# The diverging South : comparing the cashew sectors of Tanzania and Vietnam

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# The Diverging South:

# Comparing the Cashew Sectors of Tanzania and Vietnam

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# The diverging South

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# 1 Introduction

Arriving in Tandahimba District in November 2008, I passed vibrant villages with occasional cashew trees. Farmers could be seen with buckets of raw cashew, while young men were manoeuvring push-carts piled high with sacks of raw cashew. Hopping onto a SANLG motorbike, Mtausi, who became my main companion during fieldwork, took me around the region's villages. There were the sounds of drum beats in a number of them that coincided with *kualuka* and the cashew-harvesting season. Young men riding and pushing brightly coloured bicycles carrying accessories and clothing to sell could also be seen in villages with *ngoma*. The singing and dancing seemed to continue all night. My initial impression that life was good and all was well evaporated abruptly once I started talking to people about cashew. The on-time delivery of inputs and *likaba* were common concerns raised by many, together with those about the newly introduced multi-tiered trading system and the Warehouse Receipt System (WRS). Cashew farmers have seen progress both in terms of production and the amount of money they earn, but they still depend on the cash they earn from cashew for their other activities. Yet although progress has been observed in Tandahimba compared to similar cashew-producing districts elsewhere, concerns were voiced regarding the magnitude of the progress.

In November 2009, and initially as a pilot project, I visited Binh Duong Province about 68 km northwest of Ho Chi Minh City.[1] The cashew trees there are planted close together and are smaller in size, with cashew fields alternating with plantations of rubber trees. Most people travelled by motorbike and I rarely met people on foot. And when I was on fieldwork in January 2010, the same could be seen in Bugiamap, the country's 'cashew kingdom' and the highest cashew-producing district in Binh Phuoc Province.

[1] Bình Dương province / Dầu Tiếng district / Minh Hòa commune / Hòa Lộc hamlet.

How can farmers growing the same crop excel in one country and not in another? This divergence in outcome is a recurring issue and is central to this thesis. What makes this thesis original is that, through the lenses of one sector, namely the production of raw cashew, the experiences – or development trajectories – of two countries are compared. Comparing the most successful cashew-producing areas allows insight and the opportunity to learn from the top performer. This approach will allow others to learn from the differences between and within the two countries. The study shows that cashew nuts, '(the) poor man's crop and rich man's food' (Jaffee 1994: 1), flourish in different settings. The main research question is: What accounts for this divergence in experience, even within the confines of the same sector?

Rather than comparing the broad socio-economic divergence of whole economies, the point of comparison is in one sector only in order to gain insight as to what might account for the divergence in development. As divergence is central to this analysis, two case studies in the most successful cashew-producing regions of Tandahimba District in Tanzania and Bugiamap District in Vietnam were chosen. Learning from successful performers was considered to be a good point of departure. One could imagine that the rural areas I visited might have been homogeneous and this was true in some ways, such as the use of motorbikes and the unpaved roads. In sampling cashew-producing areas, I ignored the use of random sampling in order to learn from better performers. Visiting all the cashew-producing areas in the two countries would have added little benefit and would have been logistically and financially unfeasible in the time allowed. Comparing Tanzania and Vietnam and knowing how a better performer ranks is in line with the objective of the thesis, namely to understand the divergence between Tanzania and Vietnam as part of the Tracking Development project.[2] This is a multidisciplinary project that aims to explain the divergence in the last fifty years between Sub-Saharan African and South East Asian countries with similar, but not identical, points of departure. This then led to confining the study to using data from rural-based fieldwork, which grounded the analysis in a specific sector with a view to drawing wider lessons. Although I had a detailed questionnaire translated into both Kiswahili and Vietnamese, my evening meetings with my hosts, whether drinking *ghahawa* on the veranda of the Natima guest house in Tandahimba or having a chat with Mr Xoay and Mr Hung in Bugiamap, helped to clarify some of my field observations. Though I am Tanzanian, I had never been to Tandahimba and all I knew of the southern part of Tanzania was about *makonde* carvings, cashew and *ngoma*. And from the statistics that I had

[2] For more information about the project: http://www.institutions-africa.org/trackingdevelopment_archived/home.html and Prof. David Henley's inaugural address: http://www.ascleiden.nl/Pdf/OratieHenley.pdf

worked with, it was clear that the area was deprived and ranked low on many key social and economic indicators.[3] This interaction with people allowed me a better understanding of the data I collected. Since I do not speak fluent Vietnamese, I recruited a team of research assistants with the help of my hosting centre in Vietnam, the Center for Urban & Development Studies (CEFURDS). The research assistants were students at Ho Chi Minh City University of Social Sciences and Humanities. We worked together at Bugiamap and while visiting processing plants. Information from individual farmers was complemented with information from key informants' interviews with traders, processors, researchers and decision makers.

Why did I choose to study cashew? Because the divergence in development here – from an old-timer to new-timer dominance – illustrates a more general difference between Tanzania and Vietnam. While diversification away from agriculture in Vietnam went hand in hand with rising agricultural production and productivity, diversification in Tanzania appears to go hand in hand with sluggish growth and stunted productivity in agriculture. The different approaches used by the countries that make the sector decline or flourish have had implications for the whole economy. Diversification in Vietnam would seem to have encouraged both an increase in agriculture and improvements in well-being, while stagnating productivity in Tanzania appears to have led to a decline in well-being. Comparative economic history has been used to understand divergence.

To answer the question as to what accounts for this divergence in experience, even within the confines of the same sector, this thesis is divided in two main parts. The first part, comprising Chapters 2 and 3, looks at the overall macro and sector context in the two countries, while the second part – Chapters 4 and 5 – uses empirical evidence from fieldwork to showcase the sharp differences among cashew farmers by looking at household production and market dynamics. Chapter 2 considers the transition from socialism to a market economy with 1986 as a turning point[4] in the context of the world economy. The chapter draws from Heckscher-Ohlin's trade theory as used by Wood (2001) and Karshenas's (2001) measure of the value added per agricultural worker. The similarities between Tanzania and Vietnam indicate that the socialist approaches implemented failed either to increase production substantially or reduce poverty. Tanzania's economy was influenced by both Arabs and Europeans (the Germans and the British) and some of their influence can still be seen today. Vietnam's economy was influenced by Russia and China. After the socialist approach was abandoned, mar-

[3] PHDR (2005).

[4] Van Donge *et al*. (2012: s9) define the turning point as 'dates at which two crucial development indicators, GDP and poverty incidence, showed a lasting turn for the better, leading to sustained growth in association with sustained poverty reduction'. The concept used in this thesis simply refers to a period when there was a major change in policy, in this case a shift from socialism to a free market economy.

ket-oriented strategies were adopted by both countries. On the one hand, there were the adaptive self-initiated market-oriented strategies of *Doi Moi* in Vietnam, while in Tanzania there were the opportunistic conditional market strategies of the Structural Adjustment Programmes. The strategies adopted in Tanzania were restrictive in nature and resulted in a reduction in domestic expenditure, minimal growth in agricultural commodities and a decline in well-being. Plans were implemented with only a short-term perspective, while Vietnam has exhibited a better institutional set-up that has allowed the productive sector to grow.

Chapter 3 describes the history of the cashew nut and seeks to explain global trends by looking at the roles played by the different actors. The chapter draws from the global value chain (GVC) framework. Cashew consumption and production have been increasing around the world, with producers, processors and traders as the industry's main actors. And a shift is currently being seen in the share of raw cashew produced by different regions. India and Brazil have consistently been among the biggest producers of raw cashew since the 1960s although Asian countries have increased their market share significantly in the last decade. In 1961 a tonne of processed cashew, i.e. kernels, fetched less than US$ 1000 but by categorizing consumers and introducing standards, cashew has become a premium quality product and a tonne of kernels has been fetching an average price of more than US$ 4500 over the past two decades. Technological advances explain the current demarcation of cashew production: raw nut producers are primarily in Africa and Asia, processors are predominantly in Asia (Vietnam and India), and flavouring is being done in Western countries (the US and Europe). If we look at Tanzania and Vietnam, it can be seen that there are many players at different levels of the chain in Vietnam, which allows for flexibility, while there are few upstream actors in Tanzania and this results in rigidity among downstream actors. In the context of producing cashew, Tanzania is an oldtimer while Vietnam is a new player in cashew production globally. Local Vietnamese traders are playing a role in advancing the sector in Vietnam, while Indians both from within and outside Tanzania play the trading role in Tanzania.

Empirical evidence from fieldwork can be found in Chapter 4, where the differences between raw cashew producers in terms of sunk costs (irrecoverable costs), output performance and input usage at household level are identified. To investigate the performance of cashew households in the two countries, the analysis draws on Ruttan & Hayami's induced technical and institutional innovation model. Based on rural fieldwork, comparison is made of the two countries by considering how the crop is set up and inputs are utilized. An accounting framework is used to show the divergence in production at household level. Cashew is an important source of income and employment for farmers in both Tanzania and Vietnam and investment in cashew is a continuous process. Credit

is, however, crucial for farmers as it ensures a steady supply of inputs and allows continuous maintenance. In Vietnam, credit is provided through government-initiated poverty-alleviation programmes and by private banks but Tanzanian farmers' sole means of finance are their earnings from cashew.

Chapter 5 draws together the information from the preceding chapters to explain the divergence observed. What emerges from the observations is the way the actors in the sector interact with each other. This chapter reveals why Vietnam has excelled at cashew production while Tanzania has lagged behind. The cases of cashew in Tanzania and Vietnam show how market failures are solved, in one case coordination is used as a solution where downstream and upstream stakeholders are linked (in Vietnam) by backward linkages while in the other, coordination provides incentives to mainly downstream actors (a single stakeholder, i.e. the farmer) through forward linkages (in Tanzania). Drawing on the theory of implicit contracting and the value chain framework, both spot and relational contracting are used in the analysis. Issues with hold up that investors face once they have decided to invest seem to adversely affect farmers in Tanzania and processors in Vietnam. Farmers in Vietnam seem to escape the sunk cost fallacy. By contrasting cashew value chain systems, in particular looking at the balanced value chain and unbalanced value chain, it is argued that farmers react to changes in price. The balanced value chain in Vietnam allows a compatible functioning of the sector that encourages its expansion. The unbalanced value chain in Tanzania results in power being tilted away from farmers, which leads to the acceptance of residuals payments and being positioned in the margins by both state-run and private trading.

It is also argued that the implementation of an industrial policy for market development as a strategic policy in Vietnam versus the opportunistic policy in Tanzania has led to increased production and erratic production respectively. The chapter shows how radical reversals of policies in Tanzania have resulted in erratic production with occasional spurts of growth while adaptive efficiency in Vietnam has resulted in a steady increase and the stabilization of production at a high level. The chapter shows that there are plenty of ideas in Tanzania about how to increase production but there is a distinct lack of strategic implementation regarding decisions taken at a high level. Unfortunately this is happening because there is little to no commitment at the lower political level and little infiltration of the proposed reforms. This is compounded by a lack of coordination among the actors in the cashew sector, something that applies to the Tanzanian economy more generally. The chapter also shows how anti-poverty programmes were geared towards productive sectors in Vietnam unlike in Tanzania where social sectors were given more consideration.

