GLOBAL CASHEW MARKET

A SNAPSHOT OVERVIEW
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This document has not formally been edited by the International Trade Centre.
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Preface

This global cashew market overview was carried out within the framework of “Gambia Sector Competitiveness and Export Diversification Project” implemented by the International Trade Centre (ITC) in collaboration with the Ministry of Trade, Regional Integration and Employment of the Gambia.

The project aims at responding to several trade related development priorities of the Gambia and targets, among other objectives, at providing specific support to cashew nuts, groundnuts and sesame agricultural sectors. The main goals pursued by the project are to facilitate the identification of export opportunities, enhance quality and value addition of export products, support export diversification and strengthen the sectorial institutional support.

A “Cashew sector development and export strategy of the Gambia for the period 2014 - 2019” has been recently developed by Gambian cashew sector representatives in collaboration with the Government of Gambia, under the methodological guidance and with technical support from ITC. The strategy has been adopted by the Gambian Ministry of Trade, Industry, Regional Integration and Employment and introduced publicly through a seminar at the beginning of this year.

Within this context, the present cashew market survey has been undertaken with a view to inform cashew sector stakeholders on the current international cashew market situation and trends, facilitate the positioning of the Gambia in the global cashew market, and establish a framework for the export development of the sector. The information provided on cashew farming, processing and trade could be used to benchmark the performance and prospects of the Gambian cashew sector in the global market.

Two national consultants have previously assessed the situation of the Gambian cashew sector and participated in the process of elaboration of the national cashew sector development and export strategy, namely Messrs’ Fafading Fatajo and Gabriel Gomez. The information they have provided, completed with additional data from other sources and from stakeholders of the Gambian cashew business community has been elaborated and included in the strategy. The relevant excerpts are presented in Annex 1 of this survey for easy reference.

Several publications and articles listed under the last chapter References, statistical and internet resources cover various cashew market issues in various countries and regions. Rather than reflecting their content in historical detail, this survey concentrates on a snapshot overview of the recent developments in the international cashew market. The survey covers the key aspects of cashew farming and processing; the global production and trends for in-shell cashew and kernels; the factors influencing cashew consumption and trends in demand; cashew trade issues; as well as pricing and prices. The most recent statistical data available (2009 to 2012/2013) is analysed and presented as much as possible in a user-friendly, accessible graphical form.
## Abbreviations, glossary, HS classification codes and conversions

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<th>Abbreviation</th>
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<td>ACA</td>
<td>African Cashew Alliance</td>
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<td>ACI</td>
<td>African Cashew Initiative</td>
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<td>AFD</td>
<td>Agence Française de Développement</td>
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<td>AFI</td>
<td>Association of Food Industries (US)</td>
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<td>APC</td>
<td>American Peanut Council</td>
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<td>CBI</td>
<td>Centre for the Promotion of Imports from developing countries - the Netherlands</td>
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<tr>
<td>CENTA</td>
<td>Combined Edible Nut Trade Association (UK)</td>
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<tr>
<td>CEPCI</td>
<td>Cashew Export Promotion Council of India</td>
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<tr>
<td>C&amp;F</td>
<td>Cost &amp; freight</td>
</tr>
<tr>
<td>CIF</td>
<td>Cost, insurance &amp; freight</td>
</tr>
<tr>
<td>CNSL</td>
<td>Cashew nut shell liquid</td>
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<tr>
<td>US $</td>
<td>United States dollar</td>
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<td>EU</td>
<td>European Union</td>
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</table>

**Fair-trade**

The fair-trade system ensures trading as directly as possible with producer organizations, ensuring that all participants comply with fair-trade standards. These standards guarantee fair and sustainable terms of trade for producers in developing countries.

<table>
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<tr>
<th>Abbreviation</th>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FOB</td>
<td>Free on Board</td>
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<td>g</td>
<td>Grams</td>
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<tr>
<td>Ha</td>
<td>Hectares</td>
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<tr>
<td>HACCP</td>
<td>Food safety system ‘Hazard Analysis and Critical Control Points</td>
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<td>IFC</td>
<td>International Finance Corporation - World Bank</td>
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<td>INC</td>
<td>International Nut Council</td>
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<td>INR</td>
<td>Indian Rupee</td>
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<td>ISO</td>
<td>International Standards Organization</td>
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<td>ITC</td>
<td>International Trade Centre</td>
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<tr>
<td>Kg</td>
<td>Kilogram</td>
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<tr>
<td>Lb</td>
<td>Pound</td>
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<tr>
<td>N.A</td>
<td>Non available</td>
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<tr>
<td>RCN</td>
<td>Raw (in-shell) cashew nuts</td>
</tr>
<tr>
<td>SINDICAJU</td>
<td>Brazilian cashew nut manufacturers’ association</td>
</tr>
<tr>
<td>Ton</td>
<td>Always metric ton</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom of Great Britain &amp; Northern Ireland</td>
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<tr>
<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>VINCAS</td>
<td>Vietnam cashew exporters’ association</td>
</tr>
<tr>
<td>XOF</td>
<td>West African CFA franc: the currency of Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.</td>
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</table>
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Glossary, HS classification codes and conversions

In-shell, raw cashew  Cashew nuts harvested, before processing
Shelled cashew/kernels  Product obtained by roasting, shelling and peeling the in-shell cashew
Outturn  Weight of cashew kernels produced from a unit of in-shell nuts (grams per kg or lbs. per 80kg bag)
Roaster  Processor and packer of cashew kernels for retail or wholesale trade
Shelling  Processing removal of outer shell, peeling and grading of in-shell nuts

According to origin, year and the grading of the nuts prior to processing, one ton of raw cashew nut yields about 20% to 25% of decorticated kernels. The yield of Wholes in the kernels can vary from 55% to 85% depending on the process and the skill of the operators.

One ton of raw cashew can yield 125 kg CNSL and 54% cashew shell which can be used as fuel.

One ton of in-shell cashew is equivalent to 10 cartons of kernels in India and to 9 cartons of kernels in Brazil. One carton contains 50lbs./22.68 kg of kernels

One 20 ft. container can take 212 bags of 80 kg in-shell cashew, or 700 cartons of cashew kernels, i.e. /35,000 lbs. /15.88 tons kernels

1 acre = 4,046 m² or 0.4 hectare
1 hectare = 100 x 100 m = 10,000 m² or 2.47 acres
1 pound = 0.4536 kg
1 kilogram = 2.2046 lb.
1 ton = 1 metric ton (1000 kg)

HS Codes and ECOWAS NTLs for cashew products

<table>
<thead>
<tr>
<th>HS Code</th>
<th>Description</th>
<th>NTL</th>
<th>Description</th>
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<tbody>
<tr>
<td>080131</td>
<td>Fresh or dried cashew nuts, in shell</td>
<td>801310000</td>
<td>Cashew nuts, in shell, fresh or dried</td>
</tr>
<tr>
<td>080132</td>
<td>Fresh or dried cashew nuts, shelled</td>
<td>801320000</td>
<td>Cashew nuts, without shell, fresh or dried</td>
</tr>
</tbody>
</table>

HS Codes of the three largest cashew importers

<table>
<thead>
<tr>
<th>Country</th>
<th>HS Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>India</td>
<td>08013100</td>
<td>Cashew nut in shell</td>
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<tr>
<td></td>
<td>08013101</td>
<td>Dried raw cashew nut</td>
</tr>
<tr>
<td></td>
<td>08013210</td>
<td>Shelled cashew kernels broken</td>
</tr>
<tr>
<td></td>
<td>08013120</td>
<td>Shelled cashew kernel, whole</td>
</tr>
<tr>
<td></td>
<td>08013190</td>
<td>Shelled cashew kernel, other</td>
</tr>
<tr>
<td>Vietnam</td>
<td>08013100</td>
<td>Cashew nuts, in shell</td>
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<tr>
<td></td>
<td>08013200</td>
<td>Cashew nuts, shelled</td>
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<tr>
<td></td>
<td>0801310000</td>
<td>Cashew nuts, in shell</td>
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<td></td>
<td>0801320000</td>
<td>Cashew nuts, shelled</td>
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</table>
Notice of caution

Data on production, processing and trade of in-shell cashew and cashew kernels are not always reliable and information from different sources can vary considerably, therefore many of the published figures should be viewed with caution. For instance, raw cashew production is particularly difficult to assess: the nuts collected under the trees are not always weighed along each stage of the production and commercialisation chain including post-harvest, collect and purchasing, transfer and intermediary storages, processing and export. In fact, raw cashew production statistics are most frequently extrapolations of kernel output figures based on average kernel weight guesstimates. Mirror statistics are largely used in this survey.

Likewise, the number of small and medium scale cashew processing units is by far incompletely recorded and accounted for; therefore the data on their number, capacity and operational status are most often relative. As far as trade figures are concerned, considerable discrepancies appear between data reported by various sources, as well as by exporting origins and importing countries (the latest are often higher). Moreover, the unrecorded border trade in raw cashew escaping customs control is significant but difficult to account for.
1. Cashew production

Cashew is a perennial tree belonging to the Anacardiaceae family. Native to Brazil, the tree has spread to other parts of tropical South and Central America. Portuguese traders introduced it into India and Africa in the 1960’s to prevent soil erosion, as a fire and wind breaker and for wasteland development. The tree is now widely cultivated for its nuts and derived products in West, East and South Africa and in South Asia, from Sri Lanka to the Philippines.

1.1. Farming

Throughout the world, hundreds of thousands of subsistence farmers rely on cashew as cash crop and essential source of income. In many countries the nuts are sold during periods when no other crops are available for income security and for acquiring basic inputs for coming crop seasons.

About 85% of cashews cultivation is estimated to be done on smallholding farms ranging in size from 0.5 ha to 5 ha. The remaining 15% of raw cashew is produced on medium to large scale commercial plantations owned by large companies or individuals and operated by hired labour. Given the land tenancy structure and demographics, a majority of cashew smallholder farmers are elder people.

1.1.1 Botanical characteristics

Cashew tree is usually growing from the sea level to an altitude of about 1000 metres, in regions with annual rainfalls between 500 mm and 3750 mm. It has leathery oval leaves and bears reddish flowers growing in clusters, and red or yellowish pear-shaped fruits referred to as cashew apples. The kidney-shaped ovary with a hard double shell growing at the bottom of each fruit is the cashew nut. Between the shell and the nut is found a black caustic oil difficult to remove – the cashew nut shell liquid (CNSL), which can be processed for industrial uses.

The extensive root system of the tree helps it to tolerate a wide range of moisture levels and soil types, but commercial production is only advisable on well-drained, sandy loam or red soils. For maximum productivity, good soil and adequate moisture are essential.

Most cashew trees start bearing fruits in their third or fourth year and are likely to reach their mature yields by the seventh year, if conditions are favourable. Although the trees can live up to 50-60 years, most of them produce nuts for about 15-20 years only.

Like many other tree crops, cashew trees undergo cycles of 4 to 5 years when the output reaches a high pick, to drop afterwards and only recover stepwise.

Growing in a great number of habitats and cross-pollinating freely, cashew trees vary widely in terms of crop quality and yields. However, there are as yet very few named varieties; a distinction is made mainly between trees with yellow or red cashew apples.

1.1.2 Agricultural practices

Several farming systems are practiced, depending on the agro-ecological cultivation zones and environments. Between 70 and 180 trees can be planted per hectare in mono or mixed cropping systems. Farmers tend to plant fewer trees and leave space to intercrop with annual crops as far as space and soil
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fertility allow it, in order to alleviate their income risks when cashew prices are low. The choice of intercrops under the various farming systems depends on their compatibility with cashew and their comparative advantage in terms of profitability. The most common intercrops are yam, groundnut, soybean, maize, sesame, pineapples and pepper.

Propagation and culture

Land preparation, as well as the provision of adequate moisture levels and spacing is essential for attaining good cashew propagation and culture conditions.

The tree is usually grown from seeds placed directly in the field; sowing is the quickest and cheapest method of planting. Other propagation and culture methods include raising seedlings in nurseries, ground or air layering and approach-grafting. The disadvantages of sowing in comparison with planting nursery seedlings raised in plastic bags include lower rates of germination, danger of serious damage by animals and less opportunity for selection of seedlings.

In areas lacking irrigation facilities, cashew seeds should be sown or planted in the rainy season, during periods of regular rainfall.

Specific mixtures of fertilisers for young plants up to 5 years of age and for adult trees are recommended to be applied at determined frequencies, timings and rates.

Diseases and pests

Cashew can be affected by a number of different diseases and pests at different stages of its growth, which can cause considerable damage to the tree and the crop and require close control and chemical treatments.

As subsistence farmers cannot afford agro-chemical inputs such as fertilizers, fungicides and pesticides, the cashew crop is a good candidate for organic certification.

Access to land, agricultural inputs and extension services are of critical importance in cashew farming. Low farm gate cashew prices and high production costs in low-productivity smallholder plantations do not generate sufficient profits to maintain an adequate plantation management and to allow smallholders to invest in improved varieties and necessary agricultural inputs.

Knowledge on efficient cultivation and proper plantation management is not commonly applied by small cashew farmers, who lose interest in cashew plantings during low price periods.

An intensive cashew production requires higher investments providing for the use of improved planting materials on extended areas, the procurement of sufficient agricultural inputs, the application of good cultural practices and the use of manual or motorised equipment. The financing and input distribution systems predominant in most of developing countries render the application of inputs (pesticides, fungicides, motorized blowers, and spare parts) costly and often inaccessible to small farmers, who end up applying too few inputs at the wrong timing, leading to substantial losses in productivity.

Agricultural inputs comprising fertilisers, fungicides, insecticides and improved seeds and grafts, but less often agricultural equipment are subsidised in nearly all producing countries by governments, private companies and cooperative societies, but most often provided in limited/insufficient quantities.

Although increasing market prices and cashew demand have made it more attractive for smallholders to engage in cashew farming, little knowledge of good cultivation and post-harvest practices limit their capacity to increase productivity and obtain quality nuts as required on international markets. Good agricultural practices requiring relatively small investments and training of farmers can go a long way towards increasing yields and cashew productivity.

Public agricultural extension services which should play a key role in guiding and training farmers at village level are challenged by inadequate staffing, lack of skills and training, poor working conditions, insufficient motivation and lack of transport equipment in practically all producing countries. This hinders the productivity and profitability of cashew cultivation in particular in African countries.

1.1.3 Harvesting, post-harvesting, handling and storage

Cashew grows North and South of the equator. Harvests take place the year round, with harvesting seasons hardly overlapping in the different regions, as shown in Fig. 1.
Most of the countries producing cashew, which supply together about 80 per cent of world output, are located north of the equator. They harvest from February to May, the beginning and the end of harvesting seasons possibly varying by several weeks, depending mainly on weather conditions. The largest part of world raw cashew supplies is therefore concentrated during the first half of each year, wherefrom the dependence of raw cashew availabilities for the entire year on the crop harvested north of the equator.

Cashew producing countries south of the equator supply about 20 per cent of the global crop and harvest generally between September and December.

**Fig. 1: Raw cashew harvesting seasons**

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<td><strong>South Hemisphere</strong></td>
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<td>Mozambique</td>
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</table>

*Harvesting* is labour intensive and time consuming, but the work is not very difficult and women and children can usually help.

When fully ripe, the cashew apples fall to the ground. Harvesting involves collecting the nuts from the apples fallen on the ground. Workers clear therefore the surface under the trees from weeds; detach the nuts from the apple and collect them in baskets or sacks. On average, a worker can harvest a maximum of 50 kg of nuts per day.

In very dry climates, where the topsoil remains dry overnight, nuts can be left under the trees for several weeks without their quality being affected, but when humidity of the air or soil causes moisture and dew formation, the nuts should be reaped at least twice a week.

