceeds domestic production: India imports approximately 50% of nuts processed</td>
<td>Exceeds domestic production; imports 300,000 tons of raw cashew nuts (43%) primarily from Africa and Indonesia.</td>
</tr>
<tr>
<td>Standards</td>
<td>HACCP and ISO favors large processors rather than mini-mills in compliance and certification</td>
<td>CEPC Integrated Scheme for Cashew Quality trains managers in processing that optimizes quality</td>
<td>Few processors adhere to ISO, HACCP, and GMP standards</td>
</tr>
<tr>
<td>Extraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelling Labor Costs</td>
<td>Approx. .88 USD/kg</td>
<td>Approx. .26 USD/kg</td>
<td>14 USD/kg (13.5 kg/day/worker)</td>
</tr>
<tr>
<td>Peeling Labor Costs</td>
<td></td>
<td></td>
<td>.23 USD/kg (11 kg/day/worker)</td>
</tr>
<tr>
<td>Sorting Labor Costs</td>
<td></td>
<td></td>
<td>.033 USD/kg (140 kg/day/worker)</td>
</tr>
<tr>
<td>Average monthly salary</td>
<td></td>
<td></td>
<td>54 USD/month</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>95% of labor is women. Women are specialized into one stage of processing upon gaining employment in a plant according to their skill and caste</td>
<td>Shelling done mostly by women and ethnic minority laborers.</td>
</tr>
<tr>
<td>Soaking/steaming</td>
<td></td>
<td>Steam boiling method allows the recovery of the Cashew Nut Shell Liquid (CNSL). Primarily drum roasting and steaming methods. About 5% of cashewnuts are dried in the sun for 2-3 days and shelled without roasting.</td>
<td>Two thirds of factories use burning method, one third use steaming method.</td>
</tr>
<tr>
<td>De-shelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini-mills use semi-manual removal techniques resulting in higher number of whole cashews (75-85%) vs. large processors who get only 50-55% with mechinized/impact deshelling</td>
<td>The most precise cutting machines are bought from Mangalore. MSEs are disadvantaged by local suppliers with inferior machinery. CEPC members can apply for equipment subsidies, but most shelling is done manually using mallets, which results in up to 90% whole kernels for skilled workers.</td>
<td>Semi-manual cutting, manual peeling (with knife), and manual sorting of nuts. Tried imported mechanized de-shelling, however were not satisfied with the quantity of broken nuts. Also had some sorting machines, however quality was not good.</td>
<td>Semi-manual</td>
</tr>
<tr>
<td>Processing Level</td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Usage of by-product</td>
<td>Export cashew shell liquid for industrial uses</td>
<td>CNSL is sold domestically and exported; shells are used to fuel steaming; liquor is sold in Goa</td>
<td>5-10% of nut shells are burned to fuel roasting or steaming process. CNSL is extracted from shells and later processed by paint industries. Currently 10 companies export, primarily to China.</td>
</tr>
<tr>
<td>Grading</td>
<td>4 scales of color; size classified by average quantity per pound (smallest are 450 units/lb. and largest at 160 units/lb. Price determination by a combination of size, lightness of color and wholeness.</td>
<td>26-32 types depending on color, scratch, size and wholeness; grading takes place in the factory per CEPC specifications. Despite training by NGOs, most MSEs don't grade and those who do use only 4 categories.</td>
<td>Different processors have different grade standards. Average is approximately 24 different grades. Sorted by hand according to size and color.</td>
</tr>
<tr>
<td>Technical Assistance</td>
<td>SEBRAE; CONAB, EMPBRAPA</td>
<td>Varies by state. In Maharashtra, NGOs provide training, but it is only partially implemented. CEPC Lab provides voluntary training of manufacturers, primarily in Kerala.</td>
<td>None</td>
</tr>
</tbody>
</table>