# 2

# Parallel but different transitions to a market economy

## Introduction

This chapter addresses the transition to a market economy in Tanzania and Vietnam and the divergence in performance between the two countries in the period between 1986 and 2007.

The year 1986 was crucial when Tanzania and Vietnam both adopted market reforms. Tanzania was being ruled by only its second president since independence in 1961, President H.E. Ali Hassan Mwinyi, who faced the monumental task of introducing free-market changes after almost two decades of socialism. A move away from the socialist method of doing business presented its own challenges as this was the only method of operation that those in government knew. Tanzania's economy was performing poorly and having to comply with conditionalities laid down by international financial institutions that were supporting its ailing economy. For Vietnam, 1986 marked the beginning of the implementation of *Doi Moi* (renovations), namely market-oriented strategies. As in Tanzania, this was a new path away from socialism and the Vietnamese economy was functioning equally poorly at the time. *Doi Moi* was characterized by a move from socialist collectivization to individual ownership of land and the freedom to produce and trade. Vietnam started to implement wide-ranging strategies to enable its citizens to move out of poverty in this period, including rural electrification and resettlement projects. 1986 was thus a turning point for both countries.

A macro view of the two countries is provided in Table 2.1 and Graph 2.1. The variables considered include land area, arable land, population, the percentage of the population in rural areas, and population density and structure. Tanzania has three times more land than Vietnam and about half its population, with a population density of about 50 people per $km^2$ compared to more than 250 per

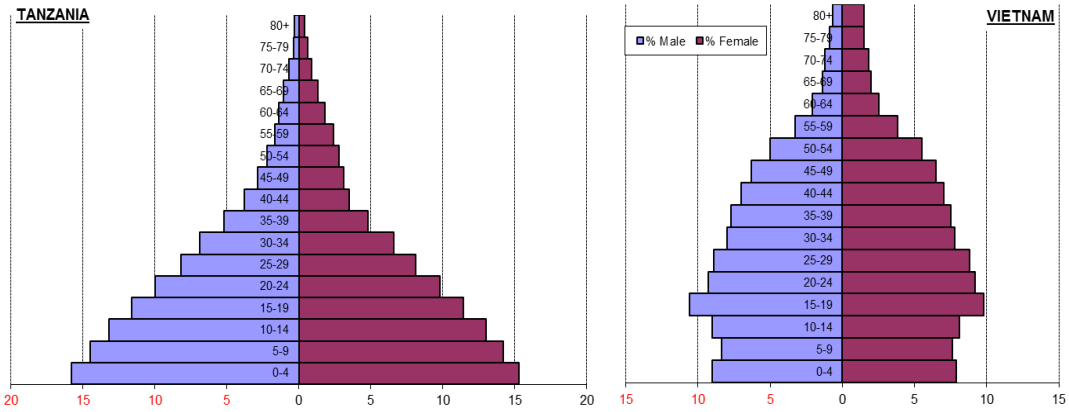
km$^2$ in Vietnam. The rural population in both countries is about the same at around 70% of the total population. The two countries have different population structures. The population pyramids in Graph 2.1 show that both countries are predominantly made up of young people. Vietnam's population structure is starting to bulge, with half its population being under 30 years of age, while half of Tanzania's population is under 20.

*Table 2.1* Vietnam and Tanzania compared

| | Land area (km²) | Arable land (hectares) | Population (in millions) | Percentage in rural areas | Population density |
|---|---|---|---|---|---|
| Tanzania | 887,460 | 9,600,000 | 42,188 | 73.7 | 49 |
| Vietnam | 310,070 | 6,300,000 | 85,790 | 70.4 | 259 |

Source: National Bureau of Statistics (NBS) of Tanzania and General Statistical Office (GSO) of Vietnam. The estimated population figures for Tanzania are for 2010 and the population figures for Vietnam are from its 2009 census.

*Graph 2.1* Population pyramids for Tanzania and Vietnam (2009)




Source: General Statistical Office (GSO) of Vietnam and US Census Bureau, International Database

It is important to understand what happened in both countries prior to 1986 so this chapter makes macro comparisons between Tanzania and Vietnam in the context of the global economy between 1955 and 2010. The next section discusses a theory of divergence and comparison, while the third section looks into the similarities between Tanzania and Vietnam and the socialist approach that failed either to increase production substantially or to reduce poverty. After socialism was abandoned, market-oriented strategies were adopted and the subsequent section considers the self-initiated market-oriented strategies of *Doi Moi* in Vietnam, comparing them with the conditional market strategies of Tanzania's

Structural Adjustment Programmes. Improvements in GDP and agricultural growth are also examined.

## The diverging South

Trying to understand differences is an exercise often undertaken by scholars, and this research is no exception. It studies, in particular, the diverging South. To understand divergence between two areas, one has to assess how the two places are faring and compare their production levels with world averages. This approach provides respective ranking positions in relation to a benchmark figure. Alternatively, one could compare the two countries as individual cases, providing a comparative understanding and using a period with similarities as a benchmark.

Wood (2000, 2001a, 2001b) employs export structure as an entry point of comparison. By using the Heckscher-Ohlin trade theory and assuming that a 'country's export depends on the composition of its resources', the H-O theory helps to describe North and South trade where the composition of GDP of Northern economies is composed of capital-intensive manufacturing while developing countries in the South have economies based on labour-intensive export items. Wood shows that the differences between the two regions are mainly caused by variations in skill, land and labour and that countries with a high ratio of skills to land tend to export manufactured products, while those with a low ratio of skills to land are more likely to export primary products.[1] Wood feels that Africa has low manufacturing levels and a low percentage of processed products in its primary exports, with low levels of skill and high levels of land per worker.[2] But then again, this acts as a diseconomy of scale. He also observes that there has been little improvement in skills with a growing population.[3] Comparing Asia and Africa, Karshenas (2001), who looks only at the South, shows the variations in agrarian structure in the two regions and claims that in countries in Sub-Saharan Africa with much lower population densities, agriculture plays an important role in explaining cross-country differences in sectoral per capita income. Woods believes that all the constraints that lead to discrepancies with other parts of the world are due to a lack of infrastructure, macroeconomic mismanagement (especially in exchange rates) and ineffective administration. Africa would develop faster, he feels, if it reduced transaction costs, especially in infrastructure.

Karshenas (2001) on the other hand uses a so-called v-ratio to capture duality in Sub-Saharan African economies as compared to Asia, noting that per capita

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1 Skill per worker is measured by an adult's average number of years of schooling (aged 15 and over), while supply of land (a proxy for resources) is measured by a country's total land area. N.B. These measures do not account for quality. See Wood (2000, 2001a, 2001b).

2 The ratio of manufacturing to primary exports tends to be higher in countries with more skills and less land per worker.

3 An observation shared by Boserup (1965) who mainly focused on static comparison.

income and productivity in the non-agricultural sectors is well above that in the agricultural sector. The v-ratio measures the value added per agricultural worker as a percentage of value added per worker in the non-agricultural sector at current prices. The relatively low v-ratios in Africa are predominantly explained by the structural characteristics of the agrarian economies in Sub-Saharan Africa in contrast to those in Asia. This view is shared by Wood but Karshenas shows that initial conditions matter when it appears that, to explain wage differentials between Asia and Africa, one does not need to invoke arguments of urban bias, government wage legislation or union power in post-colonial Sub-Saharan Africa.

These approaches offer two different ways of making comparisons. Firstly, to create a measure, in the case of Karshenas the v-ratio, and then to see how countries rank, and explain the divergence by looking at the differences in initial conditions (labour, land and output). He followed the pattern by assessing how economies with limited labour operate. Wood, on the other hand, created a measure that captures the export structure variation and then sees how different world blocs are faring. He dissected the export structure in detail to ascertain the types of resources being used for export production in individual countries, and then did the same for manufacturing in total exports, both current and predicted, and identified the share of skill-intensive items in manufacturing.

The analysis in this chapter draws on macro-sectoral data and a literature study. The similar roots of Vietnam and Tanzania are considered first, with an emphasis on their common turning point,[4] and later their diverging pathways.

## Common roots, diverging pathways

There were some commonalities of experience between Tanzania and Vietnam, such as socialist development from a predominantly agrarian economy and similar levels of development in the 1960s, but also important differences (two Vietnams versus one Tanzania, war versus peacetime development). This section starts by looking at the roots that Tanzania and Vietnam have in common.

As can be seen in Table 2.1, both countries have a large rural population. This was around 80% in the 1970s and most of the people were engaged in agriculture. The two countries had high levels of poverty until the early 1990s, with almost 40% of Tanzania's population and nearly 60% of Vietnam's being classified as 'poor'.[5] With the majority of their population confined to the rural areas, both countries adopted a socialist approach but a lack of sufficient resources resulted in the underdevelopment of infrastructure. For instance, with land size almost three times that of Vietnam, Tanzania had 85,000 km of roads in 1998 and

[4] A time of sharp divergence.

[5] For levels of rural poverty, see Table 2.1A in the Appendix.

Vietnam's totalled 93,300 km. The entire railway network was 4,444 km in Tanzania and 2600 km in Vietnam in the same year.[6] Both countries have very low road density, namely 9 and 48 km of roads per 100 $km^2$ for Tanzania and Vietnam respectively.[7] At about 10% the size of Vietnam and 3% that of Tanzania, the Netherlands, for example, has a total land area of around 37,000 $km^2$ and a road network of more than 137,000 km, giving a road density of above 300 km of road per 100 $km^2$. The use of five-year plans by Tanzania's and Vietnam's interventionist governments is evident in both countries.

*Socialist state of Tanzania: 1967 to 1985*

Tanzania gained independence from the British in 1961 and became a republic in 1962. In 1964, mainland Tanganyika was united with Zanzibar to form Tanzania. Political parties were banned in 1965 and Tanzania became a one-party state with the challenge of having a population facing poverty, disease and ignorance. Under the leadership of Julius Kambarage Nyerere, the Tanzania African National Union (TANU) saw the major means of production in the hands of just a few and socialism was introduced with the expectation that it would create a more egalitarian society.

*Ujamaa na Kujitegemea*[8] (Socialism and Self-reliance) were adopted in 1967, with all the major means of production belonging to the state. Efforts were made to increase literacy levels among the population, price controls for producer and consumer goods were introduced, wages, incomes and pricing policies were adopted by the government to control wage rises (Semboja *et al*. 1988), and private banks, enterprises, hospitals and schools were privatized. According to Coulson (1982: 274), parastatals in Tanzania limited the transfer of profits abroad, investing in productive sectors and providing productive infrastructure in transport, construction and power generation. The government also abolished all local government in an attempt to improve service delivery and services were then centrally controlled.