When cashew apples are processed into products such as jam or juices, they have to be picked from the tree before they fall naturally and may be damaged (they ferment and deteriorate quite rapidly). It is therefore recommended that apples are picked when they are just about to fall. The cashew apple keeps only for 24 hours after picking; apples have therefore to be carefully transported to avoid bursting and loss of juice.

*Drying of cashew nuts* is done in the sun in order to reduce their moisture content and to mature the seed in the infra-red and ultra-violet rays. Sun drying is carried out on smooth and slightly sloping drying floors, or on mats in bamboo or palm leaves. The nuts should be constantly raked during drying (one to three days) and protected from night humidity and rain.

The moisture content of cashew nuts at harvest is dependent on climatic conditions, the moisture content of the soil on which the nuts have fallen, the weed growth density under the tree and the laps of time passed between the nut fall and the harvest. High moisture content may deteriorate the quality of the
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kernel subsequent to the action of enzymes, mould or bacterial attack. Drying the nuts immediately after harvest is essential for preserving their quality, but this process is often neglected.

**Post-harvest handling**

In order to extract the nut from its hard shell, the shell is soaked in water softened by steaming, and further air-dried to a moisture content of 9 per cent. Each nut is rubbed and cracked manually, by setting it on a sharp blade and bringing another foot-powered blade through the outer shell. The outer shell separates from the nut, which is carefully picked out with a nut pick.

In-shell cashew is packed in sacks which are at times stored in the open awaiting shipment, frequently without protection from rain. They are thus subject to infestations which may only be detected when the damage has progressed to the point of heavy loss. Infestations can also occur in the shelled kernels at various stages of handling.

**Storage of nuts** is dependent on weather conditions. A safe storage implies waterproof dry floors, secured roofs and protected windows, adequate space to allow for stacking and moving around the bags and inspect storage conditions and raised wooden platforms to place on the stacks for preventing moisture to be drawn from the floor to the nuts. The nuts can be stored for about one year.

1.1.4 **Quality and quality standards of in-shell cashew**

Quality of in-shell cashew is assessed and measured all along the production chain, from farmer to the export point or the processing unit, that is to say:

- at producer level, farmers assess the quality of in-shell nuts in order to avoid the underestimation of their products and an inadequate pricing by buyers;
- at local buyers’ level, the quality of nuts purchased is measured to avoid removal of bad lots by customers (local exporters or manufacturers) and financial penalties;
- at exporters’ level, the quality of batched cashew received from producing regions is systematically controlled at ports;
- at the level of local shelling units, the quality of in-shell cashew is measured at the reception at factory.

Quality justifies to a great extent price differences between in-shell cashew shipments. Reliability of cashew suppliers is the other critical quality factor, as reputable buyers are preferably interested in reliable and timely deliveries. Quality-based defaults and delays in shipments disadvantage the reputation of suppliers penalise heavily the prices they fetch on international markets and disturbs global markets and price situation.

In-shell cashews have no international or national standard specifications. The main physical criteria used for grading individual in-shell cashew lots are: the outturn (yield of kernels by weight), the moisture content, the size of the nuts (nut count) and the proportion of damaged nuts. All these criteria are influenced by a wide range of factors including cashew variety, growing conditions, harvesting and post-harvest methods, and the storage conditions.

In-shell cashew sampling and quality measurements are following strict specific procedures.

The outturn, also called KOR (Kernel Output Ratio), represents the quantity of good kernels measured in British pounds (lb.) found in an 80 kg bag after shelling. For example, a high outturn of 54 lb./bag means that 54 lbs. of cashew kernels could be obtained from an 80 kg bag of in-shell nuts, i.e. a yield of about 30%. Cashew is priced according to the value of the outturn.

---

1 These factors are also fully valid in kernels trade
2 The unusual unit of measure in lb./80 kg bag reflects the Africa – India nature of in-shell cashew trade. African raw cashew is sold in 80 kg jute bags – the same bags generally used for storing cocoa, while weights in India are measured in pounds. The outturn can also be expressed in grams of kernels per kg of in-shell nut.

1 pound (lb.) = 0.45359 kg. 1 kg = 2, 2 lb.
Table 1: Average cashew outturns by producing country

<table>
<thead>
<tr>
<th>Origin</th>
<th>Outturn (lb. / 80 kg bag)</th>
<th>Yield (%)</th>
<th>Nuts count (per kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea Bissau</td>
<td>54</td>
<td>31</td>
<td>230</td>
</tr>
<tr>
<td>Indonesia</td>
<td>51 – 54</td>
<td>30</td>
<td>190 – 210</td>
</tr>
<tr>
<td>Tanzania</td>
<td>51</td>
<td>29</td>
<td>200</td>
</tr>
<tr>
<td>Benin</td>
<td>48</td>
<td>27</td>
<td>195</td>
</tr>
<tr>
<td>Cambodia</td>
<td>48</td>
<td>27</td>
<td>160 – 200</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>48</td>
<td>27</td>
<td>205</td>
</tr>
<tr>
<td>Mozambique</td>
<td>46</td>
<td>26</td>
<td>185</td>
</tr>
<tr>
<td>India</td>
<td>46</td>
<td>26</td>
<td>190 – 210</td>
</tr>
<tr>
<td>Nigeria</td>
<td>45</td>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>Vietnam</td>
<td>42</td>
<td>24</td>
<td>180 – 200</td>
</tr>
<tr>
<td>Brazil</td>
<td>37</td>
<td>21</td>
<td>160 – 180</td>
</tr>
</tbody>
</table>

Source: Trade

The outturn is a very important factor in considering the economic viability of a shelling operation. The other factors include which cashew grades are produced, the ease of shelling (how difficult is to remove the testa or the thickness of the shell), the taste of kernels, their moisture and the degree of insect damage.

The moisture content influences the preservation of cashew. Expressed as a percentage, it should be measured and monitored from harvesting to shelling. It is recommended that moisture is kept between 7 and 10% after drying. If the moisture content exceeds 10% the nuts are exposed to mould, and if it is less than 6% the nuts wither and lose weight. Too dry nuts are not only a shortfall for the seller, but are also too fragile during processing.

The nut count represents the number of in-shell nuts per kilogram\(^3\). In West Africa, depending on the year, most of the in-shell cashew has a nut count of 190 to 210. Associated with the outturn, the nut count provides information on the size of kernels.

The rate of damaged nuts indicates the amount of in-shell nuts damaged, such as immature, empty, moth-eaten, oil stained, mouldy and rotten. Damaged nuts should amount to less than 10%; a lot with a rate of damaged nuts exceeding 24% is rejected.

Other quality criteria for in-shell cashew are the foreign matter content (it should not exceed 5%) and the float rate (the percentage of cashew nuts that will float when poured into water; a good float rate should not exceed 18%).

The quality of in-shell cashew determines directly the profitability of processing and the quality of cashew kernels produced. An obvious example is the low quality of a very large part of the West African in-shell cashew exported, which is kept responsible for the very high percentages of low grade, non-exportable cashew kernels obtained through processing in India and Vietnam. Côte d'Ivoire produces nearly half a million tons of in-shell cashew, but less than a third of the nuts are of superior quality. Same is the case in Nigeria, Benin and Ghana, although with proper harvesting and post harvesting methods the quality of the crop could be greatly improved.

\(^3\) A nut count of 170 nuts/kg is considered excellent, 180-190 nuts/kg is very good, 190-200 nuts/ kg is good, while nut counts of 200-210 are middle, 210-220 low middle, 230 limit acceptable and nuts with lower count are poor quality.
1.2 Processing

1.2.1 Processed cashew products

The table below summarises the main products that can be obtained from processing in-shell cashew, cashew apples and cashew shells.

Table 2: Cashew processed products and their main uses

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Processing and uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-shell nuts</td>
<td>Kernels</td>
<td>Obtained by shelling and decortication of in-shell cashew previously dried, boiled and roasted. They are consumed directly across the world in a multitude of dishes, and also processed to roasted and salted nuts used alone or in mixtures with other tree nuts as snacks, as well as in industrial bakery and confectionary products. Whole cashew grades are dominantly roasted and marketed as snacks, while broken grades are used as ingredients in the manufacture of other food products</td>
</tr>
<tr>
<td>Cashew Nut shell Liquid (CNSL)4</td>
<td></td>
<td>Traditionally obtained as a by-product during the process of removing the cashew kernel from the nut, it is used industrially in the manufacture of adhesives, resins and natural insecticides.</td>
</tr>
<tr>
<td>Cashew apple</td>
<td>Anacardium compound</td>
<td>The Anacardium compound of the apple is used to treat dermatological disorders.</td>
</tr>
<tr>
<td></td>
<td>Jams, marmalade, butter and prunes</td>
<td>Cashew spreads are used in many countries. Cashew prunes produced by boiling the cashew apple in molasses, are very similar to dehydrated prunes or dates.</td>
</tr>
<tr>
<td></td>
<td>Non-alcoholic drinks</td>
<td>The apple is pulped by grating or pounding and the juice is pressed out and strained. Cashew juice is very often mixed with other fruit juices and syrups.</td>
</tr>
<tr>
<td></td>
<td>Alcoholic drinks</td>
<td>The juice of the cashew apple can be processed through fermentation into a wine with 6 - 12 per cent alcohol content, or into more concentrated spirits.</td>
</tr>
<tr>
<td></td>
<td>Pulp</td>
<td>The fibrous pulp obtained after extracting the juice from the cashew apple can be used as animal feed or dried and processed into diet fibre biscuits.</td>
</tr>
<tr>
<td>Cashew shell</td>
<td>Shell</td>
<td>Used as boiler fuel in cashew processing factories</td>
</tr>
</tbody>
</table>

Source: compilation from literature

1.2.2. Processing methods and operations

The main scope of processing is to remove the cashew kernel from its shell with as little damage as possible; whole kernels command a higher price than do broken pieces, and pale, ivory coloured or white kernels are preferable to coloured or burnt ones. The CNSL has to be removed during the process, without either contaminating the kernels or burning the hands of the processor.

Traditionally the various processing operations are performed manually or using very simple mechanical driers, ovens and shelling machines. This type of processing is largely in use in West and East African countries, as well as in India, Sri Lanka, Cambodia and Vietnam. In many cases, the quality of cashew kernels obtained manually is higher than that of kernels issued from mechanical processing. Indian or Vietnamese hand-processed kernels have quite often better quality than the Brazilian mechanically processed kernels.

Since the 1970s, cashew processing has been partially or totally mechanised. Small and medium-scale roasting, cashew nut shell liquid extraction and shelling operations are generally mechanised, while quite often the cleaning of raw cashew and the grading of kernels remain labour intensive, manual operations.

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4 The main markets are USA, the European Union, Japan and the Republic of Korea
There are significant differences in investment requirements, labour skills, hygiene requirements and levels of efficiency between the manual processing in small units and the mechanical and semi-mechanical operations in medium to large-scale plants. Manual processing involves lower investment and variable costs and achieves often greater efficiency in terms of kernel yield and the proportion of whole kernels extracted. However this system requires a large number of experienced workers who have to strive at unhealthy levels of exposure to CNSL. Mechanised processing systems require large volumes of nuts for an efficient operation and are more vulnerable to breakdowns due to shortage of spare parts.

A general scheme of cashew processing to kernels and the various processing steps is shown in Figure 2. The processing steps illustrated in Figure 2 are described hereafter.

1. The nuts are separated from cashew apples collected after maturation (fallen on the ground most often). Apples are removed along with any other foreign matter, while the nuts are further sieved manually or mechanically to remove dust and dirt.

2. The nuts are soaked in water up to moisture content of 9 per cent to avoid scorching during the next roasting operation. Conditioning operations in a closed environment are carried out in order to prepare for removal of the CSNL. They all require a certain amount of time and experienced operators. Specially designed equipment for these cleaning and conditioning operations has been developed for large scale plants.

3. Roasting and centrifugation prepare the nuts for shell removal. During roasting, the nut releases the CNSL which renders the shell brittle; this facilitates the extraction of the kernel when the shell is broken. Three roasting methods are in use: open pan roasting, drum roasting and roasting via the hot oil method. The latter is adapted to medium/large scale operations, implying higher equipment costs and supposing the viability of CNSL collection. The roasted nuts may be centrifuged further to remove any adhering surface liquid.

4. Shelling should yield the largest possible amount of clean, whole kernels free of cracks. Manual shelling is largely used in small-scale processing units; the quality of kernels obtained is often superior to mechanical shelling. A semi-mechanised process has been developed in Brazil. The first mechanised shelling system developed by Oltremare and various alternatives are in use in the medium and large scale cashew processing units. After shelling, shell pieces and kernels are separated, while still unshelled nuts are returned to shelling.

5. Pre-grading operation, which can be done mechanically in large-scale processing units, separates mainly the Whole grades from the broken kernels and sometimes also different size groups of whole kernels. This step reduces the work involved in final grading.

6. All processors dry the kernels prior to peeling. Kernel moisture content is reduced from about six per cent to three per cent. Drying causes the shrinkage of the kernel, thereby allowing the easy removal of testa mechanically or by hand and the production of the blanched kernels. Drying also protects the kernel from pest and fungal attack. Peeling step consists in the removal of the testa which is loosely attached to dry kernels.

7. Manual peeling is performed by gentle rubbing with the fingers and the use of bamboo knifes. Many types of mechanised peeling processes are in use, including air-blasting, suction, a freezing operation or a system of rubber rollers. However, the efficiency of these systems is low because of the difficulty to remove the testa, and the high level of breakage which can be as high as 30 per cent. After peeling, the kernels are weighed to record the daily output. Peeled kernels are highly vulnerable to insect infestation, mould growth and rodent attack (they should be stored in rodent-proof containers or rooms).
8. Peeled cashew kernels can be graded into 11 to 24 grades according to size, colour and condition. The grading operation offers the last opportunity for quality control of kernels, in particular for export.

Fig. 2: Cashew processing scheme

- Cleaning, sizing and conditioning
- Soaking and conditioning
- Roasting and centrifuging
  - Open pan roasting
  - Drum roasting
  - Hot oil roasting
- Shelling
  - Manual
  - Mechanical
- Expeller CNSL extraction
- Pre-grading
- Drying
  - Open sun drying
  - Solar/furnace
  - High volume furnace
- Peeling
- Grading
- Re-humidification
- Packaging

Source: ITC 1.
Boxes and arrows in orange refer to large scale (industrial) plants.
9. Moisture content of the kernels has to be increased from 3 per cent to around 5 per cent before packing, in order to render them less fragile and lessen the risk of breakage during transport. Final moisture content in excess of 6 per cent would favour mould growth. In humid climates, the kernels may absorb enough moisture during peeling and grading to make a further re-humidification process step unnecessary.

10. The packaging material for cashew kernels has to be impermeable, since cashew kernels are subject to rancidity and go stale very quickly. Kernels are usually packed for the export in air-tight cans of 25 lbs.

### 1.2.3. Grades and quality specifications for cashew kernels

The quality of kernels is more important than their price for accessing the global market. Western buyers are more and more restrictive, requesting certifications from recognised sources proving the commitment of their cashew suppliers to consistently high quality and safety standards.

Some of the typical technical requirements for cashew kernels traded in the various parts of the world are:

- The kernels should be dry and have the characteristic shape. Depending on their grade, they can be either scorched or non-scorched, wholes or broken, but they should always be free from CNSL and the testa;
- They should be totally exempt of living insects, moulds, rodent contamination and insect damage;
- They should have a natural smell with no rancid or unusual flavours;
- Their moisture content should not exceed 5 per cent by weight.