**Packaging Level**

<table>
<thead>
<tr>
<th>Farm to Port</th>
<th>Brazil</th>
<th>India</th>
<th>Vietnam</th>
<th>Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of packaging</td>
<td>50 lb. vacuum-sealed aluminum foil bags or two metal cans of 25 pounds each. Packaging for retail sale of semi-processed or roasted nut can be in glass or plastic jars, plastic bags, metalized bags, or metal cans, which can be between 50 g and 1 kg with the processor or packager brand label.</td>
<td>25 lb. vacuum-sealed tins filled with carbon-dioxide gas; developed industry standard: the flexi-pouch pack</td>
<td>Vacuum sealed in 50 lbs boxes for export.</td>
<td>Vacuum seal bags with Zambeque logo 25 kilos</td>
</tr>
<tr>
<td>Management of packaging units</td>
<td>Western India Cashew Co. Quality Control &amp; Packing Unit was one of the first to be awarded ISO 9001:2000 accreditation.</td>
<td>All packaging done by processors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional support</td>
<td>CEPC provides subsidies &amp; assistance for vacuum sealing, product upgrading and vacuum sealing machines.</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>GE vita packaging system (vacuum seal, carbon) is considered superior</td>
<td>Sorted by hand and/or machine for quality assurance, nuts also passed through metal detector to ensure purity of nuts for export.</td>
<td>Sorted by machine to ensure that no nuts were broken and final quality control</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td><strong>Market segment (% export)</strong></td>
<td>80%</td>
<td>50% (processed);</td>
<td>98%</td>
<td>1) 70% (unprocessed);</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Domestic consumption mainly of mini-mill lower quality cashews. High quality for exportation.</td>
<td>Export highest quality nuts. Low quality sold on domestic market.</td>
<td></td>
<td>1) Approx. 30%-40% of exports are W 320</td>
</tr>
<tr>
<td><strong>HACCP compliant (# of processors)</strong></td>
<td>Western India Cashew Company was one of the first to be certified in the industry globally. National Centre for HACCP Certification located in Trivandrum, Kerala. 7 (2005)</td>
<td></td>
<td>1) All AIA network operating over 3 years meet 60% of HACCP standards 2) At least 2 processors meet all HACCP standards</td>
<td>Quality of nuts is higher in the North than in the South</td>
</tr>
<tr>
<td><strong>ISO compliant (# of processors)</strong></td>
<td>Among formal processors only the largest firms are ISO compliant. 10 (2005)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Major importers</strong></td>
<td>US (70%)</td>
<td>US (38%), followed by the EU</td>
<td>2006: US (41%), China (20%), UK and the Netherlands (12%), and Australia (10%)</td>
<td>- Processors jointly export all their production through a Dutch Broker. Charges a 3% commission. - Main Market is Europe</td>
</tr>
<tr>
<td><strong>Marketing strategy consumer behavior</strong></td>
<td>Organic, Fair Trade and the traceability of Brazilian cashew are being explored and merit further development</td>
<td>Branding, flavored cashews as a new product, focus on “hand crafted” production</td>
<td>Branding is being considered; quality improvement; plans to develop domestic market (will rise as incomes rise)</td>
<td>1) The consolidation of the Zambique brand has been a strong component of the overall strategy 2) They are principally aiming for the European market. Less interest in US market</td>
</tr>
<tr>
<td><strong>Port to Export</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exchange rate</strong></td>
<td>A depreciated US dollar has negatively affected the competitiveness of Brazil's industry and has affected the profit margins of mini-mills and mechanized processors.</td>
<td>Industry has been hurt by the depreciation of the US dollar</td>
<td>Mozambique faces more exchange rate volatility from internal pressures such as inflation. Furthermore, since the major market for Mozambican processed nuts are in Amsterdam they are less concerned with a deflated US currency.</td>
<td></td>
</tr>
<tr>
<td>Port to Export</td>
<td>Brazil</td>
<td>India</td>
<td>Vietnam</td>
<td>Mozambique</td>
</tr>
<tr>
<td>----------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Comparative advantage</strong></td>
<td>The proximity to US; traceability</td>
<td>Labor, hand processing (high quality) and history of production</td>
<td>Processing capabilities, high quality nuts grown naturally (good soil for cashew production), higher yielding trees; close China market</td>
<td>Name recognition among brokers (Zambique), Long tradition, low cost of labor</td>
</tr>
<tr>
<td><strong>Export tax</strong></td>
<td>Until 2005 Brazil taxed all raw cashews exports above the quota of 10,000 tons at a rate of 30%. Currently, there is no export tax.</td>
<td>0.%</td>
<td>0.%</td>
<td>- Fixed yearly at a level between 18% and 23% - As of 2006, unchanged for five years at 18% of the FOB price - Important policy question. Whether to maintain or eliminate the tax - Support has been built in favor of eliminating the tax. However, this needs to go through congress where it was unanimously approved by the opposition as well as the dominant party</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td></td>
<td>ICICI bank funds digitized and interlinked warehouse facilities</td>
<td>Processors have their own storage facilities.</td>
<td>- Some processors now have storage capacity and warehouse is used as collateral. - Apparently, very recently introduced.</td>
</tr>
<tr>
<td><strong>Port infrastructure</strong></td>
<td>Ceara exports 80% of cashews through the ports in Fortaleza. Strong infrastructure supports this trade.</td>
<td>Feb. 2007 Cashew Bulletin article about improved container service from Kochi to the U.S.; Exports from ports at Kochi, Goa, Mangalore, Tuticorin and Visakhapatnam</td>
<td>All nuts are exported through port at Ho Chi Minh City.</td>
<td>The Nacala Port: - Recently privatized (2004? must check) - Can accommodate container ships, however b/c of north’s and Malawi’s low level of economic activity, the volume of goods shipped though the port is limited. - Many times goods are directed through Durban or other ports to gain economies of scale - Lacks adequate facilities such as lifters and tugboats, can create delays - Approx. 200 ships annually</td>
</tr>
</tbody>
</table>
Works Cited