The main pillars of *Ujamaa* were based on the mobilization of the masses to bring about development, social justice and equality, and to reduce poverty. With a vast country and a scattered population, the party initiated a resettlement programme to allow for the easy provision of services. Initially, moving to *Ujamaa*

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[6] WDI database sourced from the International Road Federation, World Road Statistics and electronic files, except where noted, and the World Bank, Transportation, Water, and Information and Communications Technologies Department, Transport Division.

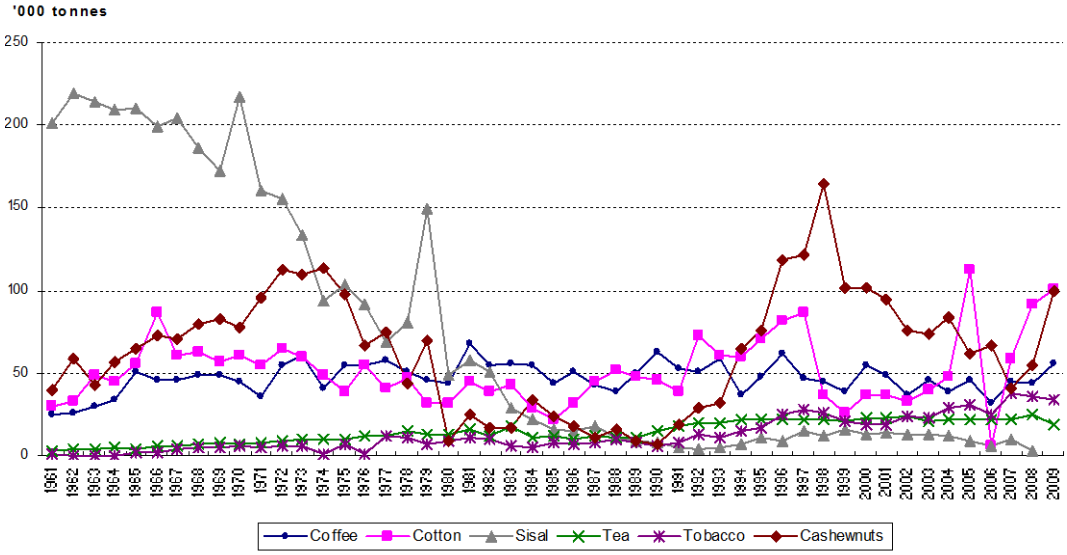
[7] WDI database sourced from the International Road Federation, World Road Statistics and electronic files, except where noted, and the World Bank, Transportation, Water, and Information and Communications Technologies Department, Transport Division.

[8] Tanzanian socialism is referred to simply as *Ujamaa* and self-reliance as *Kujitegemea*.

villages was voluntary, but persuasion and inducement were used later with farmers who were slow to move to these villages (McHenry Jr 1979).[9]

In 1973 and coupled with the oil crisis, the movement of farmers to the development villages led to a sudden fall in crop production (of cash and food crops) and exports of traditional crops experienced a dramatic fall in the following years, especially in sisal and cashew (Graph 2.2 and Table 2.2A in the Appendix). By 1975 and amid resistance from farmers, only villages where 'a substantial portion of the economic activities of the village are being undertaken and carried out on a communal basis' were designated and registered as *Ujamaa* villages.[10]

*Graph 2.2* Tanzania's export volume by commodity (1961-2009)




Source: Bank of Tanzania (BOT) and Economic Survey (2009)

Much of the state's investment was aimed at providing public-sector services, increasing industrial production and promoting communal agriculture. To compensate for its limited production, Tanzania was able to benefit from its friendly ties with the Nordic countries (Sweden, Norway, Denmark and Finland) that supported the provision of healthcare services and education. Other foreign exchange came from trading traditional export crops, such as coffee, cotton, sisal, cashew and tea.

After independence, Tanzania started to build import substitution industries (ISI) to process its raw materials. Parastatals were formed, including ones in

[9] The villages became 'development villages', reflecting the importance the party leaders put on development. See McHenry Jr (1979) for more details on their implementation.

[10] Villages and Ujamaa Villages Act 21 of 1975, Article 16: 1.

charge of crop marketing and banking. The government owned all Tanzanian enterprises and made the strategic decision to invest heavily in human capital in order to have enough qualified labour to run the economy. The expansion of parastatals meant an explosion in managerial positions, which attracted many able Tanzanians away from the civil service (Coulson 1982). These included, for instance, the National Bank of Commence (NBC),[11] the National Insurance Corporation (NIC), the National Provident Fund (NPF), the Tanzania Rural Development Bank (TRDB),[12] the Tanzania Investment Bank (TIB) and the National Development Corporation (NDC), most of which started around this time. Several production plants were set up too: Wazo Hill for cement production, cashew-shelling plants in Mtwara and textile mills such as Mwatex and the Friendship Mill. Coulson (1982) observed that a lot of the investment in the manufacturing sector tended to be capital intensive and the plants were costly to run. Most of the projects were managed by international aid donors (Wuyts 2004).

The then established Import Substitution Industries (ISI) found it difficult to obtain imported tools, machines and other inputs for production due to higher oil prices after the 1973 oil crisis. Some of the newly built cashew-processing plants never opened. The National Price Commission offered higher prices for food crops to encourage production, which led to increases in the production of food at the expense of cash crops. This was a response to the drought of 1973/74 and shows that farmers do react to price incentives. The demand for wage goods (necessities) continued to grow but this led to further increases in the prices of wage goods, particularly food (Wuyts 1994, 2001). In his recent work, Edwards (2012: 22) notes that 'during the late 1970s, and as profits from state owned firms and crop authorities declined, the government ran increasingly large deficits. These were partially financed through money creation by the Bank of Tanzania, with the resulting inflationary pressures and further erosion of competitiveness. By 1977, and in spite of the goal of becoming self-reliant, almost 60% of Tanzania's development budget was financed with foreign aid.' Wangwe (1983: 484) noted that this was due to capacity creation coupled with capacity underutilization and that 'MVA (manufacturing value added) doubled during the 1966-1980 period while industrial employment tripled'.[13] With so much money chasing so few goods, inflation became rampant (Wuyts 2004).

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[11] The bank with the most branches was split into NBC Limited (with 53 branches), Consolidated Holdings Corporation and NMB with 139 branches in 1997.

[12] Transformed in 1984 to support rural cooperatives, the then-called Cooperatives and Rural Development Bank (CRDB) was privatized to become the CRDB Bank PLC in 1996.

[13] Even with a reduction in output, enterprises continued to hire labourers, which resulted in an underutilization of labour. The structure of imports was not adjusted to reflect the greater need for intermediate inputs than machinery to solve the balance of payments crisis. All industries, with the exception of hoes/ploughs, operated at less than full capacity. See Wangwe (1983: 489, Table 7).

It was also at this time that Tanzania followed a non-alignment movement, which allowed it to receive assistance from both the Western and Eastern blocs to support its development programme, especially education and health. But failure to meet the conditions provided by the IMF on devaluation and fiscal adjustment led to minimal donor assistance.

Parts of Tanzania's northern border region were illegally occupied by the then-president of Uganda Idi Amin in late 1978 and Tanzania went to war to defend its territory. The fighting was over by April 1979 and Amin was overthrown by a combined team of Tanzanian and exiled Ugandan soldiers. Though no official figures are available, Tanzania used most of its national reserves to fight this war.[14] And a shortage of foreign-exchange earnings, coupled with the Ugandan war, led to the emergence of deep cracks in the country's economy.

Even with limited resources at its disposal, Tanzania was still at the forefront of supporting its non-free neighbours in Southern Africa, including Angola, Zimbabwe (then Rhodesia), Mozambique and South Africa where it also helped to fight apartheid by allowing freedom fighters to have a base in Mazimbu, Morogoro (Ngowi 2005). Sanctions were imposed on Tanzania as a result of its support of the opposition forces in Southern Africa and donors questioned the rationale behind providing funds to Tanzania as it was in turn supporting other countries in their fight for independence.

Tanzania began to struggle to stand on its own as its economy failed. Bienefeld (1989: 4) summarized the process that led to the crises of the late 1970s and early 1980s as 'construction, over twenty years, of a geographically dispersed, import intensive, urbanised economy depending critically on expanding marketed agricultural surpluses to feed the urban population and to earn the foreign exchange required for that system to operate'.

To win external support, Tanzania had to accept conditionalities from the International Financial Institutions (IFI). From 1981 to 1984, the country tried to implement its own reforms to avoid IFI conditionalities and to preserve its autonomy in making policy, undertaking locally designed recovery programmes that included the National Economic Survival Programme (NESP) and Structural Adjustment Programmes (SAP) in 1981 and 1983 respectively (Wangwe 2004). The NESP aimed to cut government expenditure by downsizing government institutions and privatizing parastatals (state-owned enterprises), increasing exports and reducing imports to help earn foreign exchange, increasing food sufficiency, improving strategic planning and coordinating activities better, and providing incentives to farmers through agricultural marketing to increase efficiency. For-

[14] The cost of the war is estimated at about US$ 500 million to US$ 1.5 billion (Nyang'oro 2011: 82), BOT (2011: 89) and Edwards (2012: 24).

eign-exchange liberalization and devaluation were implemented to improve the balance of payments deficit.

The above-mentioned reforms led to greater reliance on individual initiatives and corporate accountability rather than on government as the decision maker in business matters. Tax and civil-service reforms were additional components that reflected changes in the role of government under SAP. In these times of transition in the early 1980s, Tanzania experienced severe shortages in the production of necessities and wage goods. Food was rationed and many families had to access a garden to ensure their own food supply. I personally remember standing in line (saving a spot for my mother) waiting for a truck from the National Milling Cooperation (NMC) to distribute flour and sugar for *kaya* (households) in our neighbourhood. In urban areas, it was common to see houses surrounded by vegetables, chickens and cows instead of lawns. 'The worst were the generalized shortages and electricity blackouts (…) shops were empty, and many people resorted to bartering, and the precipitous decline in incomes and public services.'[15] And 'this *goods famine*' was experienced in both the urban and rural areas; farmers had little incentive to sell their crops if there was hardly anything to buy with the money they earned (Wuyts 2004: 338). In rural areas the situation was even worse.