At present there are four internationally recognized standards for cashew kernels, namely:

- The standard of the US Association of Food Industries (AFI), which is the industry-approved standard the most accepted worldwide (see http://www.afius.org/Default.aspx?pageId=767108)
- The standard of the Cashew Export Promotion Council of India – CEPC (see http://www.cashewindia.org/php/cepcViewContent.php?type=C)
- The standard of the United Nations Economic Commission for Europe ECE/TRADE/C/WP.7/2013/30, which concerns the marketing and commercial quality control of cashew kernels. The standard, which has been revised and combine the provisions of the AFI, CEPC, Brazilian and Vietnamese standards, with inputs from the African Cashew Alliance and the International Nut and Dried Fruit Council, is given Annex 2
- International Standard Organisation standard ISO 6477:1988, which specifies general and specific requirements for cashew kernels for human consumption (moisture content, grading, sampling, methods of test, packing and marking). This standard has been reviewed and confirmed in 2011.

The key aspects of the AFI standard are:

- Kernels are graded into Wholes and Brokens
- Wholes are graded by size, measured in the number of nuts per kg (this is not a calibration, which can imply that a wide range of sizes may be included in a parcel). In practice, buyers expect a reasonable degree of uniformity in a parcel, which usually occurs as a function of the shelling outturn
- Brokens are graded by type of breakage (crosswise ‘butts’, lengthwise ‘splits,’ and pieces)
- Pieces are graded by size from large to very small
- Wholes and pieces are graded by colour, ranging from Whites to Second Scorched Wholes (the nuts get discoloured during the process of drying)
- Certain grades consist of damaged kernels, for instance with dark spots, inherent discolorations or shrivelling
**ACA Quality and Sustainability Seal** ([http://www.sa-intl.org](http://www.sa-intl.org)) is an industry-accepted tailor-made mark for African cashew, certifying product compliance with internationally recognized quality, food safety and social/labour standards. The Seal is not yet widely known to European and American buyers.

The specifications for Indian cashew kernels for export have been laid down by the Government of India under the Export Quality Control and Inspection Act 1963. Cashew kernels are graded according to shape, size and colour. The Export Quality Control and Inspection Act 1963 identified 33 different grades of cashew kernels, out of which only 26 grades are commercially available and exported.

The bulk of Indian kernels commercialised are classified in six quality grades (Figure 3).

**Fig 3: Commercial grades of Indian cashew kernels**

![Commercial grades of Indian cashew kernels](source)

The specifications of the grades sourced from CEPC are given in Annex 3. A more detailed classification of Indian kernels by grade, count, colour and related characteristics is provided by Ghosh Agri Tech P Ltd. Company, at [http://www.rawcashewnuts.com/grade-classification.html](http://www.rawcashewnuts.com/grade-classification.html).


In addition to the mandatory minimum HACCP standards, cashew processors are increasingly asked to comply with the British Retail Consortium ([http://www.brc.org.uk/brc_home.asp](http://www.brc.org.uk/brc_home.asp)), the International Food Standard ([http://www.ifs-certification.com/index.php/en](http://www.ifs-certification.com/index.php/en)) and ISO 2000 ([http://www.iso.org/iso/home.htm](http://www.iso.org/iso/home.htm)).

Exporters to US and EU countries should not only meet product specifications and standards, but their facilities must comply with the code of Good Manufacturing Practice and the HACCP management system to ensure compliance with the food safety requirements in importing countries.

US importers require that exporters’ food processing establishments have an FDA registration number and can be subject to audits by buyers’ representatives. The US Food and Drug Administration Food Safety Modernization Act - FSMA is shifting focus from inspection to tracking food safety before the products.

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5 [http://www.fda.gov/food/guidanceregulation/haccp/default.htm](http://www.fda.gov/food/guidanceregulation/haccp/default.htm)
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arrive in the US. (http://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm). A key component of
the FSMA is the requirement for food facilities to have preventive controls in place, such as HACCP and a
food safety plan. These are monitored through the Rule for Foreign Supplier Verification Programs (FSVP)
for importers of food for humans and animals (http://www.fda.gov/food/guidanceregulation/fsma/ucm361902.htm).

In practice, most processors do not produce all the different grades of cashew kernels; certain grades are
requested in such small quantities that it is uneconomical to produce them.

Quality assurance procedures are essential in cashew processing in order to ensure product consistency
between different batches.

1.2.4 Types of processing

Cashew processing facilities are usually located within cashew producing zones to reduce transport costs,
as cashew kernels weigh only up to 25% of the in-shell cashew (some 5 tons of in-shell nuts are needed to
produce 1 ton of cashew kernels).

Processors in India and Vietnam, with total installed processing capacities larger than their local in-shell
cashew supplies, have to import nuts from East and West Africa in order to keep their plants running
during the periods outside their harvesting seasons. They need to purchase and stock in advance a large
part of their anticipated yearly needs, which represents a considerable need for working capital.

Three types of processing coexist: cottage and small-scale units, medium scale and semi-industrial
factories and industrial plants. Most of medium scale, semi-industrial and industrial processing plants
utilise Indian, Italian and Japanese technologies in original or modified forms.

Cottage and small scale processing units have capacities below 100 tons of in-shell cashew per year and
use artisanal traditional manual techniques and possibly simple mechanised equipment. These types of
processors dominate the processing sector in most kernel producing countries largely due to their flexibility
and the lower investment and variable costs. They can achieve rather high efficiency in terms of kernel
yields and the proportion of whole kernels extracted. However, the processing operations require
sufficiently skilled workers who are exposed to unhealthy levels of CNSL.

A major source of kernels for local markets, these processors are usually collectives, local associations
who maintain certain stocks, produce and sell plain bulk cashews by measures, cans or in recycled bottles,
and target wholesalers and consumers through traditional markets. Given the informal nature of traditional
cashew processing and their widespread operations in all countries, their number and total processing
capacity cannot be estimated.

Medium-scale and semi-industrial processors with capacities between 100 and 500 tons of in-shell cashew
per year are second most encountered and the most dynamic actors in local cashew markets. They use
more advanced technologies and have relatively high fixed costs (equipment and facilities). Their
mechanized equipment is rather vulnerable to breakdowns and shortages of spare parts, and the quality
of kernels produced is below specifications when grading and sizing operations prior to shelling are not in
place or strictly controlled.

Many semi-industrial processing units are operated below their installed capacities or on a seasonal basis,
their production is not optimised and their production costs are high. In 2012, for example, the average rate
of utilisation of capacities of West African semi-industrial processors was estimated at only 21 per cent.
The critical underutilisation of installed capacities is due mainly to insufficient working capital to cover the
costs of sufficient in-shell cashew and other production inputs, and poor management skills.
Semi-industrial processors sell plain cashews in bulk, but most of them are also roasting, flavouring, packing and branding the kernels. In order to recover their high processing costs, their products are sold most often directly to local food processors, retailers (supermarkets frequented by foreigners, service stations) or in hotels and bars targeting high-end consumers. These processors are usually experimenting new packaging and products (such as mixed nuts snacks) and are active in developing new markets.

Large-scale industrial processors with capacities exceeding 500 tons of in-shell cashews per year operate in Côte d’Ivoire, Nigeria, Benin, Ghana, Burkina Faso and Guinea-Bissau. Many of the largest industrial processors are newly established and their number is rapidly increasing. Over 80 per cent of their output is meant to be exported.

The global in-shell cashew output in 2012 is estimated about 2.67 million tons, out of which 48 per cent were produced in Asia, 45% per cent in Africa (39 per cent in West Africa and 9 per cent in East Africa) and 7 per cent in Latin America (Chart 1, industry estimates).

An attempt has been made to assess the quantities of in-shell cashew processed commercially in 2012 in the major producing countries/regions. For this purpose, an initial estimation has been made of the number of small, medium/semi industrial and industrial scale processing facilities, their output in terms of in-shell cashew processed, the potential processing capacities and trends. The results are shown in Table 3.

The estimation of the number of processing units and their capacities should be taken with caution, as the information available is very scare and not always updated. In addition, many of the existing plants were idle or working only during the marketing seasons in 2012.
### Table 3: Cashew commercial processing performance in 2012

<table>
<thead>
<tr>
<th>Country/region</th>
<th>Estimated number of processing units</th>
<th>Processing performance in 2012</th>
<th>Estimated potential processing capacity in 2012 (tons)</th>
<th>Local processing trend</th>
<th>In-shell cashew production in 2012 (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quantity of raw cashew processed (tons)</td>
<td>Quantity processed as % of raw cashew produced</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>200 – 250 excluding seasonal operations (SS, MS/SI and I)</td>
<td>1 400 000</td>
<td>235</td>
<td>2 000 000</td>
<td>Stable</td>
</tr>
<tr>
<td>Vietnam</td>
<td>350 (MS/SI and I)</td>
<td>700 000</td>
<td>200</td>
<td>1 000 000</td>
<td>Slight increase</td>
</tr>
<tr>
<td>Indonesia</td>
<td>20 (SS, MS/SI)</td>
<td>15 000</td>
<td>20</td>
<td>30 000</td>
<td>Increase</td>
</tr>
<tr>
<td>Cambodia</td>
<td>2 (MS/SI)</td>
<td>200</td>
<td>0.25</td>
<td>800</td>
<td>Stable</td>
</tr>
<tr>
<td><strong>S/Total</strong></td>
<td>2 222</td>
<td>2 115 200</td>
<td>191.4</td>
<td>3 030 100</td>
<td></td>
</tr>
<tr>
<td><strong>West Africa</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>20 (14 SI and 6 I)</td>
<td>15000</td>
<td>3.3</td>
<td>50000</td>
<td>Increase 6</td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td>10 (8 SS and 2 MS/SI)</td>
<td>3500</td>
<td>2.2</td>
<td>45000</td>
<td>not available</td>
</tr>
<tr>
<td>Benin</td>
<td>6 (5 SS/MS and 1 L)</td>
<td>1800</td>
<td>1.4</td>
<td>10400</td>
<td>Increase</td>
</tr>
<tr>
<td>Nigeria</td>
<td>15</td>
<td>3000</td>
<td>35</td>
<td>42000</td>
<td>Slight increase</td>
</tr>
<tr>
<td>Ghana</td>
<td>10 (MS/SI)</td>
<td>5000</td>
<td>12.5</td>
<td>20000</td>
<td>Strong increase 2)</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>6 (5 MS and 1 SI)</td>
<td>4000</td>
<td>13.3</td>
<td>15000</td>
<td>Increase</td>
</tr>
<tr>
<td>Togo</td>
<td>1 SS</td>
<td>100</td>
<td>0.1</td>
<td>1000</td>
<td>Increase</td>
</tr>
<tr>
<td>Mali</td>
<td>2 (SS and MS)</td>
<td>60</td>
<td>0.3</td>
<td>100</td>
<td>Slight increase</td>
</tr>
<tr>
<td>Senegal</td>
<td>15 (SS, MS and SI)</td>
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<td>Stable</td>
</tr>
<tr>
<td>Gambia</td>
<td>4 (SS)</td>
<td>25</td>
<td>0.2</td>
<td>100</td>
<td>Slight increase</td>
</tr>
<tr>
<td>Guinea</td>
<td>10 (SS/MS)</td>
<td>100</td>
<td>1</td>
<td>500</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>S/Total</strong></td>
<td>102</td>
<td>59685</td>
<td>6.3</td>
<td>143950</td>
<td></td>
</tr>
<tr>
<td><strong>East Africa</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>20, but only 6 operational</td>
<td>10000</td>
<td>6.9</td>
<td>20000</td>
<td>Slight increase</td>
</tr>
<tr>
<td>Mozambique</td>
<td>20 (19 SI and 1 I)</td>
<td>20000</td>
<td>20</td>
<td>40000</td>
<td>Increase</td>
</tr>
<tr>
<td>Kenya</td>
<td>20</td>
<td>8000</td>
<td>80</td>
<td>15000</td>
<td>Stable</td>
</tr>
<tr>
<td><strong>S/Total</strong></td>
<td>60</td>
<td>38000</td>
<td>16.2</td>
<td>155000</td>
<td></td>
</tr>
<tr>
<td><strong>Latin America</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>21 (10 MS/SI and 11 I)</td>
<td>190000</td>
<td>111.8</td>
<td>450000</td>
<td>Stable</td>
</tr>
<tr>
<td><strong>All countries considered</strong></td>
<td>2427</td>
<td>2402885</td>
<td>102</td>
<td>3779050</td>
<td></td>
</tr>
</tbody>
</table>

SS - Small scale; MS/SI – Medium/Semi industrial scale; I – Industrial scale

Source: ITC compilation from published and trade sources

6 Olam International opened in 2012 the largest processing plant in Africa, with a capacity of 30 000 tons/year of in-shell cashew
The countries considered processed together 2.4 million tons of in-shell cashew in 2012, representing 90 per cent of the world output (estimated at 2.67 million tons - see chapter 3.2 below).

Three countries produced 95 per cent of the processed cashew in 2012: India (58 per cent), Vietnam (29 per cent) and Brazil (8 per cent).

The added value of the global cashew economy is mainly captured by India and Vietnam, which import large amounts of in-shell cashew from Asian and African countries to feed their processing industries. These countries have four distinctive particularities:

- They have large local and/or neighbouring consumption markets with strong demand for all grades of cashew. India is the largest individual consumer of cashew kernels in the world, Vietnam shares a border with China and the Asian requirements for cashews for cooking are high, while Brazil holds stocks for North American cashew kernel market;
- Until recently, their labour costs were among the lowest in the world;
- Their governments strongly supported the development of the domestic processing;
- They were safe from disastrous civil wars and other major national adversities.

The situation of cashew processing sectors in India, Brazil and Vietnam is however changing: in over-capacity, many of their facilities are idle or underutilised, labour costs are escalating and the increasingly insufficient domestic availabilities of in-shell cashew to feed the local plants rendered cashew processing more and more dependent on imports from the distant Africa. As a result, they are supporting cashew processing in Africa by investments and the direct involvement of large Asian and Brazilian cashew producers and traders.

Asian countries produced 48 per cent of the total cashew crop harvested by the group of countries considered in Table 3, but processed 88 per cent of the raw cashew produced worldwide (Chart 2, source ITC).

With installed processing capacities exceeding largely the local supplies of in-shell cashew, India and Vietnam have resorted to imports from West and East Africa. The quantity of in-shell cashew processed was nearly the double of the available domestic supplies, while the rate of utilisation of installed capacities averaged 70 per cent.

West African region harvested in 2012 over a third of the world cashew crop, and 39 per cent of the total output of the group of countries considered, but processed locally only about 2 per cent of the harvest. Out of the 59 685 tons of in-shell cashew estimated to have been processed in West Africa, a quarter came from Côte d’Ivoire, 8 per cent per cent from Ghana, 7 per cent from Burkina Faso, 6 per cent from Guinea Bissau and 5 per cent from Nigeria. The current average rate of utilization of the sub regional processing capacities is estimated at 40 per cent, the larger-scale plants having however recorded rates of utilisation of around 60 per cent.

West African processing is growing fast: new export-oriented plants have been installed during the past two years in Benin, Burkina Faso, Côte d’Ivoire, and Nigeria, while others are being planned.

East African region produces now 9 per cent of the world in-shell cashew output, but domestic processing is very limited: in 2012 only 39 000 tons are estimated to have been processed. Efforts are being made to develop cashew processing in Tanzania and Kenya. In order to protect its local processing sector, Kenya imposed a ban on exports of in-shell cashew in 2009. This measure supported and explains the rise of the quantity of nuts processed in 2012 to 80 per cent of that year’s harvest.