Background Information on Brazil


http://www.unido.org/file-storage/download/?file_id=48672


Competitiveness


Value Chain Analysis

Forstater, Maya, Alex MacGillivray and Peter Raynard. “Responsible Trade and Market Access: Opportunities or Obstacles for SMEs in Developing Countries?” Vienna: UNIDO, 2006. http://www.unido.org/file-storage/download/?file%5fid=56036
http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf

http://www.unido.org/userfiles/PuffK/partnerships02.pdf

http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf

http://www.unido.org/file-storage/download/?file_id=24692


**Micro, Small and Medium Enterprise Development**


Standards


Access to Financing


Cashew Industry


Trends in Cashew Nut Production and Trade http://www.fao.org/inpho/content/documents/vlibrary/ac306e/ac306e05.htm

Brazil


SEBRAE et al., “Modernização da Cajucultura no Ceará,” March 2005

SINDICAJU, Sindicato das Indústrias do Beneficiamento de Castanha de Caja e Amendoas Vegetais do Estado do Ceará (Union of Cashew Producers of the State of Ceará) website http://www.sindicaju.org.br


India

Cashew Export Promotion Council of India website: http://www.cashewindia.org.html

Cashew Export Promotion Council of India, Cashew Statistics CD-ROM.


National Research Centre for Cashew website: http://www.nrccashew.org/technologies_developed.html


Interviews:

Rajiv Panthary and Vineeth Thomas, Chief Managers, ICICI Bank Rural Micro-banking and Agribusiness Group (RMAG)
Interview by Nikola M. Smith and Aimee D. Sostowski. Mumbai, India. 9 March 2007.

Joseph S. Pynadath, General Manager and B.S. Shekhawat, Chief General Manager, National Bank for Agriculture and Rural Development (NABARD)
Interview by Nikola M. Smith and Aimee D. Sostowski. Trivandrum, India. 12 March 2007.

K.N. Harilal, Centre for Development Studies
Interview by Nikola M. Smith and Aimee D. Sostowski. Trivandrum, India. 12 March 2007.

J. Rajmohan Pillai, Chairman of Beta Foods
Interview by Nikola M. Smith and Aimee D. Sostowski. Trivandrum, India. 13 March 2007.
Vinod Kumar, General Manager of Marketing, Western India Cashew Company/Wender’s Foods Pvt. Ltd.

Dr. K. A. Retheesh, Managing Director of Kerala State Cashew Development Corporation (KSCDC) and Kerala State Cashew Workers Apex Industrial Co-operative Society (CAPEX)

Sree Rajmohan, Assistant Secretary of Cashew Export Promotion Council (CEPC)

Dr. Jose Mathew, Associate Professor of Agronomy at Kerala Agricultural University and Head of the Cashew Research Station and A. Augustine, Professor at the College of Agriculture of Kerala Agricultural University at Cashew Research Station

Tomy Mathew, Fair Trade Alliance Kerala
Interview by Nikola M. Smith and Aimee D. Sostowski. Calicut, India. 16 March 2007.

Mozambique


http://www.intracen.org/aboutitc/events/cashewnuts/cashewnuts.htm


Interviews:

Jake Walters, Director of Technoserve, Mozambique.  
Interview by Melissa Hall and German Sarmiento, 12 March 2007.

Matule, Raimundo, Deputy Director of INCAJU. Interview by Melissa Hall and German Sarmiento, 12 March 2007.

Ali Cherif Deroua, Owner of Alexin Ltda.(processing plant) and President of AIA. 
Interview by Melissa Hall and German Sarmiento, 13 and 14 March 2007.

Rui Cardoso, Manager BCI Fomento. Interview by Melissa Hall and German Sarmiento, Nampula, Mozambique, 13 March 2007.

Silvino Martins, Owner of Condorcaju (processing plant). Interview by Melissa Hall and German Sarmiento, 14 March 2007.

Denise, Manager of Condorcaju (processing plant). Interview by Melissa Hall and German Sarmiento, 14 March 2007.

Vietnam

Branson, Adam. FAS Office of Agricultural Affairs at the U.S. Embassy in Beijing, China. http://findarticles.com/p/articles/mi_m3723/is_4_16/ai_117773761/print


*Interviews:*