The state failed to implement the envisaged reforms due to a lack of resources as even the previously friendly Nordic donors were now siding with the IFI. 'In the four years between 1981 and 1985, net official assistance, in per capita terms declined by a remarkable 40%.'[16] In 1985, after more than twenty years in power, President Julius Kambarage Nyerere, Tanzania's first president, stepped down to make way for a new president, who would have to adopt market reforms with conditionalities from the IFIs. These conditionalities in Tanzania and in other Sub-Saharan African countries were influenced by the 1981 Berg Report (Wuyts 2004), which hinged on the fact that the depressing performance of the economy was a result of bad policies, with people's interests coming behind those of bureaucrats. With evidence of failure of the required planned economic change, President Nyerere mainly concentrated on the politics of nation-building and passed the torch of economic strength to President Ali Hassan Mwinyi.[17]

*Socialist state of Vietnam: 1955 to 1985*

In the past, South Vietnam followed a capitalist path, while North Vietnam adopted a socialist path. North Vietnam gained independence from the French in

[15] Edwards (2012: 26) citing Mtei (2009).
[16] Edwards (2012: 3).
[17] Mkandawire (2001) noted that most first-generation African presidents strove for nation-building and subsequent presidents had to deal with rebuilding the economy.

1945 and introduced socialism in 1955 after its war with France.[18] The South remained capitalist with support from the US until the end of the Vietnam War in 1975 when North and South Vietnam were reunited and the socialist government in the North faced the challenge of rebuilding the country. Under socialism, most enterprises were run by parastatals or corporations. Production was centrally planned, with all farmers belonging to a cooperative society and producing communally. Earnings were then distributed to each member regardless of his/her effort or level of input. In the North where central planning was practised, production was collectivized. The leadership of North Vietnam[19] wanted to remove all traces of capitalism in the South but this proved to be a challenge after the end of the war when there was already resistance in the North to cooperatives, as incentives provided under collectivization were falling.

With all the major means of production controlled by the state, efforts were made to redistribute land equitably and the majority of farming households received land, as was observed by ANZDEC Ltd *et al*. (2000: 28):

> The distribution of agricultural land is relatively equitable in Viet Nam. This is a consequence of its socialist revolution in which large holdings were converted to state farms or agricultural collectives in the late 1950s in the North and in the late 1970s in the South. Furthermore, the process of decollectivization, in which collective land was allocated to member households, was relatively equitable. A limit of 2 hectares in the Red River Delta and 3 hectares in the south prevented the creation of large private farms.

In its socialist period, Vietnam depended on China and Russia for aid but relations with China broke down after Vietnam attacked Cambodia in 1978 (ANZDEC Ltd *et al*. 2000: 31).[20] Prior to this, China and Russia had assisted in establishing state enterprises to produce fertilizer (Minot *et al*. 2006). Vietnam received about US$ 1 bn annually in economic assistance, mainly from the Council for Mutual Economic Assistance (CMEA), which included the Soviet Union and the People's Republic of China (PRC) (Tri 1990).[21] Vietnam was not self-sufficient in food. In 1981, the Communist Party allowed farmers to sell any surpluses on the open market after meeting their required quota.[22] Marketed out-

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18 At Dian Bien Phu.

19 The party that fought the US in South Vietnam.

20 With the end of the Vietnam War, there were frequent attacks from Cambodia, which was by then under the Khmer Rouge. The Vietnamese invasion of Cambodia resulted in retaliation from China, which supported the Khmer Rouge. Vietnam went on to occupy Cambodia for ten years (1979-1989) and did not trade much with the rest of the world before its withdrawal from Cambodia.

21 The USSR in particular assisted with heavy industry, sending not only about 1000 specialists and technicians but also undertaking the training of 10,000 Vietnamese. Of the 90 projects, 25 involved large-scale electric power plants, mining and mechanical engineering and there were also tea-processing and fish-canning facilities set up and tractors and other agricultural equipment were provided. The Chinese were involved in bridge and railroad (re)construction too and provided equipment for Vietnam's mines, radio networks and state farms.

22 A three-point contract was put into practice in 1970 based on contractual output, production costs and work points. Production brigades assigned work to members, specified norms for each task and fixed the number of work points that each member would receive.

put initially increased but quotas were adjusted upwards and farmers reacted by producing less, which worsened the chronic food shortages.

After five years, the state came up with reforms that were famously known as *Doi Moi* (renovations) in 1986. *Doi Moi* saw a move towards a free market arrangement with the allocation of collective land to farming households and an end to the quota system (Tri 1990). In addition, the reforms led to exchange rate adjustments. *Doi Moi* encouraged stabilization and the development of production, distribution and the circulation of goods, which improved people's lives. Efficiency of organization and management were called for, with the establishment of order and discipline and the realization of social justice (*Ibid*.).

Economic growth in both Tanzania and Vietnam before 1986 was extremely low, and at times even negative, with growth rates below zero reflecting a real fall in output. IMF data show that the adjusted GDP per capita based on purchasing power parity (PPP) was around US$ 500 for both countries in the early to mid-1980s. This is extremely low and corresponds to less than US$ 1.5 per day on average.

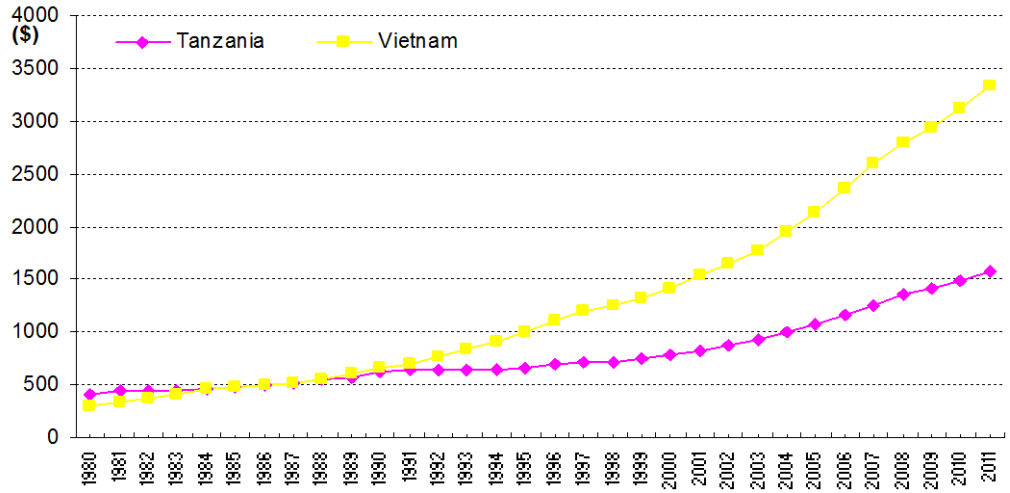
In summary, this section on the two countries' common roots shows that Tanzania and Vietnam both adopted socialism and then struggled to produce under it as all the major means of production were controlled by the state. The high levels of poverty did not disappear and in some cases even deepened. Before discussing the countries' diverging results after they adopted a more market-oriented approach, some observations are made based on secondary data on the growth performances of Tanzania and Vietnam.

*GDP growth and its structure*

Graph 2.3 shows little divergence between Tanzania and Vietnam in terms of GDP per capita before 1990. Since then, GDP per capita in Vietnam has almost doubled compared to Tanzania's GDP per capita, which has increased but more slowly (Graph 2.3). GDP per capital rose in both countries to above US$ 500 after 1986 and more than tripled in Tanzania between 1980 and 2008, while Vietnam's increased to more than six times its 1980 level.

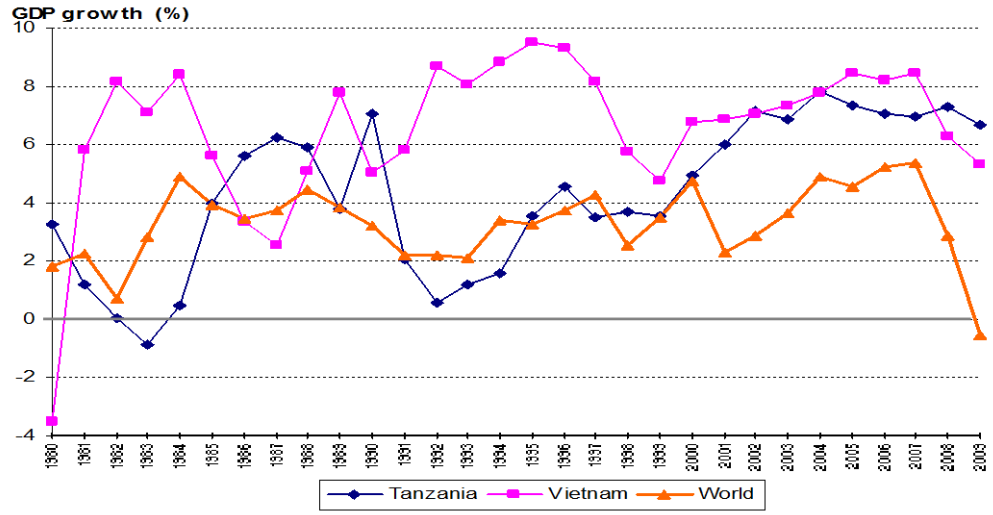
GDP growth rates show fluctuations in both countries (Graph 2.4). Vietnam's growth rate was consistently higher than Tanzania's between 1990 and 2008. And although GDP per capita has been rising steadily in Tanzania, growth rates are erratic. From 1980 to 1983, the Tanzanian economy grew by less than 2% and even experienced negative growth in 1983 when the country was implementing the NESP's home-grown reforms and SAPs. A sharp rise in GDP went hand in hand with acceptance of the IFI's conditionalities in Tanzania in 1986. Even

*Graph 2.3* GDP per capita based on purchasing power parity




Source: International Monetary Fund, World Economic Outlook Database (October 2010)

*Graph 2.4* GDP growth (constant prices, national currency) (1980-2009)




Source: International Monetary Fund (2011)

though growth in GDP is positive, it started from a very low point.[23] Around this time, export levels of most crops were low too (Graph 2.1).

A fall in GDP was seen in Vietnam in 1980, 1985, during the 1997 crisis in Asia and during the recent global economic crisis that began in 2008. It should be noted that since Vietnam adopted *Doi Moi* in 1986/1987, its GDP growth rates

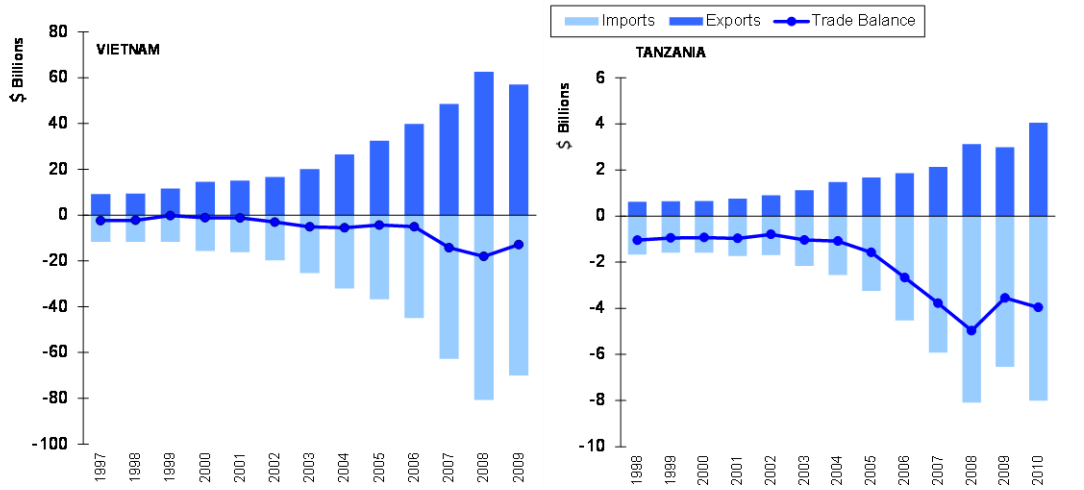
[23] For instance, Tanzania's GDP grew to above 6% in 2010 at a time when global growth rates were at 4.08%. The fact that Tanzania's growth rate is above average says little about the size of its economy and a poor country, like Tanzania, needs to maintain a high growth rate for a long period to accrue any real benefits.

have always been above the 5% mark. The country recovered quickly from the 1997 Asian crisis but is yet to emerge from the current financial crisis.