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7 Information was not available for the Philippines, Thailand, Malaysia, Sri Lanka and China, but their cashew kernel production is small, limited to local market use, and the technologies used are mostly small scale.
Brazil, the third largest cashew processing country, processed its entire local cashew harvest for a long time, banning imports from abroad. Since 2010, the country is faced with a decline of local cashew production and forced to increasingly import West African in-shell cashew, to cover the requirements of the processing sector and to be able to maintain its position as exporter of kernels in the international market.

1.3. Global production

1.3.1. In-shell cashew

Yields

Cashew yields vary widely between countries, as well as between different cultivation areas in the same country, depending on climatic conditions, cultivation techniques, tree varieties and the age of plantations. In West Africa for instance, in optimal climatic conditions, local cashew tree varieties can yield at maturity over one ton/ha/year of in-shell cashew on large, professionally operated plantations using best cultivation practices. In the same area and optimal climatic conditions, mature trees on small farms traditionally operated produce 100 to 300 Kg/ha/year of raw cashew.

A comparison of average in-shell cashew yields obtained in 2011 in Latin America, Asia and Africa is made mainly for benchmarking reasons (Charts 3, 4 and 5).

Yields in Latin America and Asia are based on the latest Factfish/FAOSTAT data of 2014. FAOSTAT estimated the average world cashew yield in 2012 at 580 Kg/ha.

African yield figures illustrated in Chart 5 have been presented by ACi at ACA Annual Conference of September 2012; they are used on the assumption that ACA field-based estimations may be more accurate than FAO figures.
In 2011, Indonesia and India have achieved the highest yields between Asian producing countries (885 Kg/ha and 708 Kg/ha respectively – Chart 3).

The highest Latin American yields the same year were recorded in El Salvador and Peru, amounting to 874 Kg/ha and 505 kg/ha respectively. Brazil produced 302 kg/ha of cashew on the average (Chart 4).

Nigeria is estimated to have harvested 700 Kg/ha of in-shell cashew in 2011- the highest average yield in West Africa, (comparable with India), followed by Mozambique with 600 kg/ha (Chart 5).

**Surfaces under cashew cultivation in 2012**

Over 4.4 million hectares are estimated to have been under cashew cultivation in 2012.

It is noteworthy that surfaces under tree crops, such as cashew, are not directly price sensitive as it is the case with annual crops. The extent of the surfaces cultivated cannot be adapted from one year to the other according to the immediate profitability offered by tree crops.

**Production**

According to industry sources, world production of in-shell cashew increased by 2 %/year\(^8\), from 2.41 million tons in 2007 to 2.67 million tons in 2012 (Chart 6).

The relative importance of supplying regions and countries changed significantly over this five years period. Asian region accounted for a half of the in-shell cashew produced, West Africa for nearly a third and Latin America and East Africa for 11 per cent and 8 per cent respectively, as shown in Chart 7.

The evolution of the relative standing of in-shell cashew producers over the period results from the comparison of these figures with the ones shown in the previous Chart 1 referring to 2012 production performances.

West African shares in the global supplies grew significantly (31% on the average over the period, against 36 per cent in 2012). The rise in importance of Eastern African suppliers was weaker (8 per cent over the period against 9 per cent in 2012). The increase in importance of African suppliers compensated the decrease in the weight of suppliers from Latin America (11 per cent against 7 per cent) and Asia (50 per cent to 48 per cent).

Cultivation of cashew could be extended in India, Cambodia, Malaysia, the Philippines and Thailand. In order to improve the competitiveness of their production, these countries consider the transition to more intensive farming, shifting to the cultivation of higher yielding cashew varieties and the application of better cultivation practices.

**West Africa** is the youngest cashew producing region. The majority of plantations were set up in the late ‘90s, fuelled by the growing Asian and recently Brazilian import needs for in-shell cashew, as well as the increase in its prices and the growing trade between West Africa, Asia and Latin America. Since the early 2000s, significant investments and large research and development programs took place in West Africa, largely financed by foreign investments. Cashew sectors in West African producing countries are getting organised and the regular increase of domestic processing creates added value to locally produced cashew. The development of cashew production in the sub-region is foreseen to continue as long as no political or macroeconomic disturbances occur.

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\(^8\) Same annual growth rate as cashew kernels production
In *East Africa*, the commercial cultivation of cashew is established since over 50 years. Mozambique pioneered and developed its cashew industry to the point that the country became world second largest producer and processor of cashew after India, and has led the development of cashew cultivation and processing in Tanzania and Kenya. However, the violent civil war in Mozambique and political unrest in the region stopped cashew developments until the beginning of this century. Production of cashew is experiencing currently a slight growth, with the renewal of old plantations and the grafting of newly developed high yielding varieties producing among the best quality cashew in the world.

Brazil dominates the Latin American supplies of cashew. Despite significant investments in the sector and the availability of high-yielding varieties, Brazilian production of in-shell cashews is on a continuing downward trend since 2008.

World leading in-shell cashew producers and their estimated outputs in 2012 are shown in Chart 8.

![Chart 8: Leading in-shell cashew producers in 2012 (tons)]

*India* is the largest producer in the world, maintaining its dominant position since the 1990s. In order to keep up with the rise in the domestic and export demand for cashew (the country is the largest cashew consumer worldwide and second largest exporter of cashew kernels), Indian companies have recently invested into the purchase of large plantations and the financing and management of processing facilities in Africa.

*Côte d’Ivoire* was the second largest producer of in-shell in 2012, overtaking Vietnam’s position. Indonesia and Cambodia are emerging as noteworthy producers.

### 1.3.2 Cashew kernels

Global production of kernels continued its average growth of about 2% per year, from 488,500 tons in 2007 to 543,200 tons in 2012.

![Chart 9: Evolution of cashew kernel production 2007 - 2012 (tons)]

The lowest production peak of 2010 has been caused by the very tight global supplies due to a combination of factors: in-shell cashew crops below expectations at all major origins, disturbances in West...
African shipments caused by the civil unrest in Côte d’Ivoire, and the pressure on global supply availabilities put by the increased Indian and Chinese consumption.

About 85 per cent of the global cashew kernels output in 2012 was produced by India (52 per cent), Vietnam (26 per cent) and Brazil (7 per cent).

The position of the major cashew kernel producing countries changed rapidly since 2011. According to information provided by Rongead, while Indian production was practically stagnant and the Brazilian output decreased by 25 per cent over the period 2011 to 2013 (see Chart 10). Production increased considerably in Vietnam (28 per cent over the 3 years period) and more than doubled in the West African region, in particular in Côte d’Ivoire and Ghana. Although far behind the three leading cashew kernel producers (India, Vietnam and Brazil), Côte d’Ivoire is at present the fourth largest cashew kernel producer in the world.

1.4. Major trends in production and processing

Production of cashew is difficult to adjust rapidly to prices, because the trees need a minimum of six years to achieve full bearing, their yielding is cyclical (inherent to tree crops) and their output is heavily dependent on climatic conditions practically impossible to act upon. Therefore the sole practical option left to processors in order to ensure sufficient supplies from year to year will remain to access different supply sources from distinct geographical locations.

The growth of Indian and Vietnamese in-shell cashew production is slowing down despite government support programs. In Vietnam this is mainly due to farmers’ preference for rubber cultivation, offering better returns, while in India cashew cultivation is moving north from the traditional, more productive Southern states. This implies that growth in processing in these two largest kernel producing and exporting countries will be increasingly depend of in-shell cashew imports from African countries.

Large Asian and Brazilian companies/multinationals will continue to support the development of in-shell cashew cultivation abroad and facilitate its shipping in order to maintain their competitive positions in the market by ensuring adequate supplies of raw cashew and the economically acceptable rates of utilisation of domestic capacities.

Small scale cashew suppliers could continue to access international markets as long as they are either grouped, or tight to large exporters/traders who can offer reliable supplies in quantity and quality on import markets.

Considerable investments are required for the provision of modern, performing equipment and efficient processing methods in very many old cashew processing units in Asia and Africa, in order to improve the price competitiveness of their products and upscale to acceptable levels their quality and food safety.

standards. The trend is to install medium scale and large processing plants (as the ones recently installed in Côte d’Ivoire and Ghana).

The raising number of mechanical cashew processing facilities will increase the ratio of Broken and Whole grades brought to the market, wherefrom the need to develop the interest and increase the demand for Broken grades through new utilisations and market diversification. Meanwhile, efforts are made to develop affordable shelling machines that can produce higher amounts of Whole grades.

From an economical point of view, in-shell cashew processing will remain located in the production zones. An increasing number of foreign cashew companies and investors are likely to finance export-oriented cashew processing units in African countries and export the largest part of their production in the medium term. Asia will remain however the largest cashew processing region because of the competitiveness of processing sectors in India and Vietnam in particular, and their benefit from having large and dynamic cashew domestic markets.

The valorisation of cashew by products in countries with very small local markets will continue to be economically problematic. The commercial valorisation of cashew by-products in African countries implies the development of reasonable size local consumption markets and the use of profitable processing techniques.

The increase of production efficiency and the retention of added value in the country of origin through domestic processing are key development objectives in nearly all cashew producing countries. In addition, cultivation of certified organic cashew fetching higher prices on one hand, and the processing and commercialisation of by products from primary and secondary processing on the other hand, are likely to be developed to a larger extent.

In Western importing markets, sustainable sourcing practices at retail level (important and industry-driven initiatives), programs and standards will increasingly support the sustainable cashew production and trade. An example is the setup of the Supplier Ethical Data Exchange Sedex (http://www.sedexglobal.com), a non-profit organisation dedicated to driving improvements in responsible and ethical business practices in global supply chains. A raising number of European manufacturers and retailers use already the Sedex database to verify cashew suppliers’ credentials regarding labour and standards, health and safety issues, environment and business ethics. The choice of cashew suppliers in Europe will remain also influenced by their compliance with the Business Compliance Initiative – BSCI (https://www.bsci-intl.org) and the Social Accountability 8000 – SA 8000 (http://www.sa-intl.org).

Moreover, increased concern about food traceability, in particular in Europe and USA, puts cashew suppliers offering full traceability of their kernels are at a competitive advantage. Adoption of traceability systems in cashew trade will therefore be increasingly important in order to access the developed countries’ markets.

Cashew cottage and small scale processing raise often major food safety problems. Small scale processors remain dependent on the size of the local market as their direct access to international markets is likely to remain difficult because of problems encountered in complying with the high quality and food safety standards, as well as the packaging and traceability required.

Reliability of stakeholders involved into cashew production, processing and trade has been previously mentioned as a quality factor. Contract defaults or renegotiations at every level of the supply chain, from farmers to exporters, are occurring all the time and at all origins and destinations. Sellers usually default in rising cashew price periods, and the buyers in falling markets. This disrupts the markets and efforts will hopefully be made to improve the situation.

Linkages in the supply chain are underdeveloped between growers and processors, between processors and roasters/packers and between roasters/packers and retailers. As regular and sustainable supplies of quality cashews are becoming an increasingly serious issue for the future, it is expected that the interrelations within the total supply chain and the collaboration with the primary producers will have to be reinforced worldwide.

10 According to industry sources (Red River Foods Inc.), the yield of Whole grades obtained in 2012 by the three main producing/exporting countries per ton of export kernels was 80 per cent in Vietnam, 75 per cent in India (shelling done mostly manually) and 53 per cent in Brazil.

11 In general, cashew apple prices are below 10 per cent of the kernel prices, while CNSL ex-factory prices for large quantities in bulk are 1 per cent below the price of kernels.
2. Cashew consumption and trends in demand

2.1 Uses of cashew products

The major uses of cashew products are already summarised in Table 2, chapter 1.2.1 and considered in more detail below.

The use of raw cashew kernels, i.e. simply decorticated, is most common in Asian countries for cooking purposes. Consumption is expected to grow for culinary and confectionary applications, already most common in India, Pakistan, and Vietnam, other South East Asian countries and Brazil (main ingredient in sweets).

Elsewhere, the bulk of cashew kernels are consumed as snacks roasted, salted, honey or spice-coated. Strongly promoted and already popular as TV and drink snacks, cashew kernels alone or part of trail mixes are appealing to affluent consumers as fashionable and healthy eating products. It is estimated that about 80 per cent of cashew kernels are consumed as snacks. Whole nuts and large pieces are the grades preferred for this use, mainly WW320, WW450 and WW240. Consumption of kernels as snacks is on the rise among the middle, upper-middle and high-income groups. However, cashew too high prices in comparison with competing almond or pistachio nuts have a negative impact on consumption, as they can be replaced for this use either by other edible nuts or by other types of snacks.

Raw or roasted cashew kernels are also used in USA and some Asian and African countries for the manufacture of cashew butter, which is also an alternative to peanut butter for those who are allergic to peanuts.

The use of cashew kernels in the confectionary sector, for the manufacture of sweets and chocolates, is more developed in India, South East Asia and Brazil, but has not yet taken off in Europe or Japan. This consumption is regional and unlikely to grow outside those particular regions. All grades could be used in confectionary, with the exception of Western Europe where Brokens are not popular.

Although bakery offers a considerable market for nuts including cashew kernels, cashews has not made inroads into this sector with the exception of India and the US to a limited extent (cookies and brittles). Small cashew Pieces could develop a market in bakery, but they are usually considered as a sale off in comparison with blanched, sliced or diced almonds, hazelnuts, walnuts and pecans. Bakery industry tried to popularise the use of cashew when almonds and hazelnuts prices are high, but considered that its flavour does not go well with bakery products and their use is made more difficult by the fact that they are not offered as ready made premixes suitable for use in food processing.

The extract from IFC study “Prospects for Cambodia’s Cashew Sub-sector” given in Annex 3 enumerates more detailed specific uses of cashew Pieces and Broken grades.

2.2 Global cashew kernel consumption

The global cashew kernel consumption is estimated to have increased by an average of 7 per cent per year over the first decade of this century. Since 2009, the reduction of

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12 Consumption is defined as the total amount of consumer goods (or services) that an individual (or group of individuals) really uses during a given period of time. The consumption reflects the relationship between real disposable income and consumer spending.

Demand represents the quantity of goods (or services) that a consumer (or a group of consumers) desires and wishes to purchase for a given price. However, demand is determined by many different factors other than their own price, such as the price of substitute or complementary goods (or services).
consumption in Europe and the United States triggered mainly by price volatility with sharp increases, and the relative stagnation of the global cashew production triggered a slowdown in the growth of the global cashew market.

It is estimated that the average annual growth rate of the global cashew kernel consumption has not exceeded one per cent between 2007 and 2012 (Chart 11).

The growth rate differed however according to markets: while demand in traditional markets (USA, Japan and Western Europe) was nearly stagnant, that of emerging markets\(^{13}\) rose faster in after mid-2011 under the influence of cashew price stabilization and the concurrent increase in prices of competing California almond and pistachios. Indian statistics indicate also a marked increase in domestic cashew consumption.

Chart 12 illustrates the breakdown of world cashew kernel consumption by main producing regions and countries in 2012.

![Chart 12: Global cashew kernel consumption 2012 (Total 550 000 tons)](chart)

India, Brazil and Viet Nam together produced about 85 per cent the world kernels output in 2012, and consumed domestically a little more than a third of the global cashew intake.

India has traditionally large and dynamic domestic market for cashew kernels. The country maintained its position as world leading consumer, with 31 per cent shares in the total consumption in 2012. Given India’s position as leading exporter of cashew kernels and the international market preference for high kernel grades, India is valorising lower grades since a long time for local consumption.

North America and Europe consumed about 44 per cent of cashew kernels produced worldwide in 2012 (24 per cent and 17 per cent respectively).