Tanzania and Vietnam trade with many other partners. Vietnam joined the WTO in 2007 and Tanzania has been a member since 1995.

Tanzania and Vietnam are net importers[24] as they have a negative trade balance (trade deficit) (Graph 2.5). When considering the period between 1997 and 2009, Vietnam traded at more than 10 times the level Tanzania did. The Tanzania graph shows more inequality between exports and imports, which signifies a high domestic absorption rate (Wuyts 2004). Nevertheless, the adoption of SAPs, which were aimed at macro-economic stabilization and an acceptable trade balance, showed disappointing trends in Tanzania. Trade deficits meant that Tanzania had to find other means to finance its economy by receiving payments for services rendered abroad (factor payment) or grants (transfer payments). The latter was more applicable for Tanzania but implied continued dependency on donors. For a country's economy to grow, it needs to be able to finance imports that will lead to growth and have a sustainable balance of payments that is not inflationary and is set at a stable exchange rate.

*Graph 2.5* Total imports, exports and trade balance by country (1997-2010)




Source: UN Comtrade (2011)

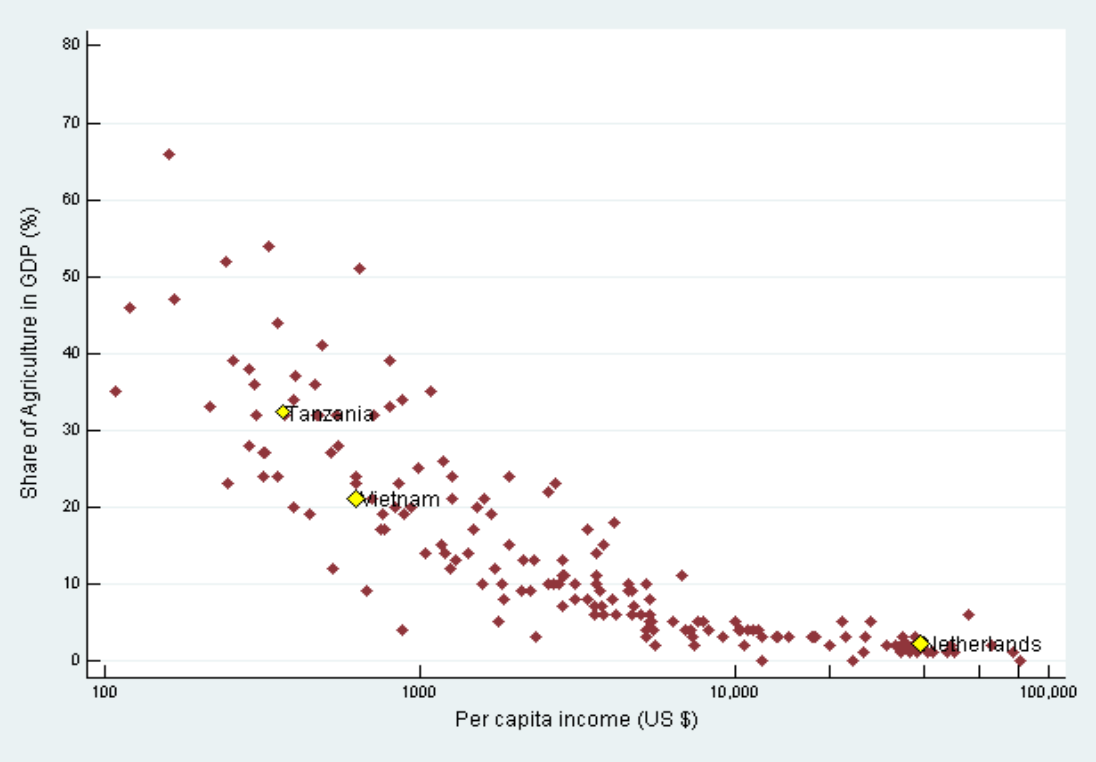
Trade is made up of many goods and is not limited to agricultural commodities, processed goods, semi-processed goods and services. As Vietnam and Tanzania are agrarian economies, the next section focuses on agriculture.

[24] A net importer is a country that imports more goods than it exports.

*Agricultural growth*

This section presents an empirical analysis of agricultural growth and the share of agriculture in GDP. At national level, agriculture's contribution to GDP generally tends to fall with an increase in per capita GDP. Graph 2.6 shows that low-income countries have a higher share of agriculture in their GDP than high-income countries. Tanzania and Vietnam with per-capita incomes of less than US$ 1000 per person in 2005 had a 32% and 21% share of agriculture in their GDPs respectively.

*Graph 2.6* Transformation of GDP across countries (2005)



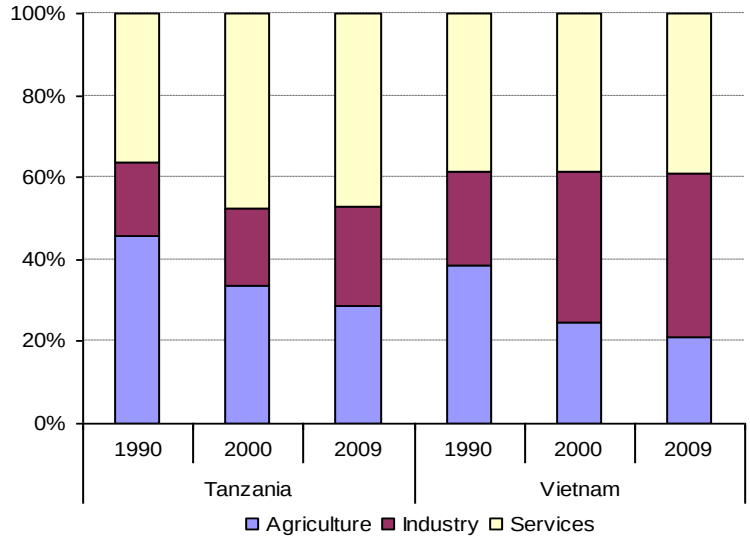

Source: World Bank, International Comparison Program database

With GDP being composed of agriculture, industry and trade, changes in the economy can be observed over time. As a country develops, the contribution agriculture makes to its GDP tends to fall while that of industry and services tends to rise. In Tanzania, agriculture's contribution to GDP was 45% in 1990 and 30% in 2009 (Graph 2.7). The contribution of agriculture to GDP has thus fallen while those of industry and the service sector are on the rise. The rise in the service sector can be mainly attributed to increased tourism (Bank of Tanzania 2011),[25] even

[25] Between 2001 and 2008, revenue from tourism almost doubled from US$ 725 million to US$ 1354.9 million, according to the Bank of Tanzania (2009: Table A, p. xviii). See also Table 2A3 in the Appendix.

though the rise in agriculture has not gone hand in hand with increased productivity and yields.[26] Since 2000, for instance, agriculture has contributed about 25% to 33% of the country's GDP and employed about 30 million people.[27].

*Graph 2.7* Percentage contributions of agriculture, industry and services to GDP in Tanzania and Vietnam (1990, 2000 and 2009)




Source: WDI, World Bank national accounts data, and OECD national accounts data files

On the other hand, agriculture's contribution to GDP in Vietnam was about 38% in 1990 and 20% in 2009 (WDI 2011). Contributions from the service sector have remained the same, while those of industry have risen. Higher contributions by the industry sector to GDP reflect the on-going mechanization and upgrading undertaken by the Vietnamese government since the mid-1980s.

## Similar economic turning points (1986)

The two countries moved towards more market-based development in the 1980s, with 1986 being a crucial year for both. Tanzania's President Ali Hassan Mwinyi was in power and had the monumental task of introducing free-market policies after more than two decades of socialism. The move from socialist to capitalist ways of doing business presented new challenges as most of the concepts were still new. Tanzania's economy was performing poorly and had to comply with

[26] World Bank (2009: 10), contrary to the known fact that with the rise in productivity, the share of agriculture in GDP decreases because fewer inputs are needed for the same output.

[27] Agriculture Sample Census (2007/2008).

IFI conditionalities to get it moving. On the other hand, 1986 saw Vietnam begin to implement its *Doi Moi* and market-oriented strategies. Tanzania was taking a new path away from socialism at a time when the Vietnamese economy was also at a low level. *Doi Moi* is characterized by a move from socialist collectivization to the individual ownership of land and the freedom to produce and trade. With *Doi Moi*, Vietnam embarked on massive strategies to lift its citizens out of poverty with projects devoted to rural electrification and resettlement, among others. 1986 is thus an ideal turning point to compare the two countries.

## Diverging tracks

Short-termism or market-based development through a blend of (donor-inspired) structural adjustment and *ruksa* (permission) prevailed in Tanzania. In Vietnam, reforms were internally driven by *Doi Moi*, were strategically informed and characterized by adaptive adjustment.

Initially, the new market-oriented strategies were implemented under a single-party state. With the economic changes in Tanzania, a wave of political change followed, with multiparty politics being officially adopted in 1992. Unlike Tanzania, Vietnam only undertook economic reforms and, to date, no political reforms have been implemented.

Regarding infrastructure, Tanzania had 91,049 km of roads in 2010, 7% of which were paved, according to TANROADS and PMORALG, while Vietnam had about 222,179 km in 2004, of which 19%, mainly national and provincial roads, were paved.[28] The road network in Vietnam has more than doubled since 1998, while Tanzania's has increased by a mere 10%. Both countries need to make massive investments to improve and expand their road networks.

A few years after adopting the new donor-inspired Structural Adjustment Programmes, Tanzania saw its crop production, especially cash crops, increase from their low levels of the mid-1980s, although these have never reached the levels seen in the 1960s and 1970s. With stagnant production, its people remained poor.[29] In 2007, 33% of Tanzania's population were living below the national poverty line, with poverty rates highest in rural areas: 37.6% of rural households were living below the basic needs poverty line compared with 24.1% of households in other urban areas and 16.4% in Dar es Salaam (HBS 2009).[30] Tanzania's main agricultural export commodities include coffee, cotton, tobacco, cashew, tea and sisal. Table 2.2 shows the production levels of five major traditional crops since the introduction of market-oriented strategies in 1986.

[28] www.viettraffic.com
[29] See Table 2A1 in the Appendix for poverty figures.
[30] The basic needs poverty line specifies the income required to purchase a selection of essential goods.

*Table 2.2* Tanzania's export volume by commodity ('000 tonnes)

| | 1986 | 1996 | 2006 | 2009 |
|---|---|---|---|---|
| Coffee | 50.4 | 61.7 | 31.5 | 56.1 |
| Cotton | 31.6 | 81.9 | 5.5 | 100.4 |
| Sisal | 15.1 | 8.9 | 6.1 | |
| Tea | 9.5 | 22.0 | 22.4 | 19.2 |
| Tobacco | 7.2 | 24.9 | 25.0 | 33.8 |
| Cashewnuts | 17.8 | 118.4 | 66.3 | 99.3 |

Source: Bank of Tanzania and Economic Survey (2009)

Tanzania was expected to adopt liberal policies under donor guidance in 1986 although this period of 'loss-of-voice' from 1986 until mid-1995 saw the redefinition and reconstruction of sovereignty through actions by the country's aid donors (Wangwe 2004). The Economic Recovery Programme I (ERP) (1986-1989) was prepared by the government with assistance from the World Bank and the IMF. Its reforms included devaluing the currency, structural reforms, removing import controls and implementing increased management and investment in infrastructure. ERP documentation specifies four general objectives:

- Increase the output of food and export crops by providing appropriate incentives for production, improving market structures, and increasing the resources available to agriculture;
- Rehabilitate the physical infrastructure in support of directly productive activities;
- Increase capacity utilization in industry by allocating scarce foreign exchange to priority sectors and firms; and
- Restore internal and external balances by pursuing prudent fiscal, monetary, and trade policies. (URT 1986)

Once market-oriented strategies had been adopted, wage goods started reappearing on the shelves. And with permission to import goods, Tanzania once again saw an influx in all sorts of products ranging from second-hand cars to clothing. The conditionalities that were then implemented meant a halt in employment growth for the government.[31] The private sector was now given little support from the government and Tanzania witnessed a near-total government withdrawal from agriculture with the abolition of marketing boards. Problems emerged in providing inputs for local producers, farmers and state-owned plantations and enterprises.

The ERP's second phase, from mid-1995 onwards, saw the privatization of state-owned enterprises and utilities through the Enhanced Structural Adjustment Facility (ESAF).

[31] Since independence, and especially since the adoption of socialism, the government was the country's single biggest employer.

To understand Tanzania's performance, it is important to note the strategies that were adopted at the time and the fact that Tanzania had been receiving aid since independence from mainly bilateral donors and had been able to draw up its own development strategies. However by 1986, the aid that was being provided came for the first time with conditionalities and marked a loss of autonomy for Tanzania (Wangwe 2004). The country was required to adopt strict liberal policies and also saw a shift from bilateral aid to multilateral aid, a move from project aid to programme aid and a shift from a planned economy to a market economy. The main theme of all these recommended strategies was macroeconomic stabilization and trade. Looking at the performance of the different policies adopted, the following was noted by Wobst (2001):

- *Economic performance:* Positive (mainly non-agricultural) GDP growth resulted in single-digit inflation, import reserves of at least three months, stagnant agriculture and an increase in government revenue. There was positive GDP growth and GDP per capita of around US$ 500 (Graphs 2.3 and 2.4). Most of the growth came from industry, mainly mining,[32] tourism and communication.
- *Price and market reforms*: Producer prices were liberalized in 1991, subsidizes for agricultural inputs were removed and the provision of electricity was still controlled by the state.[33]
- *Import rationing:* Permission was granted to import from one's own sources.
- *Tariffs:* A harmonization of tariffs was undertaken to increase local revenue collection and some taxes, such as export taxes, were reintroduced while input subsidies were abolished. Domestic tax revenue has since declined.
- *Devaluation:* The exchange rate of the Tanzania Shilling was allowed to float and interest rates were deregulated. This was part of the liberalization process where government let go of control and allowed competition to take place.
- *Land reforms:* An equitable distribution of and access to land by all citizens was promoted (URT 1997).[34]
- *Private banks:* In addition to privatizing the banking system, new banks were also allowed to operate.

To summarize, the range of policies that Tanzania adopted atomistically has resulted in minimal improvement in the agricultural sector and there is still a big gap between expectations concerning various policies and their proven results.

A few years after adopting its *Doi Moi* strategies, Vietnam became self-sufficient in food (rice) for the first time and today is one of the world's leading exporters of rice. Not only did it increase production, it also saw large numbers of its population climb out of poverty as a result of the country's agrarian reforms.[35] Only 16% of the population were still living below the national poverty

[32] See Table 2A3 in the Appendix.
[33] After privatization, TANESCO (Tanzania Electric Supply Company) was managed by Net Group Solutions of South Africa between 2002 and 2006.
[34] Public land can be leased to any citizen who obtains the right of occupancy.
[35] See Table 2A1 in the Appendix for poverty figures.

line in 2008 and Vietnam was exporting rice, coffee, (shelled) cashew nuts, rubber, pepper and tea (FAOSTAT 2011). Table 2.3 shows Vietnam's production of various crops at the beginning of *Doi Moi*, after its implementation in 1998 and levels of production in 2008.

*Table 2.3* Vietnam's exports of selected commodities ('000 tonnes)

| | 1988 | 1998 | 2008 |
|---|---|---|---|
| Cashewnut | 80.0 | 216.0 | 1,234.0 |
| Coffee | 42.0 | 409.3 | 1,067.4 |
| Rubber | 49.7 | 193.5 | 660.0 |
| Pepper | 6.2 | 28.6 | 127.8 |
| Rice | 17,000.0 | 29,145.5 | 38,725.1 |
| Sugar cane | 5,699.6 | 13,843.5 | 16,128.0 |

Source: FAOSTAT (2011).

All crops registered a marked increase in production and, with the exception of rice, their production more than tripled. While Graph 2.7 shows a decrease in agriculture's contribution to GDP, Table 2.3 shows that crop production has increased dramatically. Growth in production in Vietnam implies a link up with industry as it is not only the agricultural sector that has benefited from *Doi Moi* but also the forestry and other sectors. The question is how this came about. *Doi Moi* was meant to be a new driving force to promote agriculture by introducing favourable conditions for individuals and the private sector to increase production, processing, services and other aspects of agriculture (Tri 1990). Only profitable cooperatives were retained and the rest of the land was given to exchange teams or private holdings.

With its agrarian-supported economy, Vietnam undertook land reforms and others concerning commercial enterprises, including households. The Vietnamese Communist Party adopted the following reforms as outlined by ANZDEC Ltd *et al*. (2000: 22, 25, 34-36):

> (The *Land Law of 1988* (Resolution 10 of 1988)) recognized the farm household as the basic unit of agricultural production. Farmers were allowed to buy, own, and sell agricultural inputs (...) Cooperative land was assigned to farming households for 10-15 years under different forms of contracts or bidding (...) The *Land Law of 1993* (Resolution 5 of 1993) recognized five rights (exchange, transfer, lease, inheritance, and mortgage) and a land value to serve as the basis for tax collection, compensation, and valuation of property whenever land is allocated. Land is allocated for long term use as follows: 20 years for annual crops and aquaculture and 50 years for perennial crops (...) *The 1998 Amendment to the Land Law* elaborated three main features: (i) flexible ceilings of land allocation were introduced, depending on the particular local conditions, (in the Land Law of 1993, the ceilings on agricultural land were fixed at two hectares in the North and three hectares in the South; (ii) farmers

> were allowed to rent land in excess of local allocation limits; and (iii) non-farmers organizations or individuals were allowed to rent land for investment purposes.
>
> The government forced state-owned enterprises (SOE) to improve efficiency by exposing them to greater market competition and cutting their subsidies and access to low-interest credit. (This led to closure and reduction of staff employed by SOE.)
>
> (Recognition of) commercial farms (…) more than 100,000 commercial farms characterized by large landholdings, use of permanent hired labour, and integration with markets and agro-industry.
>
> With the exclusion of rice, all agricultural tradable products have been excluded from quota restrictions during last decade.

The Food Staple Programme was therefore given priority in its fourth five-year plan (1986-1990). According to Tri (1990: 187-188), there were five important measures:

> (i) Correct determination of areas reserved for cultivation of food crops and other high-yield paddy-growing areas throughout the country; (ii) strengthening of material and technical basis for agriculture; (iii) large scale application of technological innovation in agriculture; (iv) switching towards economic accounting in the state-run food agencies, and (v) comprehensive renovation of policies towards agriculture and peasants

In summary, Vietnam's *Doi Moi* policies prioritized the productive sectors by linking them to farmers and other economic sectors.

## Conclusion

Tanzania and Vietnam are both agrarian economies that adopted socialism and had poorly performing economies in the late 1970s and early 1980s. The two countries experienced resistance from their populations during the implementation of collectivization. The incentive system under collectivization failed to reward effort, and investment in manufacturing was given top priority under socialism. There was a subsequent rise in employment in the manufacturing sector in Tanzania but no rise in output was noted.

The implementation of market-oriented policies resulted in different performances. Tanzania adopted donor-inspired policies and saw growth in imports of all sorts, while there was minimal growth in the production of agricultural commodities. Poverty in the rural areas did not decrease and this reflected a failure to increase labour productivity and capital. On the other hand, home-grown, market-oriented strategies promoted growth in both the agricultural sector and industry in Vietnam, which resulted in a tremendous drop in poverty rates. Food sufficiency rose and, as a result of the implementation of its *Doi Moi* policy, Vietnam became a global exporter of several crops, including rice, pepper, cashew and rubber, to name but a few.

The cases of Vietnam and Tanzania demonstrate that integrated market-reform policies can be inclusive in all sectors. The government has a role to play in the provision of non-price incentives, structural support and infrastructure. Vietnam

doubled its road network from 1998 to 2004 but Tanzania's network increased by less than 10% in the same period. Such an increase is important as a better road network reduces the cost of linking downstream with upstream between sectors.

Free-market policies were also adopted, one with autonomy and government support (in Vietnam) and the other (in Tanzania) saw uncertainty lead to the short-termism[36] application of reforms. Only short-term gains and not the whole economic picture were considered in Tanzania. This period was famously known as *ruksa* (permitting) when everything happened unsystematically. This chapter has shown that the liberal reform programme in Tanzania failed: 'As well as the flexibility and competition that the market provides, successful capitalism needs careful economic management and institutions that foster cooperation and commitment' (Hunting 1995: 163). And Rodrik (2007) would argue that there is a need for the right amount of intervention from government as too little or too much can also have adverse long-term effects. A strong institutional set-up is crucial.[37] All these arguments shy away from the neoclassical view that markets work best and that the government should only intervene in the case of market failure.