The development of a larger middle class with higher spending revenues fuelled the growth of cashew consumption in emerging markets. Middle East, China, Russia and Eastern European countries are estimated to have covered nearly 15 per cent of cashew kernel consumption that year. Consumption of cashew kernels is also increasing in many smaller markets worldwide, contributing to attenuate the impact of the macro-economic crisis on the global consumption.

Historically, consumption of cashew is concentrated in India, USA and Europe. Other consumers steadily growing in importance are China, Russia, Southeast Asia (Vietnam, Thailand and Malaysia), Middle East (UAE, Saudi Arabia, Lebanon, Israel and Turkey), North Africa (Algeria, Egypt), Oceania (Australia, New Zealand) and Brazil.

The International Nut Council provided an indication of the cashew kernels consumption per capita in 2011, based on the estimated percentage of population which is consuming the product. Cambodia appears to have been the largest consumer (1.7 kg per capita), followed by the Netherlands (1.5 kg), Australia (1.3 kg), USA (1.1 kg), China and India (0.09 kg each), Israel (0.7 kg), Canada (0.6 kg) and Saudi

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\(^{13}\) Emerging markets are broadly defined as nations in the process of rapid growth and industrialization. Often these nations are shifting to open market economies. China, India, Malaysia, Thailand and South Korea are some examples.
Arabia (0.5 kg). The very high consumption per capita for the Netherlands is reflecting in fact Rotterdam position as the predominant point of entry of cashew shipments in Europe.

2.3. Factors influencing demand and consumption

The factors influencing cashew demand and consumption considered below can undergo rapid changes and bring along drastic shifts in the market.

The level of real income is the basic factor which determines consumers’ disposition to buy and eat cashews. When real incomes increase, consumption expenditures can also increase and consumers adopt the use of new, more “fashionable” and expensive food products such as snacks, cashew nuts and nut mixtures.

Expectation of price changes influences consumption of both in-shell cashew and cashew kernels in the short term. When processors and importers expect near future prices to rise (tight supply/demand balance), they hasten to buy taking advantage of still low prices. On the contrary, when prices are expected to remain low (abundant supply situation), buyers are less inclined to promptly spend on purchases and the short-term consumption decreases.

Demographic factors including the rate of population growth and urbanisation, as well as the age pyramid, are positively correlated to cashew consumption. The growth of population in developing countries, the higher proportion of young adults and the zooming rate of urbanisation contribute to a more rapid growth of cashew consumption in the developing world than in the traditional Western markets.

Demonstration effect has a considerable influence on demand of cashew kernels. People are easily influenced by advertisements on radio and television, associating consumption of cashew and mixed nuts with drinks and the pattern of living like medium and high income classes.

Availability of cashew influences consumers’ desire to buy. Abundant supplies lead to lower prices and encourage purchases. When cashew availabilities are scarce and kernel prices are high, consumers will limit their consumption and eventually turn to cheaper nut substitutes (almonds, and pistachios).

Market information regarding nutritional properties of cashew and its contribution to healthy diets has a very positive influence on cashew consumption. As middle class population in developed countries in particular is highly concerned by adopting healthier lifestyles. It is thought, for instance, that the popularisation of Atkins diet at the beginning of this century has contributed to the rise in cashew kernels consumption.

Individual tests and preferences are subjective factors shaped partly by cooking and eating cultures and habits, and partly by information and the knowledge of products (information which is mostly disseminated through advertising). Different societies, as well as industrial food sectors, use cashew in various ways because of their differences in taste and preferences.

Cashew consumption is seasonal. Although people eat cashew throughout the year, for most consumers cashew is a relatively expensive food desired and afforded on special occasions. Main peaks of consumption are from October to January, during the Diwali and Navratrai festivals in India, the lunar New Year in China and Southeast Asia, the Ramadan in all Muslim countries and the Thanksgiving, Christmas and New Year periods in USA and Europe.

2.4 Trends in demand

Price elasticity of demand for cashew is high. Increases in kernel prices are passed on to consumers who shift rather easily to other types of snacks and edible nuts. In addition, cashew packers and retailers find it difficult to adapt to volatile prices, especially when private label packing is involved. Cashew price volatility constitutes a serious threat to demand; the recent slowdown in consumption was caused by the high volatility in kernels prices between 2008 and 2011.

From 2009 to 2011, consumption in Europe and the United States capped as a result of the too high and volatile cashew prices. However, according to latest information, consumption growth resumed since 2012. USA imports of cashew kernels in 2013 were 20 per cent higher than in 2012. EU imports of kernels in 2013 were only 2 per cent higher than in 2012.

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14 Supermarkets are the main retailing channel for cashew in developed markets
The global cashew market is expected to continue to benefit from a moderate increase in consumption over the next few years. India, China, other South East Asian countries and the Middle East region should experience a healthier growth of cashew demand fuelled by population increase, rapid urbanisation and increases in incomes.

Cashews are very well suited to organic cultivation and processing. They are ideal for gourmet and Fair-trade marketing. Demand for sustainably-produced, Fairtrade and organic cashew, which has already taken well off in Western Europe, is expected to develop.

The worldwide growing awareness and concern about food safety and food-related health issues are certainly going to sustain the demand for traceable cashew supplies. This will involve structural modifications in cashew supply chains, which badly lack of transparency at present.
3. Cashew trade

Cashew trade is characterised by the opacity of the market, a high degree of speculation and the lack of liquidity in the market. The fact that 35% to 45% of world production of in-shell cashew is shipped over thousands of kilometres to be processed implies that minor disturbances in port handling and in shipping can have major effects on cashew kernel pricing.

Two major trade flows dominate the cashew international trade, such as illustrated in Figure 4: exports of in-shell cashew from West and East African producing countries towards the major processing centres in India, Vietnam and Brazil, and cashew kernel trade patterns from India, Vietnam and Brazil towards Europe, USA, China and Australia.

Fig. 4: Main trade flows for in-shell cashew and cashew kernels

The bulk of the global trade in cashew is handled by a reduced number of commodity trading groups such as Olam15 (Singapore), Bond Commodities Ltd. (UK), Valency International Trading Pte Ltd (Singapore), or Barrow, Lane & Ballard and Ballard (UK). These large groups trade in other commodities in addition to cashew, and are usually involved at several levels in the entire cashew value chain.

Agents and brokers such as Swathy Enterprises, Amberwood Trading Ltd., Samsons Traders, Global Commodities Ltd., Global Trading & Agency B.V., Ghosh Agri Tech P Ltd, Richard Franco Agency, etc., play also a significant role in the cashew trade. They are the direct link between producers/exporters and the end use market segment and well aware of cashew availabilities, prices and market trends. Their willingness to share market information contributes to increasing market transparency and easing speculation.

15 The Singapore-based Olam International started-up by trading in Nigerian cashew some 25 years ago. The group is now the largest global cashew trader, alongside with being world's largest shipper of Robusta coffee and a leading trader in other major commodities. Over a quarter of the group’s sales revenues of 20.8 billion US$ in 2013 were provided by edible nuts and spice business.
3.1. In-shell cashew

In shell cashew trade is operated by local, as well as international traders who purchase the crop either on their own account for onward sale, or on behalf of Indian, Vietnamese or Brazilian processors. Very often the traders advance funds at the beginning of campaigns to local agents in producing countries to secure supplies.

3.1.1 Exports

World exports of in-shell cashew decreased by 5% on the average from 2009 to 2012, because of the reduced demand for kernels in consuming markets and the decline in West African export availabilities (Chart 13).

While West African production and exports of in-shell cashew were affected by social and crop problems, exports from East Africa increased slightly and exports from Asian countries were nearly stagnant.

West African countries covered just below the three quarters of global in-shell cashew exports during the period averaging one million tons/year, East African region provided for 18 per cent and Asian countries for 6 per cent (Chart 14).

The decrease of the total West African exports from 918 100 tons of in-shell cashew in 2009 to 726 500 tons in 2012 was triggered by the drastic fall of Nigerian exports and the slighter fall of shipments from Côte d’Ivoire.
Global cashew market - A snapshot overview

As shown in Chart 15, the six West African countries having covered 90% of the sub regional in-shell cashew exports between 2009 and 2011 were Côte d’Ivoire (48%), Nigeria (18%); Guinea Bissau (13%), Ghana (10%), Burkina Faso (5%) and the Gambia (3%).

3.1.2 Imports

India is the largest importer of in-shell cashew, as additional raw material for its export-oriented66 local processing industry. According to COMTRADE statistics, the country imported 93% of the in-shell cashew produced worldwide in 2009 and 82 per cent in 2012. Far behind India, Vietnamese shares in world import market increased from 4% in 2009 to 10% in 2012. Brazilian imports rose also from 1% to 6% of the world total, while China emerged as importer since 2009 (Charts 16 and 17).

3.2 Cashew kernels

3.2.1 Exports

Export trade in cashew kernels follows three main routes. The bulk of primary- and secondary-processed kernels originating from producing countries (Vietnam, India and Brazil, and in much smaller quantities

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16 The fast growing local consumption of cashew kernels is resulting in the decline of exports
Eastern and Western Africa and other Asian countries) are exported to Europe, USA and other consuming markets. A part of the kernels originating from these producing countries are following re-exporting routes between European countries and the USA. The kernels are re-exported either directly, or after having undergone a final processing and branding. Furthermore, intra-trade in cashew takes place between European Union countries.

Export of kernels from all origins increased insignificantly, by less than 0.2 per cent per year between 2009 and 2012, with a low peak of 418 200 tons in 2009 and a high peak of 420590 tons the year after (Chart 18).

Exports from Vietnam increased steadily, by 8% per year on the average, from 175 600 tons in 2009 (equivalent to 42 per cent of the global exports), to 221 500 tons in 2012 (equalling 53 per cent of the total export trade). The expansion of exports continued in 2013, when they reached 264 500 tons according to latest trade statistics.

India, on the contrary, lost important export market shares. Exports of cashew kernels fell from 129600 tons in 2009 (equivalent to 31 per cent of the global exports), to 100600 tons in 2012 (only 24 per cent of the global exports). However, Indian exports started recovering in 2013, when they amounted to 108 600 tons.

Brazil lost nearly half of its shares in kernel export market in four years, with exports falling from 47800 tons in 2009 (11 per cent of world total) to 25300 tons in 2012 (6 per cent only).
3.2.2. Imports

Import trade in cashew kernels is much more diversified than exports.

According to COMTRADE statistics, recent global imports decreased by 2% per year on the average, from 371,250 tons in 2009, to 346,720 tons in 2012 (Chart 20).

The major importers of cashew kernels are the United States, the European Union and the Middle East countries. They have taken 71% of the global imports in 2009 and 2012 (Charts 22 and 23).

The importance of the main importing countries/regions in the global import trade changed during the period considered. The Middle East region lost 2% of market shares to the benefit of the European Union. China shares decreased from 10% in 2009 to 3% in 2012, while other Asian countries excluding China increased their shares from 4% to 7%.

Imports of cashew kernels into the USA decreased by 2% per year on the average, from nearly 117,000 tons in 2009 to 109,000 tons in 2012 (Chart 24). According to latest March statistics they recovered however to 112,500 tons in 2013.

Vietnam and India supplied over three quarters of the imports over the period (47% and 29% respectively - Chart 25).
The share of Brazilian cashew kernels in the total US imports declined drastically, from nearly a quarter of the total US imports in 2009 to only 12% in 2012, in favour of European, Asian and African suppliers.

European Union (28) imports of kernels decreased by 1% per year over the period. After the sharp drop from 2009 to 2011, they recovered in 2012 just above their level two years before, and continued to increase in 2013, as mentioned above (Chart 26).

The main importers were the Netherlands (Rotterdam harbour being the entry point of the largest part of kernel imported into the EU), Germany and UK, followed by France, Italy and Belgium (Chart 27).

The origins of imports into the European Union restrained over the period considered. The shares of the three traditional suppliers, Vietnam, India
and Brazil increased from 77% of the total imports in 2009 to 85% in 2012. Vietnamese supplies, which covered just above the half of the total imports into the EU in 2009 (54%), increased its shares to 54% in 2012.

Supplies from India decreased from 23% of the total in 2009 to 19% in 2012, while Brazilian kernels reinforced strongly their position on the European market (3% of the total imports in 2009 and 12% in 2012). East African exports maintained a share of 4% in the total imports into the European Union over the three years considered, while West African suppliers gained in importance at the expense of other suppliers, having supplied 1% of imports in 2009 and 4% in 2012 following the increase of processing in the region.

Middle East is the third largest import market for cashew kernels. Imports in the region over the period averaged 42400 tons per year, with a high pick of 54800 tons in 2011 and a sharp drop to 34200 tons the year after. India was the main supplier, having covered 82% of imports in 2009 and 98% in 2012 (Chart 28).

Over a half of the Middle East total imports from 2009 to 2012 (34% and 18% respectively) were destined to the United Arab Emirates and Saudi Arabia. Lebanon, Israel and Turkey followed in importance.
4. Cashew prices

Trends and dynamics of cashew trade and prices of both the in-shell cashew and cashew kernels are responding primarily to the tightness of the supply - demand balance influenced by unpredictable factors such as weather, economic and social crisis and small farmers’ behaviour. This renders the market highly speculative, with long term price evolution hard to predict and short term prices volatile. Frequent imbalances between the availability of cashew supplies and the demand lead to strong price swings, market volatility and stimulate speculation and cartel trading.

Reliable market information is difficult to get in order to re-establish the market equilibrium, wherefrom the critical impact of hearsay, rumours and speculation on cashew pricing. In-shell cashew market in particular is largely speculative and short-term oriented; the few large traders dominating the market can influence the price movements.

Cashew price volatility undermines buyers’ confidence in the market and dissuades the commitments to forward buying. Banks and indigenous African traders and entrepreneurs are reluctant to invest in domestic cashew processing because of the volatility of prices. The renewed interest to invest in cashew processing in Africa is driven by large Asian and Brazilian cashew processors who are seeking to diversify and secure their supplies and insulate at least partly their businesses from the market volatility.

4.1. Factors influencing prices

4.1.1 Cashew harvesting cycles

Cashew pricing is related to the annual harvesting cycles of the crop illustrated in Figure one, chapter 1.1.3. The distinct cashew harvesting sequences in countries of the Northern and Southern hemispheres and the patterns of in-shell cashew processing are accounting for the setting of African in-shell cashew prices.

Vietnam harvests usually the year’s first cashew crop, followed shortly after by India. West African crop is harvested around the same time, while the arrival of Brazilian and East African crops begins in August/September, tying the trade over until the following year crops arrivals from Vietnam, India, and West Africa.

The bulk of the in-shell cashew processing takes place in India and Vietnam. Both countries are harvesting domestically about half of the in-shell cashew intake of their processing industries, just before the arrival of the West African crop. They rely therefore on additional imports from West Africa for covering their additional in-shell cashew needs for processing. As a result, prices of West African in-shell cashew are negotiated depending on crop outputs in India and Vietnam: poor crops in Asia will increase the demand and the competition of Asian processors for the product, pushing the opening West African prices upwards. The situation would be reversed in case of good harvests in Asia. East African cashew producers have the advantage of being able to store up and offer their crop between the end of the West African season and the beginning of the new Indian and Vietnamese harvests.

4.1.2 Exchange rates

Currencies have an impact on cashew pricing. Let’s consider, for instance, the influence of currencies on prices received by West African exporters of in-shell cashew to India over the period 2002 – 2013. Currency values indicated further are average quarterly midpoint exchange rates and their per cent changes over the past decade provided by OANDA (http://www.oanda.com/currency/historical-rates).

For trade in cashew in West Africa, it is important to follow the evolution of both the West African CFA franc (XOF) and the Indian rupee (INR) against the US dollar.

The exchange rate between the CFA franc and the US dollar is important because the contracts are priced in US dollars. For a same quantity of in-shell cashew exported, a stronger dollar allows the exporter to receive more CFA francs, while a weaker dollar limits their purchasing power. The US dollar weakened by 35% between the beginning of 2002 and September 2013, meaning a loss in the purchasing power of West African exporters of in-shell cashew (Chart 29).
The exchange rate between the US dollar and the Indian Rupee is important because most India purchases two thirds of in-shell cashew exported by West Africa, and most Indian cashew processors use the rupee as currency. When the Rupee is stronger against the US dollar they can set higher prices for the West African in-shell cashew; on the contrary, if the Rupee allows for fewer dollars, they will set lower prices. Whenever the exchange rate is high Indian cashew stakeholders will focus more on export, which will impact on Indian cashew kernel prices.

The Rupee weakened by 27 per cent during the period considered, as shown in Chart 30.

The variations of US dollar/rupee and US dollar/XOF exchange rates are relative to rates of January 2002 considered as base.
Greater the difference between the two curves, more Indian processors lose purchasing power in West Africa. Under these circumstances, Indian processors have lost much of their purchasing power in Africa.

### 4.1.3 Transport costs and time

Unlike other lower-priced food products, land and water transport costs have a relatively small incidence on the final price of cashew, not exceeding 4 to 5 per cent; changes in transport costs following fuel prices and the shipping demand have only a moderate impact on cashew pricing. Following are some indicative shipping costs of cashew between Africa and Asia.

<table>
<thead>
<tr>
<th>Freight</th>
<th>XOF/kg</th>
<th>USD/t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>West Africa - Asia</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>East Africa - Asia</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Indonesia – other Asia</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Transport time impacts on the quality of the delivered cashew and the borrowing interests incurred by exporters or importers. Some general shipping time indications are:

<table>
<thead>
<tr>
<th>Shipping in days</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa – Asia</td>
<td>25</td>
<td>70</td>
</tr>
<tr>
<td>East Africa – Asia</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Indonesia – Other Asia</td>
<td>8</td>
<td>20</td>
</tr>
</tbody>
</table>
Imports of cashew from East Africa to Asia or between Indonesia and other Asian countries are cheaper and faster than from West Africa. However, West African processors have a strong comparative advantage over their Asian and East African competitors as far as transport costs are concerned.

4.1.4. In-shell cashew

Prices of Indian and Vietnamese in-shell cashew are set by the availability of domestic crops and the accessibility to imports from abroad. The physical availability of cashew counts as much as the perceived availability based on production forecasts for the season. Expectations of good harvests in West Africa and the Southern hemisphere will put pressure on prices, while forecasts of poor production will boost prices and push buyers to accumulate stocks.

Price of in-shell cashew imported into India should be similar to that of the crop harvested in Kerala or the other Indian producing states. Therefore, West African export prices should amount to the market price in India less the cost of transport from Africa to India.

In-shell cashew pricing is highly speculative. Buyers have to take into account quantity and quality requirements of processors, kernel yields and the price of the kernels, as well as the quality and reliability reputation of exporters. The significant variations in kernel quality and yields across origins contribute to the opacity of in-shell cashew pricing.

In the last instance, large processors and traders are the ones to determine the in-shell cashew prices; their ability to manipulate the market by underselling or overselling affects the equilibrium and stability of the market. The majority of raw cashew exporters are medium to low net-worth stakeholders unable to sustain large price swings; this explains the amount and frequency of contractual defaults on in-shell cashew. The situation is worsened by the usual lack of a legal enforceability of contracts.

4.1.5. Cashew kernels

The benchmark grade for cashew kernel pricing is the Indian W320; price quotations are usually based on this grade. Prices of other grades are correlated with the Indian W320 grade to a large extent; differences are related to their specific availability and the fact that their demand is derived from different sectors. They are traded at a discount or premium depending on size and colour of kernels, scorching and whether or not they are whole.

Spot prices for kernels are dependent on supply and fluctuate with both the real and the perceived crop availability, the level of stocks, the quality of products available, exchange rates and the transport costs. Very often African cashew is valued below other origins on quality grounds.

Seasons have also some effect on spot market prices, which rise during festive periods such as Asian festivals, New Year and religious celebrations.

Moreover, cashew kernel prices are partly influenced by the prices of competing edible nuts such as almonds and pistachios. The sustained promotion of edible nuts produced in developed countries creates a long lasting effect on their consumption and price competitiveness versus cashew.

4.1.6 Consumer prices

The value of cashew kernels increases up to four-fold from import to retail depending on the market, with branded products sold at a premium. A CBI report\footnote{CBI - “Tailored Intelligence: Promising EU-EFTA markets for cashew nuts”, November 2012, \url{Click here to download}} gives the following indications of cashew kernels retail prices sourced from retailers’ websites in August 2012 (Table 4).
The same year, UK – branded, roasted and salted cashew kernels were sold at retailing level (supermarkets) at around £1.45 per 100g. This was equivalent to 23000 US$/ton, or to 11 385 US$/ton when the 17.5% VAT (4 025 US$/ton) was excluded. In France, the retail price of private label cashew kernels was equivalent to $9,600 US$/ton.

The considerable buying power of retail supermarkets gives them the strength to maintain such very high levels of prices and explain their disinterest in increasing sales volumes by cutting margins.

Cashew suppliers are the ones responsible for market promotion activities. The fact that their margins are being squeezed at a maximum by supermarkets explains the limited interest of small and medium scale cashew kernel exporters from developing countries to promote low volume, branded cashew kernels.

### 4.2. Price structure

Prices of different cashew products vary according to both the value added at the different stages of the supply chain and the price-setting procedures of the seller.

Chart 32 illustrates Rongead 2013 estimation of the breakdown of cashew kernel retail price (considered 100%) in Western Europe, when obtained from West African in-shell cashew having undergone the primary processing in India and the secondary processing and packaging in Europe. Wholesale/retail distribution and the primary and secondary processing represent over the three quarters of the retail price (40% and 36% respectively), followed by farm and collection prices 12%; land transport and handling 5%; port charges and export taxes 4% and shipping costs 3%.

<table>
<thead>
<tr>
<th></th>
<th>The Netherlands</th>
<th>United Kingdom</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>15 (Albert Heijn)</td>
<td>18.34 (Waitrose)</td>
<td>16.65 (Coop)</td>
</tr>
<tr>
<td>Fair Trade</td>
<td>23 (Albert Heijn)</td>
<td>21 (Waitrose)</td>
<td>Non available</td>
</tr>
<tr>
<td>Organic</td>
<td>18.95 (Terra Sana) 19.75 (De Nieuwe Band)</td>
<td>19.45 (Waitrose)</td>
<td>Non available</td>
</tr>
<tr>
<td>Organic and Fair trade</td>
<td>Non available</td>
<td>25.50 (Real Foods)</td>
<td>26.65</td>
</tr>
</tbody>
</table>
In-shell cashew farm gate price does not exceed 12 per cent of cashew kernel retail price. Neglecting the importance of farm prices leads, however, to farmers’ disinterest in cashew cultivation and collection and subsequent shortages and price rises across the entire value chain. Market transparency at the farm level, access to market intelligence and the use of alternative shorter commercialisation lines to processors are necessary for improving cashew sector performance and acceptable farm prices.

4.3 Evolution of cashew prices

Cashew prices have trended upwards by an average of 3.5%/year over the past 15 years. Their volatility increased considerably since 2007/08, with higher amplitudes between their higher and lower peaks (Chart 32).

The W320 cashew grade (320 kernels/kg) is used as a benchmark for price calculations.

In general, larger unbroken kernels (graded by number per kernels kg) are fetching higher prices. For instance, according to The Hindu Business Line publication of in July 2012, the FOB price difference between different cashew kernel grades was the following:

<table>
<thead>
<tr>
<th>Kernel grade</th>
<th>US$/lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 320</td>
<td>3.10 – 3.30</td>
</tr>
<tr>
<td>W 240</td>
<td>3.50 – 3.70</td>
</tr>
<tr>
<td>W 450 and SW 320</td>
<td>2.80 – 3.0</td>
</tr>
<tr>
<td>SSW</td>
<td>2.60 – 2.80</td>
</tr>
<tr>
<td>Splits and Butts</td>
<td>2.25 – 2.35</td>
</tr>
<tr>
<td>Pieces</td>
<td>1.80 – 1.90</td>
</tr>
</tbody>
</table>

The price of in-shell cashew is directly related to cashew kernel price, being based on kernel quality and efficiency coefficient. Kernel price drops are immediately passed upstream the cashew value chain.

The consideration of cashew kernel price developments over the past 15 years gives an idea of the high volatility in the cashew market and the main causes which provoked it (Chart 33).

Chart 33: Cashew kernel price developments, 1998-2013
The strong upward pressure on prices in 1999, when peak average W 320 cashew FOB price reached 6.80 US$/kg, was caused by crop shortfalls and forward contracting of product which processors were unable to deliver defaulting on their commitments, while demand was strong and importers were unable to fulfill their short-term obligations. High crop supplies worldwide the following four years led to a price plunge to historic lows of 3.75 to 4.20 US$/kg in 2003.

A subsequent upward shift in prices took place in 2004 and 2005, caused by reduced harvests following unfavourable climatic conditions, as well as a sustained global demand and the collective efforts of Indian and Vietnamese processors to obtain higher prices. Average quarterly prices reached 5.30 US$/kg by mid-year, after what they re-started to decline throughout the mid-2007. By mid-2007 prices resumed their increase with very large Indian crops supplies and the numerous delays and defaults on contracts of Vietnamese and Indian shippers. By the end of that year, prices have jumped by 28 per cent, from 4.43 to 5.67 US$/kg.

Sharp price increases continued in 2008, reaching an average of 7.40 US$/kg by mid-year, due to a short Brazilian crop and to Indian and Vietnamese shippers’ performance. Faced with higher than expected raw cashew prices, some of them delayed and defaulted on shipments bidding up prices and renegotiating contracts. By the end of the year however, a market correction brought down prices sharply, at about 4.90 US$/kg. An upward swing in prices started again in the beginning of 2009; cashew kernel prices averaged 6.35 US$/kg by the year end.

The rise in prices continued throughout 2010, reaching a new peak of 7.60 US$/kg in the last quarter of the year following low supplies and a slowdown in consumption on macroeconomic grounds. The increase continued to accelerate during the first quarter of 2011 reaching in March the highest peak on record exceeding 8.5 US$/kg. Several reasons explain the unprecedented price rise, including shortfalls in Brazilian and Vietnamese crops, rising Indian domestic consumption reducing export availabilities, the higher African in-shell cashew prices caused by reduced and delayed raw cashew shipments from Côte d’Ivoire following political unrest, coupled with the rebooting of global demand.

Since August 2012 prices eased, with a significant drop in US demand due to very high prices the previous year. The market stabilised in 2013 to considerably lower price levels.

Chart 34 illustrates the evolution of the average monthly import prices of cashew kernels over the 2010 to 2013 period. Corroborating the global price evolution, import prices of kernels into USA in September and October 2013 were at the level of 2012 (7 US$/kg and 6.9 US$/kg respectively) and decreased slightly under their 2012 level in November and December (6.74 and 6.61 US$/kg respectively). Meanwhile, the total cashew kernel imports into USA in 2013 was 20 per cent higher than in 2012, the second best year of all times.

![Chart 34: USA - Cashew kernels average monthly import prices 2010-2013, US$/kg](image)

**Source:** USDA

The year 2013 was characterized by the stability of cashew kernel prices and the reduced volatility on in-shell cashew. The stability of 2013 prices is extremely rare in the history of cashew price records going back to the 1980’s, with the only period that comes close being 2006-2007. It is due to a balanced supply-demand situation and the recent change in buying patterns, with buyers spreading their orders across the year. Prices of in-shell cashew remained reasonably stable; buyers regained confidence in the cashew business, discouraging speculation in kernels which remained subdued.
5. The Gambian cashew sector

Cashew is a priority alternative crop with a considerable development potential for the diversification of Gambian production and exports of agro-based products, dominated at present by groundnuts.

Cashew cultivation is already practiced in the Western and North Bank regions of the country, satisfying for the time being the local demand limited at 5 tons of kernels and the export trade estimated at 25000 tons of in-shell cashew in 2012.

Cashew processing is limited at cottage level and about ten small-scale units with a potential processing capacity estimated at 100 tons in 2012. The rate of utilisation of the installed capacity is however very low due to the lack of organisation of the sector and the limited technical, managerial and marketing know-how and financial resources.

The country exports only small quantities of in-shell cashew, as the export availabilities are irregular and the quality of the nuts is inconsistent. In addition to climate vagaries, export availabilities are hindered by inadequate management and harvest and post-harvest methods, collection and storage problems, as well as by the wide ignorance of the importance of quality for export production, and quality control and management techniques.

Gambian export performance and the development of cashew exports are prevented by the current sector disorganisation and its low knowledge and information on the international market size and structure, demand and price trends, potential export market and market access conditions for the Gambian cashew, potential development partners and business and joint venture opportunities.

The Gambian cashew market lacks of transparency and sectorial organisation. Market and product information is very limited, in particular at farmers’ and cooperatives’ level, and traders and small and medium-size exporters most often ignore buyers’ requirements in individual markets and market access rules and regulations. It is therefore understandable that the trade has difficulties in seizing business opportunities. All these constraints are envisaged to be addressed urgently in order to support the development of the cashew sector.

Both the public sector (the Ministry of Trade, Regional Integration and Employment - MOTIE, the Ministry of Agriculture, the National Agricultural Research Institute and Gambia Investment and Export Promotion Agency) and the private business community (cashew producers, processors and traders, national cashew farmers associations and federation and the Cashew Alliance of the Gambia) are committed to support the development of the Gambian cashew production, processing and exports. The recent elaboration of the “Cashew Sector Development and Export Strategy of the Gambia, 2014-2019” was a step of primordial importance in this direction.

The present survey has been elaborated with the aim of providing very recent information on cashew production, processing and demand at the international level allowing to situate the Gambian cashew performance in the global context, for further analysis and dissemination.