[36] Hunting (1995) described the British economy as being filled with speculation and with little real investment taking place.

[37] Lindauer & Pritchett (2002) emphasized the need to tackle corruption, address inequality and build credible institutions.

# 3

# Cashew: Old-timer versus newcomer

## Introduction

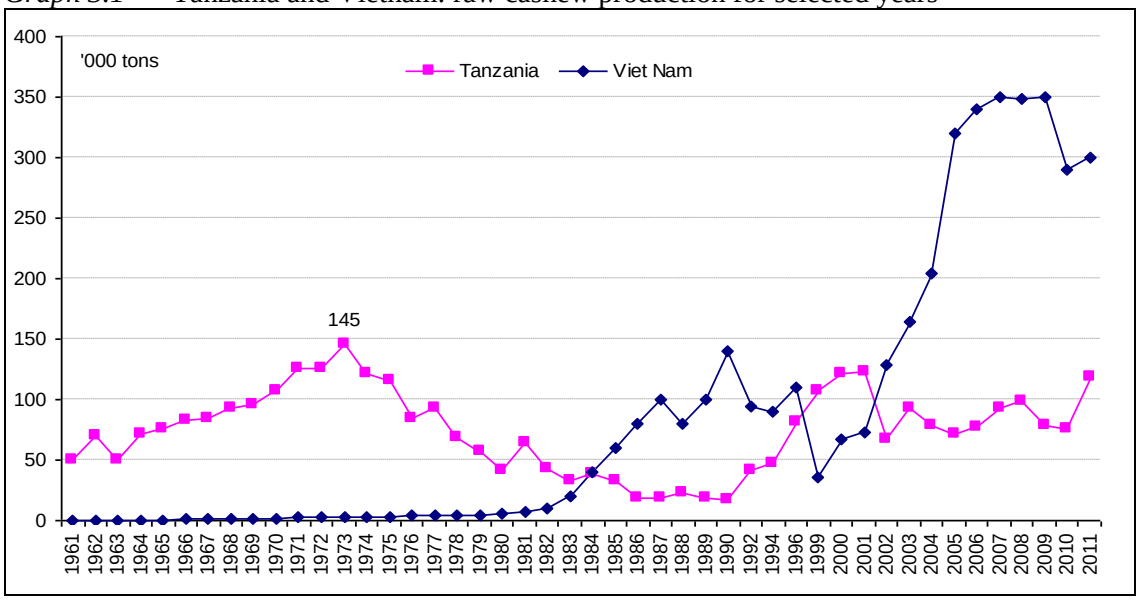
The previous chapter presented the macro context for understanding the Tanzanian and Vietnamese economies. This chapter describes the sectoral history of the cashew crop and explains the trends observed by looking at the roles played by the different actors. Before 2000, the production of raw cashew in Tanzania and Vietnam was comparable but the gap has been expanding ever since (see Graph 3.1). Despite Tanzania's early entry into cashew production, its seasonal output has fluctuated between 70,000 and 90,000 tonnes while Vietnam has stabilized production at 340,000 tonnes since 2005.[1] When looking at cashew production in this way, Tanzania is an old timer while Vietnam is a newcomer in the cashew-producing world.

## Description of cashew value chains

Cashew is a commonly produced cash crop in Tanzania and Vietnam and offers an opportunity to understand the contrasting economic strategies adopted in development in the two countries. Agriculture needs to be coordinated for the crop to grow successfully and producers require inputs for production and markets to sell their output. The global value chain (GVC) framework is useful in understanding the comparative dynamics of inter-linkages with the productive sector, governance and processes embraced by these two countries, with a view to explaining the different outcomes in terms of productivity. The GVC framework allows identification of the 'key actors who play a critical role in coordinating

[1] GSO and VINACAS figures are different from those produced by the FAO. Cashew production figures from Tanzania cover two years. For example, the 2010/2011 season includes the cashew harvest from October 2010 to January 2011. Throughout this thesis, this is referred to as production in 2011. For comparative purposes, the values of volumes are quoted in US$.

*Graph 3.1* Tanzania and Vietnam: raw cashew production for selected years



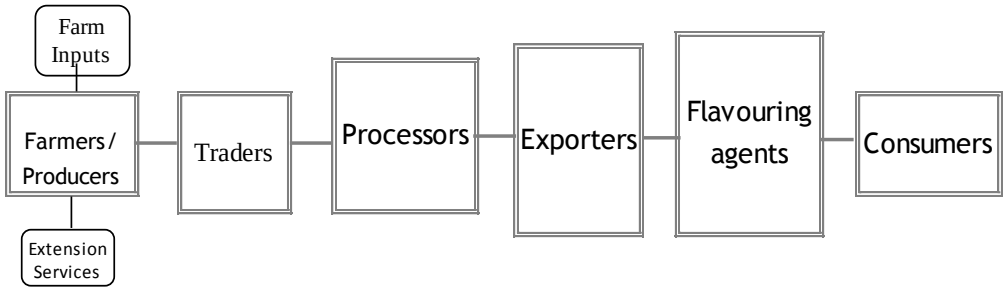

Source: FAOSTAT|© FAO Statistics Division 2010 production output up to 1990 for Vietnam and up to 2007 for Tanzania, Vietnam Cashew Association (1990 to 2006) Cashewnut Board of Tanzania (2007 to 2011), General Statistics Office of Vietnam GSO (2007 to 2011)

production in the chain defining who is to perform what role, what standards are to be met in participating in the chain, coordinating a process of chain-upgrading, and influencing the distribution of returns amongst the various parties who participate in these chains' (Kaplinsky 2004: 3). In other words, a value chain describes 'the full range of activities which are required to bring a product or service from conception, through the different phases of production delivery to final consumers, and final disposal after use' Kaplinsky *et al*. (2001: 4). Initial work to introduce value chains was done by Gereffi (1994) who distinguished two main types of governance that exist in the creation of value chains: these are producer-driven and buyer-driven. Primary commodities like cashew belong to the latter, where there is a low barrier to entry in production and buyers determine the nature of producers' access to end consumers. The introduction of standards to which all the actors participating in the chains need to adhere has been important. Those who manage to stick to high standards continue with production and receive higher returns, and others are left to conduct less-valued activities. As Gibbon (2001) put it, chains that once started with smallholder producers are now supplied by large-scale farms in the case of fruit and vegetables, with on-site packing facilities that are essentially controlled by export companies. This has implications for smaller firms that mainly operate on the margins. Production is primarily driven by supermarkets that have increasing information about their consumers. With standards set high and changing fast, big producers with sophisticated technology and enough investment for research and development have a

significant advantage. And those who cannot adhere to the standards need to utilize markets with lower premiums.

There are five main ways of governing the chain, namely, market, modular, relational, captive and hierarchy.[2] GVCs governed by *markets* contain firms and individuals that buy and sell products to one another with little interaction beyond just exchanging goods and services for money. The central mechanism of governance is price. This is typical spot contracting. Suppliers in *modular* value chains make products or provide services to a customer's specifications. Suppliers in modular value chains tend to take full responsibility for process technology and often use generic machinery that spreads investment across a wide customer base. GVCs governed by *relations* have mutual dependence regulated through reputation, social and spatial proximity, and family and ethnic ties. Since trust and mutual dependence in a relational GVC take a long time to build up and the effects of spatial and social proximity are, by definition, limited to a relatively small set of co-located firms, the costs of switching to new partners tend to be high. GVCs that are *captive* have small suppliers who are usually dependent on larger, dominant buyers. GVCs governed by *hierarchy* are characterized by vertical integration and the dominant form of governance is managerial control. Buyer-driven chains tend to be coordinated via market, modular or relational governance. The cashew value chain is presented in Figure 3.1.

*Figure 3.1* Cashew value chain




Farmers are important and come at the beginning of the chain. Credit providers like banks and extension service providers are also crucial, as are transporters. There are authorities leading the process of production, processing and exporting in terms of quality assurance and customs. Moving into processing, there is value creation so standards are enforced that create barriers to entry and increase profits (Kaplinsky *et al*. 2001: 41). And as one goes higher up the value chain into flavouring, more quality and standard checks are enforced with stricter and tougher

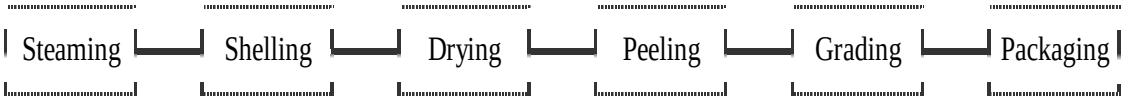
[2] This paragraph is about the Global Value Chain Initiative. See http://www.globalvaluechains.org

entry barriers. Moving up the value chain not only requires investment in terms of money and capital but adherence to global standards and food-safety requirements becomes crucial too. Entry requirements in the chain increase with value addition due to logistic reliability, coordination and financial requirements.

At the initial node, returns are lowest for producers but increase with value addition. For instance, among producers of raw cashews, those who opt to dry their nuts receive a higher price than those who do not. At this point, modes of transportation and storage are basic. Producers transport their produce from their farms either on foot or by push-cart, bicycle or motorbike. Cashew is stored in buckets or sisal/plastic sacks and then delivered to the trader (the village buying point). Traders who are financially able to handle bigger consignments improve on the storage and transportation of the crop by delivering to processors or exporters using lorries to transport their produce from the village to warehouses.

Raw cashew received by processors from traders undergoes different processes. Before a kernel is obtained, there are several stages of cashew processing that have to take place: steaming, shelling, drying, peeling, grading and packaging. Coordination plays a central role at all stages and it is important to monitor quality. To obtain a kernel, care must be taken to remove the different outer layers (see Figure 3.2).

*Figure 3.2* Cashew processing steps




Steaming helps to ease the shell off and shelling entails the removal of the outer shell that, when squeezed, produces CNSL (cashew nut shell liquid). It is important to ensure that the shell does not touch the kernels.[3] Once the outer shell has been removed, drying helps to ease the testa (inner thinner shell) and peeling ensures its removal.[4] Grading involves grouping the kernels by size and colour according to a standard and then the cashew nuts are packaged in airtight bags. A kilo of cashew when processed gives about a quarter of a kilo of kernels.[5] The margins received differ according to the quality of the kernels produced, with

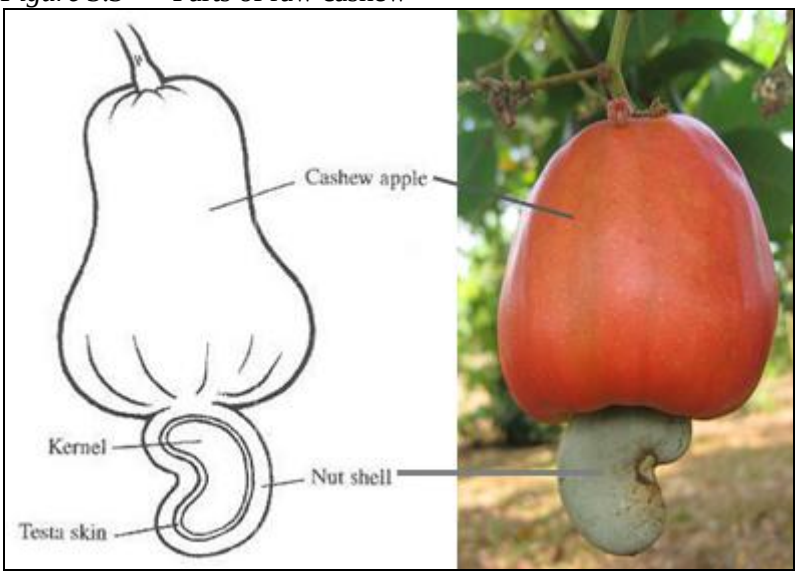
[3] CNSL is very corrosive and heat resistant so it is used as a lubricant. This is the main health and safety issue regarding cashew processing.