The present situation of cashew production in the Gambia has already been assessed in 2013, and is presented in the strategy document. A pertinent excerpt is given in Annex 1.
Selected References, statistical and internet resources

Publications

International Finance Corporation (IFC) - “Prospects for Cambodia’s Cashew Sub-sector”, October 2010
Rabobank - “A hard nut to crack - cashews”, June 2012
Rongeaud – « Connaître et comprendre le marché international de l’anacarde », Juin 2013
Red River Foods Inc. – Brochures «Highlights of the cashew industry » 2010, 2011
Dominic Lemken, Agricultural Economics and Rural Policy Group, Wageningen - “Are Cashew Grades and other Tree Nut Prices linked?” 2013
Cashew week special issue September 2013 on ACAQ Conference 2013, to Download full Issue - Cashew Info
CBI – “Promising EU/EFTA markets for cashew nuts”, 2012
International Nut & Dry Fruit Council (INC) - “Global statistical review 2007 - 2012”, www.nutfruit.org
Dr H. Panda – « The Complete Book on Cashew (Cultivation, Processing & By-Products)”, 2013
A. Senthil and Dr M P Mahesh - “Analysis of cashew nut production in India”, Asia Pacific Journal of Marketing & Management Review, March 2013
Dr. Shalini Yadav – “Economics of cashew in India”, 2010
UNIDO – “Tanzania’s Cashew Value Chain: A diagnostic”, 2011
Food News Special Supplement “Dried Fruit and Nuts 2013”, July 2013
Cashew week “Opportunities in Middle East for cashew", Volume 15, Issue 06, February - Investor Day – Edible Nuts, Spices & Vegetable ... - Olam

Statistical resources

African Cashew Alliance (http://www.africancashewalliance.com/en)
Cashew Export Promotion Council of India (http://www.cashewindia.org/)
Europa Food Safety Rapid Alert System for Food and feed – RASFF (http://ec.europa.eu/food/food/rapidalert/index_en.htm)
European Union Market access database (http://madb.europa.eu/madb/indexPublic.htm)
Eurostat (http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home)
FAOSTAT (http://faostat.fao.org)
Global cashew market - A snapshot overview

Index mundi (http://www.indexmundi.com)
Sindicaju (http://sindicaju.org.br)
United States Department of Agriculture (http://www.usda.gov/wps/portal/usda/usdahome)
United States interactive tariff and trade data web (http://dataweb.usitc.gov/)
Vinacas (http://www.vinacas.com.vn)
Zauba (https://www.zauba.com/)

Cashew on line market bulletins and news

Agra-Net, Food News and Public Ledger (http://www.agra-net.com/portal2/pl/)
All Africa (http://allafrica.com/)
Cashew week/Cashew Info.Com (http://www.cashewinfo.com/)
Commod@frica (http://commodfrica.com/fr/cours)
Commodity daily market news – Cashew news (http://cashewnnews.blogspot.ch/)
Delmas (www.delmas.com/news/delmas-com-watch)
Dutch Valley Food Distributors (http://www.dutchvalleyfoods.com/)
Ecofin (http://www.agenceecofin.com/agence)
ExPECT Newsletters (http://ecowasexpect.com/portail/expect-newsfeed/?lang=en)
Fairtrade International (http://www.fairtrade.net/price-and-premium-info.html)
Fresh Plaza (http://www.freshplaza.com)
N'Kalô (www.anacarde.com)
Samsons Traders (http://samsons.co.in)
The Hindu business on line (http://www.thehindubusinessline.com)
Global Trading & Agency B.V. (http://www.globaltrading.nl/Home)
African Cashew Alliance (http://www.africancashewalliance.com/en)
Annex I

Chapters referring to the current situation of the Gambian cashew sector - except from the “cashew sector development and export strategy of the Gambia 2014-2019”

Where we are now

Historical perspective of the sector

Cashew was first introduced in the Gambia in the 1960s as an agroforestry crop, planted around forestry boundaries as a firebreak. In the 1980s the Ministries of Agriculture and Forestry promoted the cultivation of the crop on a large scale as a means of protecting the environment and providing an economic benefit to farmers. Farmers were advised to plant cashew along the borders of their farmland and forests to contain growth of grass and curtail intrusion of fires into farm areas.

The Gambian cashew sector was mostly developed through private sector efforts in the late 1980s. In the early 1990s the private sector commenced distribution of seeds of locally improved varieties. Seeds were distributed along with a cashew grower’s manual.

The production of raw cashew nuts steadily increased from a low 200 tons in 1998 to 2,000 tons in 2007. At the same time, the number of cashew exporters grew from two exporters in 2003 to more than 15 in 2007, confirming the vitality of the sector. At that time the exports of cashews from the Port of Banjul exceeded 30,000 tons, while production of Gambian cashew nuts was merely 2,000 tons. The vitality of the sector in the Gambia, the high concentration of exporters and the port infrastructure drew cashews from Senegal and Guinea-Bissau. Leadership from the private sector has led to the sector’s growth in the Gambia.

Cashew growers associations and cooperatives have emerged with the development of the sector. At the moment there are five cashew farmers associations operating in the Gambia. In 2012, the Federation of Gambian Cashew Farmers Associations was established to represent the interests of all the cashew farmers associations and facilitate dialogue with other sector stakeholders. An apex body for the sector - the Cashew Alliance of the Gambia – was also established in 2011 to represent the various private sector interests of the sector.

In sum, the sector has grown organically from humble beginnings to become in 2011 the sixth most important export sector of the Gambia. For a long time there was little government assistance but that situation is changing, with government leaders speaking favourably about the need to develop cashew production.

Current context

According to a recent survey the majority of cashew farmers are individual land owners with average holdings of 1–3 ha. The majority of the sector’s operations are managed by cashew farmers, local traders, collectors, exporters and a few processors.

Production

There is no official data on Gambian cashew nut production from either official sources or international organizations such as the Food and Agriculture Organization of the United Nations (FAO). The following figures are based on data collected through various sources.

Gambian cashew nut farming has gained most of its momentum in the Western and North Bank regions. It is estimated that by 2011 there were about 2.3 million cashew trees planted on 23,529 ha.²

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³ There are five functional growers’ associations active: Kombo Cashew Farmers Association, National Cashew Farmers Association, Soomo Cashew Farmers Association, NDAR cashew and Hakilinya Cashew Farmers Association
⁵ ITC calculations based on Comtrade data
⁷ ibid, p.25, and IRD baseline data.
⁸ 10,000 tons estimated production in 2011/400kg/ha. Estimated area cultivated was 23,529 ha and, based on the assumption of approximately 100 trees per ha, the total estimated number of cashew trees in the country is 2,352,900.
Table 1 shows production and processing for the period 2005–2011. During this period raw cashew nut production rose by approximately 700%, sustained by good local market prices.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production, tons</td>
<td>1,250</td>
<td>1,750</td>
<td>2,000</td>
<td>3,000</td>
<td>6,500</td>
<td>8,000</td>
<td>10,000</td>
<td>4,643</td>
</tr>
<tr>
<td>Harvested area (ha)</td>
<td>3,187</td>
<td>4,375</td>
<td>5,000</td>
<td>7,058</td>
<td>15,294</td>
<td>17,777</td>
<td>23,529</td>
<td>10,889</td>
</tr>
<tr>
<td>Yield, kg/ha</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>425</td>
<td>425</td>
<td>450</td>
<td>450</td>
<td>421</td>
</tr>
<tr>
<td>Exports (tons)</td>
<td>12,498</td>
<td>22,891</td>
<td>22,521</td>
<td>24,095</td>
<td>27,367</td>
<td>12,223</td>
<td>24,869</td>
<td>20,923</td>
</tr>
</tbody>
</table>

Source: ITC calculations and IRD data

Gambian cashew production is relatively small compared to the world leaders in raw cashew nut production. World raw cashew output is estimated to have increased by about 3% per year over the past five seasons, from 2,130,000 tons in 2006/2007 to 2,490,000 tons in 2010/2011.10 Viet Nam and India are two of the world leaders in cashew production, as well as two of the largest processors of kernels. As indicated in table 2, the Gambia is in the vicinity of two of the largest producers in the world. The production of Nigeria and Côte d’Ivoire ranges from 835,000 tons to 393,000 tons respectively. The current production of the Gambia, if it is confirmed, would place the country at the 16th rank globally in terms of production volume.

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viet Nam</td>
<td>1,249,600</td>
<td>1,234,000</td>
<td>1,165,600</td>
<td>1,242,000</td>
<td>1,237,300</td>
</tr>
<tr>
<td>Nigeria</td>
<td>660,000</td>
<td>727,603</td>
<td>800,000</td>
<td>830,000</td>
<td>835,000</td>
</tr>
<tr>
<td>India</td>
<td>620,000</td>
<td>665,000</td>
<td>695,000</td>
<td>613,000</td>
<td>674,600</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>280,000</td>
<td>330,000</td>
<td>350,000</td>
<td>380,000</td>
<td>393,000</td>
</tr>
<tr>
<td>Brazil</td>
<td>140,675</td>
<td>243,253</td>
<td>220,505</td>
<td>104,342</td>
<td>230,785</td>
</tr>
</tbody>
</table>

Source: FAO Statistics

Cashew grows across virtually the entire country but production and quality differs greatly from one region to another. The average yield of cashew production in the Gambia is estimated at 450kg/ha, which is low when compared with the world average of 840kg/ha.11 The average yields in the Gambia are partly explained by limited use of good agricultural practices (GAP) and post-harvest losses caused by inadequate handling practices.

**Processing**

It is estimated that cashew kernel processing accounted for only 5–10 tons in 2012.12 Kernel processing is mainly undertaken by a few small-scale factories13 which have limited capacity and resources. The development of two new large processing plants in 2013 has increased total processing capacity to approximately 10,000 tons.

The challenge with cashew processing, though not peculiar to the Gambia, is that to be economically viable there must be enough output of processed kernels.14 This implies the need for a calculated expansion either in the size of existing farms, the entering of new farmers into cashew production, or an increase in imports of RCN from the subregion to ensure processing plants can achieve economically sustainable operations. In increasing the availability of RCN for processing it will also be important to ensure quality requirements are maintained, which could mean excluding sourcing from

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9 During this period cashew nut production increased from 1,250 to 10,000 tons.
12 Bilateral meetings with IRD and Gambia Horticultural Enterprises.
13 There are three main micro-processors of cashew kernels: Gambia Horticultural Enterprises, Jawneh & family enterprise, and Group Juboo. Two larger plants became operational in 2013 with a processing capacity of 2,500 tons per year and 7,000 tons per year.
some zones of the subregion such as Mali. Expansion of cultivation in the east of Gambia should also be undertaken with caution.

The processing of cashew also includes the transformation of the cashew apple. At the moment cashew apples are mainly transformed at the household level into jams, alcohol, dried fruit and other sub-products, and there is very little commercialization of products, with the exception of fresh apples sold in markets.

Value chain operations

A report by Gomez, Jaeger and Peters described the chain as simple and direct, with harvest passing from the farmers to buying agents working for collectors, who in turn supply the exporters.

Research and development

In the past there was not much work done in cashew research due to limited government intervention in the sector. The National Agricultural Research Institute (NARI) is considering doing research on cashew, especially looking into the characteristics of the varieties available in the country and their genetic potential (discussions with the Programme Leader, Agroforestry Programme and NARI, October 2012). The IRD has done some research seeking to introduce high-yielding varieties and to expand value addition by increasing the amount of processing done and the variety of products. Currently (2013) IRD is engaged in research work on cashew covering Gambia and Senegal.

Seed selection

According to IRD, when planting a cashew tree one must investigate the best seed variety suitable for the region. Seeds for planting should be obtained from healthy mother trees of a recognized high yielding variety, aged 8–15 years. It is recommended to scout for several cashew trees with good flowering and following them through to maturity.

Planting

There are two ways to grow cashew seeds. One way is to plant the seed directly in the desired location. Trees planted in such manner are easily eaten by pests. They also require watering, which could be difficult, especially on a large scale. Another method is to plant the seed in a plastic bag and then transfer the young tree seedling (about three months old) to the desired location. This method has higher chances of survival and good growth.

Production

The cultivation of cashew in the Gambia is restricted to rain-fed production due to economic limitations and saline intrusion upstream. Cashew does not do well in saline soil (salty soil).

Production involves planting, weed management, pruning and grafting. These are followed by fire burning, collecting the nuts and drying. The key inputs into the production process are seeds, seedlings, pruning and grafting tools, weeding tools, collection containers, drying material and storage bags. There is rare use of fertilizers in the sector except by commercial farmers, who are few. The simple materials used for the above processes are imports retailed locally. Fencing is required to protect against theft and animal invasion. Frequent visits to the farm are recommended as fencing alone does not fully deter thieves and animals.

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15 According to sector stakeholders, certain production zones in East Gambia, Senegal and Mali produce RCN of lower quality, mainly because of climatic conditions.
17 Interview with IRD.
Harvesting

The cashew in the Gambia is not harvested from the tree; apples are allowed to fall and are picked for separation of nuts from the apple under hygienic conditions. The ground should be kept free of weeds. Nuts and apples are separated within 24 hours. Nuts are dried under the sun for 3–4 days while guarding against moisture and insects.

Nut count test

This test is done to give an indication of the size of the raw nut by counting the number of raw nuts per kilo. Nuts selected randomly from the bags are placed on a scale until the scale reads 1 kg. Then the number of nuts is counted. It will take more small nuts to add up to a kilo. The larger the nuts, the fewer nuts it takes to make a kilo. The fewer the nuts the better. 20

Processing

By 2012 there were four processors, with two being regularly active and with the total amount processed ranging between 10 and 15 tons per year. There is reported substantial artisanal processing activity with an estimated 46% of households reported to be doing some processing for household consumption. 21 The vast majority of cashew is exported raw, mainly to India. There every part of the cashew is used or processed to generate income. This includes the nut, the peel inside the shell and the liquid inside the shell, as well as the outer shell and the cashew apple. 22

Exporting

Products from the Gambia and the subregion (mainly Senegal and Guinea-Bissau) are aggregated at Banjul and shipped to export markets. They are packed in jute bags and shipped to the export market. As described in the export section, most Gambian cashew is exported raw to India.

Services and support

The support services required in the value chain include:

- Research;
- Training in good methods;
- Quality and standards management;
- Prompt and regular dissemination of accurate relevant market and production information;
- Financial services;
- Labour;
- Transport, storage & handling;
- Cross-border facilitation;
- Packaging;
- Export promotion.

The Government of Gambia has not intervened much in the sector but this appears bound to change with growing interest from policymakers. Cashew production and processing is recognized in many policy documents, such as the NES, as an important crop for socioeconomic development. There is one donor activity, namely the Gambia River Basin Cashew Value Chain Enhancement Project (CEP), which is supporting activities along the value chain. Some limited business development services are provided by numerous sector associations.

Labour, finance and transport are the key services required. Storage is usually on the farmers’ premises. Packaging is not an issue right now as the bulk of the Gambian cashew is exported unprocessed. There are numerous sector associations but their ability to improve competitiveness

has been hindered by a lack of resources and limited government intervention. Thus there is limited lobbying and advocacy for the required services listed above to be made available.

**Other activities along the value chain**

Intercropping with food and other cash crops is possible. Beekeeping has also been noted by IRD as a viable operation. Other possibilities including use of the apple to make juice and alcohol, and making jams, cakes and candles (IRD). These are all done on limited a scale at household level. Scarcity of production data makes it difficult to quantify values along the value chain.
Annex II

UNECE STANDARD DDP-17

CONCERNING THE MARKETING AND COMMERCIAL QUALITY CONTROL OF CASHEW KERNELS

2013 EDITION

UNITED NATIONS

NOTE

Working Party on Agricultural Quality Standards

The commercial quality standards developed by the United Nations Economic Commission for Europe (UNECE) Working Party on Agricultural Quality Standards help facilitate international trade, encourage high-quality production, improve profitability and protect consumer interests. UNECE standards are used by Governments, producers, traders, importers and exporters, and other international organizations. They cover a wide range of agricultural products, including fresh fruit and vegetables, dry and dried produce, seed potatoes, meat, cut flowers, eggs and egg products.

Any member of the United Nations can participate, on an equal footing, in the activities of the Working Party. For more information on agricultural standards, please visit our website http://www.unece.org/trade/agr/welcome.html.


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UNECE standard DDP-17 concerning the marketing and commercial quality control of Cashew Kernels

I. Definition of produce

This standard applies to cashew kernels obtained by heating, shelling and peeling the true fruits of the cashew tree *Anacardium occidentale* (L.). This standard does not apply to cashew kernels that are processed by salting, sugaring, flavouring, roasting or oil frying or to cashew kernels for industrial processing.

Cashew kernels may be presented in one of the following styles:

- Whole: whole kernels of characteristic shape, with more than 7/8th of the kernel intact. Kernels with no more than one eighth of kernel broken off are considered as whole.
- Brokens: Kernels where one eighth or more of the original kernel is broken off. Designations of Brokens as follows:
  - Butts: Kernels of not less than 3/8th of a whole kernel, which have been broken crosswise, but the cotyledons are still naturally attached.
  - Splits: Kernels split lengthwise naturally, provided that no more than one eighth is broken off.
  - Pieces: Kernels, which have broken into more than two pieces.

II. Provisions concerning quality

The purpose of the standard is to define the quality requirements of cashew kernels at the export control stage after preparation and packaging.

However, if applied at stages following export, the holder/seller shall be responsible for observing the requirements of the standard. The holder/seller of products not in conformity with this standard may not display such products or offer them for sale, or deliver or market them in any other manner.

A. Minimum requirements

In all classes subject to the special provisions for each class, and the tolerances allowed, the cashew kernels must be:

- Intact; the presence of a small hole at the proximal end of the whole kernel or a central split or crack is not considered a defect
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- free from damage affecting the appearance of the produce
- clean, practically free from any visible foreign matter

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18 Definitions of terms and defects are listed in annex III of the Standard Layout – Recommended terms and definition of defects for standards of dry (In shell Nuts and Nut Kernels) and dried produce 
Global cashew market - A snapshot overview

- free from living pests, whatever their stage of development
- free from damage caused by pests, including the presence of dead insects and/or mites, their debris or excreta
- free from mould filaments visible to the naked eye
- free from any rancidity
- free from spots in aggregate in excess of 3 mm on the kernels
- free from blemishes and areas of discoloration or spread stains in pronounced contrast with the rest of the kernel
- free from adhering testa exceeding an aggregated area of 6 mm in diameter or shell liquid
- free of abnormal external moisture
- free of foreign smell and/or taste.

The condition of the cashew kernels must be such as to enable them:
- to withstand transportation and handling
- to arrive in satisfactory condition at the place of destination.

B. **Moisture content**

Cashew kernels shall have a moisture content not exceeding 5.0 per cent.\(^3\)

C. **Classification**

In accordance with the defects allowed in section “IV - Provision concerning tolerances”, cashew kernels are classified into the following classes:

<table>
<thead>
<tr>
<th>Class</th>
<th>Commercial designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra</td>
<td>&quot;white&quot;</td>
<td>white, pale ivory, pale ash-grey, light yellow</td>
</tr>
<tr>
<td>Class I</td>
<td>&quot;scorched&quot; or &quot;lightly blemished&quot;</td>
<td>light brown, light ivory, light ash-grey, deep ivory, yellow</td>
</tr>
<tr>
<td>Class II</td>
<td>&quot;scorched seconds&quot; or &quot;dessert&quot;</td>
<td>light brown, amber, light blue, deep brown, deep blue, discoloured, black spotted, immature, shrivelled, blemished, and stained kernels are permitted.</td>
</tr>
</tbody>
</table>

The defects allowed must not affect the general appearance of the produce as regards quality, keeping quality and presentation in the package.

---

III. Provisions concerning sizing

Sizing is compulsory in "Extra class", but optional for "Class I" and "Class II". Designation of sizes is as follows:

Whole:

<table>
<thead>
<tr>
<th>Size code or count</th>
<th>Maximum number of kernels per pound</th>
<th>Maximum number of kernels per kilogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>150</td>
<td>325</td>
</tr>
<tr>
<td>180</td>
<td>180</td>
<td>395</td>
</tr>
<tr>
<td>210</td>
<td>210</td>
<td>465</td>
</tr>
<tr>
<td>240</td>
<td>240</td>
<td>530</td>
</tr>
<tr>
<td>320</td>
<td>320</td>
<td>706</td>
</tr>
<tr>
<td>450</td>
<td>450</td>
<td>990</td>
</tr>
<tr>
<td>500</td>
<td>500</td>
<td>1100</td>
</tr>
</tbody>
</table>

Pieces:

<table>
<thead>
<tr>
<th>Designation/Size code</th>
<th>Minimum size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large pieces:</td>
<td>Not passing through a sieve of aperture 4.75mm</td>
</tr>
<tr>
<td>Small pieces:</td>
<td>Not passing through a sieve of aperture 2.80mm.</td>
</tr>
<tr>
<td>Very Small Pieces:</td>
<td>Not passing through a sieve of aperture 2.36mm.</td>
</tr>
<tr>
<td>&quot;Baby bits&quot; or &quot;granules&quot;:</td>
<td>Not passing through a sieve of aperture 1.70mm.</td>
</tr>
</tbody>
</table>

IV. Provisions concerning tolerances

At all marketing stages, tolerances in respect of quality and size shall be allowed in each lot for produce not satisfying the minimum requirements of the class indicated.

A. Quality tolerances

<table>
<thead>
<tr>
<th>Defects allowed</th>
<th>Extra</th>
<th>Class I</th>
<th>Class II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Tolerance for cashew kernels not satisfying the minimum requirements of which no more than:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not sufficiently developed, shrunked or shrivelled</td>
<td>1</td>
<td>2</td>
<td>*</td>
</tr>
<tr>
<td>Mouldy, rancid, decay,</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Damage by pests</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Living pests</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Superficial damage (whole kernels only)</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Adhering testa</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>(b) Size tolerance, if sized</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for produce not conforming to the size indicated, in total:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholes (by number)</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Pieces (by weight) (smaller sizes)</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>(c) Tolerance for other defects:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broken kernels (butts, splits and pieces) in wholes</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
Global cashew market - A snapshot overview

<table>
<thead>
<tr>
<th>Defects allowed</th>
<th>Extra</th>
<th>Class I</th>
<th>Class II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces in butts/splits</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Kernels of a colour of the next lower class</td>
<td>5</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Foreign matter, loose shell fragments, loose testa fragments, dust (by weight)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

* Tolerance is not applicable, shrivelled kernels are permitted, as per description in the classification.

V. **Provisions concerning presentation**

A. **Uniformity**

The contents of each package must be uniform and contain only cashew kernels of the same origin, quality, style and size (if sized).

The visible part of the contents of the package must be representative of its entire contents.

B. **Packaging**

Cashew kernels must be packed in such a way as to protect the produce properly.

The materials used inside the package must be clean and of a quality such as to avoid causing any external or internal damage to the produce. Cashew kernels must be packed in hermitically sealed containers. The use of materials, particularly of paper or stamps bearing trade specifications, is allowed, provided the printing or labelling has been done with non-toxic ink or glue.

Packages must be free of all foreign matter in accordance with the table of tolerances in section “IV - Provisions concerning tolerances”.

VI. **Provisions concerning marking**

Each package must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

A. **Identification**

Packer and/or dispatcher: Name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority.

B. **Nature of produce**

- “Cashew kernels”

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20 Since the process of de-shelling and peeling of inedible raw cashew nuts to produce edible cashew kernels is “significant transformation” the country where the raw cashews are shelled may be designated as country of origin.

21 These marking provisions do not apply to sales packages presented in packages.

22 The national legislation of a number of countries requires the explicit declaration of the name and address. However, in cases where a code mark is used, the reference “packer and/or dispatcher” (or equivalent abbreviations) must be indicated in close connection with the code mark, and the code mark should be preceded with the ISO 3166 alpha country code of the recognizing country, if not the country of origin.
Global cashew market - A snapshot overview

- Style.

C. Origin of produce

- Country of origin\(^{23}\) and, optionally, district where grown or national, regional or local place name.

D. Commercial specification

- Class and/or commercial designation
- Size (if sized) expressed in accordance with section III
- Crop year (optional).

E. Official control mark (optional)

Adopted 1999
Revised 2013

\(^{23}\) The full or commonly used name should be indicated
Annex III

Indian specifications of cashew kernels quality grades

N.B NLSG stands for Next Lower Size Grade and NLG for Next Lower Grade

### A. Cashew Kernels - White Wholes

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) NLG 2) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-180</td>
<td>White Wholes</td>
<td>White/pale ivory/light ash Characteristic shape</td>
<td>170-180</td>
<td>5</td>
<td>5</td>
<td>5 (NLSG and SW together)</td>
</tr>
<tr>
<td>W-210</td>
<td>do</td>
<td>do</td>
<td>200-210</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>W-240</td>
<td>do</td>
<td>do</td>
<td>220-240</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>W-320</td>
<td>do</td>
<td>do</td>
<td>300-320</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>W-450</td>
<td>do</td>
<td>do</td>
<td>400-450</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>W-500</td>
<td>do</td>
<td>do</td>
<td>450-500</td>
<td>5</td>
<td>5</td>
<td>5 (SW)</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter. Scraped and partially shrivelled kernels also permitted provided such scraping/shrivelling does not affect the characteristic shape of the kernel.

### B. Cashew Kernels - Scorched Wholes

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) NLG 2) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW</td>
<td>Scorched Wholes</td>
<td>Kernels may be scorched/slightly darkened due to over-heating while roasting or drying</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>7.5 (SSW)</td>
</tr>
<tr>
<td>SW-180</td>
<td>do</td>
<td>do</td>
<td>170-180</td>
<td>5</td>
<td>5</td>
<td>7.5 (NLSG and SSW together)</td>
</tr>
<tr>
<td>SW-210</td>
<td>do</td>
<td>do</td>
<td>200-210</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>SW-240</td>
<td>do</td>
<td>do</td>
<td>220-240</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>SW-320</td>
<td>do</td>
<td>do</td>
<td>300-320</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>SW-450</td>
<td>do</td>
<td>do</td>
<td>400-450</td>
<td>5</td>
<td>5</td>
<td>do</td>
</tr>
<tr>
<td>SW-500</td>
<td>do</td>
<td>do</td>
<td>450-500</td>
<td>5</td>
<td>5</td>
<td>7.5 (SSW)</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter. Scraped and partially shrivelled kernels also permitted provided such scraping/shrivelling does not affect the characteristic shape of the kernel.
C. Cashew Kernels - Desert Wholes

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) NLSG 2) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSW</td>
<td>Scorched Wholes Seconds</td>
<td>Kernels may be over-scorched, immature, shrivelled, speckled, discoloured and light blue.</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>7.5 (DW)</td>
</tr>
<tr>
<td>DW</td>
<td>Dessert Wholes</td>
<td>Kernels may be deep scorched, deep brown, deep blue, speckled, discoloured and black spotted</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter.

D. Cashew Kernels - White Pieces

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) NLSG 2) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Butts</td>
<td>White/pale ivory or light ash. Kernels broken cross-wise (evenly or unevenly) naturally attached</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>5 (SB)</td>
</tr>
<tr>
<td>S</td>
<td>Splits</td>
<td>White/pale ivory or light ash. Kernels split naturally lengthwise</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>5 (SS)</td>
</tr>
<tr>
<td>LWP</td>
<td>Large White Pieces</td>
<td>White/pale ivory or light ash</td>
<td>Kernels broken into more than two pieces, not passing through 4 mesh 16 SWG sieve/4.75mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>5 (SW and SP together)</td>
</tr>
<tr>
<td>SWP</td>
<td>Small White Pieces</td>
<td>White/pale ivory or light ash</td>
<td>Broken kernels smaller than those described on LWP but not passing through 6 mesh 20 SWG sieve/2.80 mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>5 (BB and SSP together)</td>
</tr>
<tr>
<td>BB</td>
<td>Baby Bits</td>
<td>do</td>
<td>Plemules and broken kernels smaller than those described as SWP but not passing through a 10 mesh 24 SWG sieve/1.70 mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>1% (cashew powder)</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter. Scrapped and partially shrivelled kernels also permitted provided such scraping/shrivelling does not affect the characteristic shape of the kernel.
### E. Cashew Kernels - Scorched Pieces

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB</td>
<td>Scorched Butts</td>
<td>Kernels broken crosswise (evenly or unevenly) and naturally attached. Kernels may be scorched/slightly darkened due to overheating while roasting or drying in drier/borma</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>7.5 (DB)</td>
</tr>
<tr>
<td>SS</td>
<td>Scorched Splits</td>
<td>Kernels split naturally lengthwise. Kernels may be scorched/slightly darkened due to overheating while roasting or drying in drier/borma</td>
<td>N.A</td>
<td>5</td>
<td>5</td>
<td>7.5 (DS)</td>
</tr>
<tr>
<td>SP</td>
<td>Scorched Pieces</td>
<td>Kernels may be scorched/slightly darkened due to overheating while roasting or drying in drier/borma</td>
<td>Pieces passing through a mesh 16 SWG sieve/4.75 mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>7.5 (SSP &amp; SPS together)</td>
</tr>
<tr>
<td>SSP</td>
<td>Scorched Small Pieces</td>
<td>Kernels may be scorched/slightly darkened due to overheating while roasting or drying in drier/borma</td>
<td>Pieces smaller than SP but not passing through a 6 mesh 20 SWG sieve/2.80 mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>5 (DSP)</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter. Scraped and partially shrivelled kernels also permitted provided such scraping/shrivelling does not affect the characteristic shape of the kernel.

### F. Cashew Kernels - Dessert Pieces

<table>
<thead>
<tr>
<th>Grade designation</th>
<th>Trade name</th>
<th>Colour and characteristics</th>
<th>Count, (number/lb.)</th>
<th>Max moisture (%)</th>
<th>Max Broken (%)</th>
<th>NLSG 1) max (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS</td>
<td>Scorched Pieces</td>
<td>Kernels may be over-scorched immature, shrivelled, speckled, discoloured and light blue</td>
<td>Kernels broken into pieces but not passing through a 4 mesh 16 SWG sieve/4.75 mm I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>7.5 (DP and DSP together)</td>
</tr>
<tr>
<td>DP</td>
<td>Dessert Pieces</td>
<td>Kernels may be deep scorched, deep brown, blue, speckled, discoloured and black spotted</td>
<td>Kernels broken into pieces but not passing through a 4 mesh 16 SWG sieve/4.75 mm and I.S. sieve</td>
<td>5</td>
<td>Nil</td>
<td>7.5 (DSP)</td>
</tr>
</tbody>
</table>

Kernels shall be completely free from infestation, insect damage, mould rancidity, adhering testa and objectionable extraneous matter.

Uses for cashew pieces and broken grades

(Excerpt from IFC study “Prospects for Cambodia’s Cashew Sub-sector”)

Fancy Splits: Used mainly in snack foods for mixing with pieces to make a cheaper roasted nut. Also used in some types of ethnic cooking, especially Chinese and Indian food. They are heavily bought by the US market, but are not as popular in Europe. They are also available scorched at a discount.

Fancy Butts: Used mainly as a cheap roasting nut, they are often combined with W450 as a ‘Wholes and Broken’ mix, or as a substitute for W450 in vending packs in the US. They are also available scorched at a discount.

Large White Pieces or P1: Used as a cheap roasting nut, or mixed with dried fruit or other nuts. It is the standard grade used in cooking and breakfast cereals, where a white colour nut is needed. It is also used in the manufacture of cashew butter.

Scorched Pieces or P2: Same sizing as LWP but with discoloured nuts. Quality is widely variable. Used in the US for the manufacture of cashew brittle. Also used as ingredient in pesto sauce, substituting the more expensive pine nuts.

Small White Pieces or SP1, Scorched Small Pieces or SP2, SSP1 & SSP2 & SPS: These grades are interchangeable in industrial uses. They often substitute almonds. Sometimes used in pesto sauce in Italy and for coating ice cream or confectionary. These grades are increasingly used as substitutes of almonds or hazelnuts, which are more expensive to be diced or otherwise prepared.

Baby Bits; G1; G2: These grades were difficult to sell until recently, but when Indian and Brazilian confectionary industries were short of better grades of cashew they started using them. In the West, these grades are used in the manufacture of cashew butter, as ingredients in biscuits and as coatings for ice cream and cakes.

Meal or Flour: Used in all sorts of applications where a sweet nutty taste is required. Processors sell it to bakers and confectioners in Europe and the US.