[4] Used as animal feed, especially for poultry.

[5] Kernels are graded as whole or broken. The wholes are further divided into Whites Wholes (W-xxx), Scorched Wholes (SW-xxx) and Dessert Wholes. The split cashews are divided into Fancy Splits and Butts Splits. The broken pieces are classified as Large White pieces (LWP), scorched pieces (SP) and Dessert Pieces and can be grouped as spits/butts. The Whole Whites fetch the highest prices.

high grades fetching a higher price. Producing higher grades requires maximum attention to detail. Kernels are graded according to their size and the number of kernels per pound (454 g). Thus W320 means there are between 300 and 320 kernels per pound. The most common count for Indian and African kernels is 300-320 per pound (W320) followed by 400-450 (W450), 220-240 (W240) and 200-210 (W210) per pound (Azam-Ali *et al.* 2001). Thus the lower the number, the bigger the nut count per pound. Whole whites fetch the highest price.[6]

*Figure 3.3* Parts of raw cashew




Source: Google sketches (2010) left panel; photo by author right panel

Given the technological requirements, small processors are involved in shelling, while medium-sized processors undertake all the activities that require close quality control. Processors that are able to package in vacuumed tins/plastic bags have higher returns and those with large consignments use containers and reputable logistics companies. Small processors use local networks for transportation and local consumers.

Roasters receive consignments from processors, and high-end roasters are linked to consumers through large supermarkets and department stores. Roasters supply cashews for specific contracts and to ensure contracts are renewed, quality and adherence to delivery times are crucial. If possible, producers want to supply their goods to the final consumer in order to obtain a maximum price but the entry requirements at the higher levels of processing are exclusive and expensive.

[6] The variety, the care of the tree and the post-harvest handling all affect the quality of the kernel.

*Nature of the tree crop*

Cashew is a tree crop[7] with a long gestation period. It grows in warm climates where the average daily temperature is 25°C, although this can range from 10°C to 40°C. Cashew is drought resistant but needs reasonable rainfall and flourishes best in well-drained (sandy) soils. Its deep root system requires sufficient rain if the tree is to produce abundant fruit. Proper spacing is also crucial if trees are going to grow to their full potential as they need adequate light, water and nutrients. Research on cashew and other permanent crops is different from that of seasonal crops as more time is required to observe performance levels. Cashew trees require great care from the time of planting as they can last for more than 30 years. The first harvest is only in the fourth year, implying low initial investment. Harvesting occurs annually within two months. In Vietnam, according to Que *et al*. (2006: 5), 'Initial investment and annual cost for a unit area of cashew is lower than that of other perennial industrial crops – equal only 1/3 those of rubber, coffee or tea.' The spacing of cashew trees differs depending on the availability of technology and soil type. High-density planting produces more cashews per hectare for up to seven years while low-density planting will produce fewer cashew per hectare but more per tree. There are three ways of spacing the trees: in triangular, quincunx or square patterns. Triangular spacing is done at intervals of 12 m x 12 m = 79 trees/ha, Quincunx spacing is at 15 m x 15 m = 76 trees/ha; and square spacing is at 9 m x 9 m or 10 m x 10 m. In Tanzania, NARI recommends triangular spacing but quincunx spacing is recommended on the Makonde Plateau as trees there tend to be bigger.[8] These choices are for smallholder cultivation as intensive farming requires thinning.[9] Young cashew trees (less than five years old) allow intercropping. More mature cashew trees cannot be intercropped and old trees have an interlocking canopy. These three stages of cashew growth

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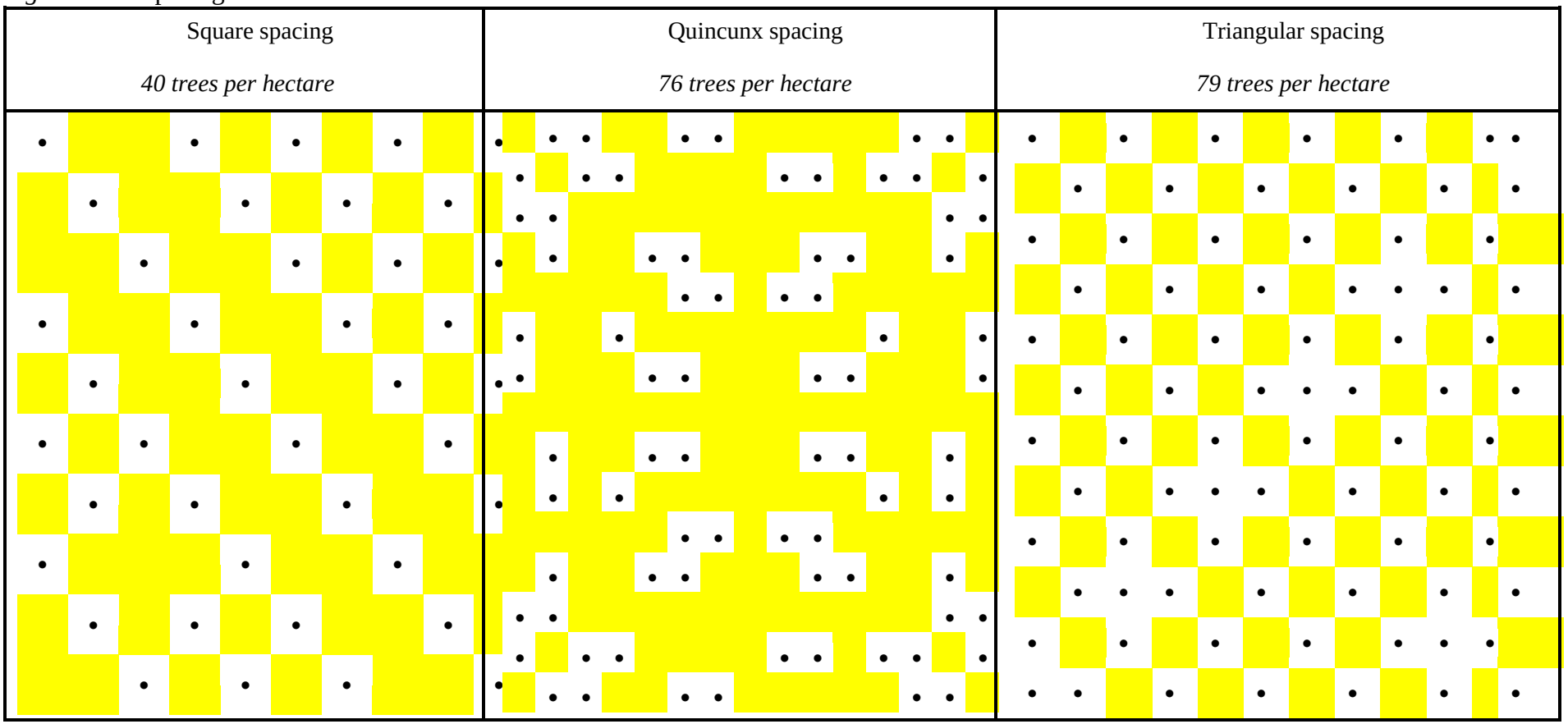
[7] Information in this section comes from P.J. Martin *et al.* (1997) and http://www.agripinoy.net/growing-the-cashew-plant.html Pinoyfarmer (2008).
*Permanent crop vs. seasonal crop:* Crops grown all over the world have different gestation periods. Some take a couple of weeks, while others take years before the first harvest. Some crops need replanting after every harvest, while others last for many seasons. The crops that last for many seasons are called permanent crops and those needing replanting are referred to as seasonal crops. Tomatoes and rice are examples of seasonal crops, while cocoa, coconut, coffee, tea and cashew are permanent crops. Tree crops are permanent crops. There are two main differences between seasonal crops and permanent crops. Firstly, the gestation period is longer for permanent crops. A seasonal crop can be cultivated two or three times a year but a permanent crop takes years before harvesting is possible. Secondly, the initial costs associated with investing in permanent crops are spread over a longer period. There are costs associated with investing in both seasonal and permanent crops. Some permanent croppers invest and then have to wait before the first harvest while incurring additional maintenance costs. This is the case for cashew, tea and coffee. However, other permanent trees, like cocoa, palm and coconut, require no or very little maintenance and produce one crop every season once they are mature.

[8] Interview with Dr Shamte Shomari, NARI, Mtwara, 17 November 2008.

[9] Thinning involves removing the interlocking canopy and congested trees.

*Figure 3.4* Spacing of cashew




Source: Sketch by researcher to show the proximity of the trees. Each plot (cell) is similar in size.

require different management.[1] Intercropping cashew with food crops in Tanzania is used as a way of cutting down on weeding and its associated costs.[2]

## The sector story of cashew on the world market

Raw cashew nuts, kernels and Cashew Nut Shell Liquid (CNSL) are the tradable outputs from cashew plants. This section looks at the global production of raw cashew nuts and kernels.

*The global raw cashew trade*

Cashew consumption and production have been increasing around the world, with producers, processors and traders as the industry's main actors.[3] Originally from Brazil, cashews were introduced into India and Africa in the 16th century by Portuguese traders (Azam-Ali *et al*. 2001). According to FAOSTAT, production of raw cashew increased more than tenfold between 1961 and 2008,[4] with steep changes in production observed from the mid-1990s onwards (Graph 3.2). The world is currently seeing a shift in the share of raw cashew produced by the different regions (Graph 3.3).

African countries dominated raw cashew production in the 1960s and 1970s, with Mozambique and Tanzania being the main producers up until the early 1980s. The two countries produced more than 60% of the world's raw cashew between 1961 and 1975 and any fluctuations observed in this period were mainly attributed to production issues in these countries.

In 1961, the total global production of cashew amounted to about 230,000 tonnes. Since then, production has expanded rapidly, with more countries starting to grow the crop. India and Brazil have consistently been among the biggest producers of raw cashew since the 1960s and, in the last decade, Asian countries have increased their market share significantly (Graph 3.2), with Vietnam and India leading the way (Graph 3.3).

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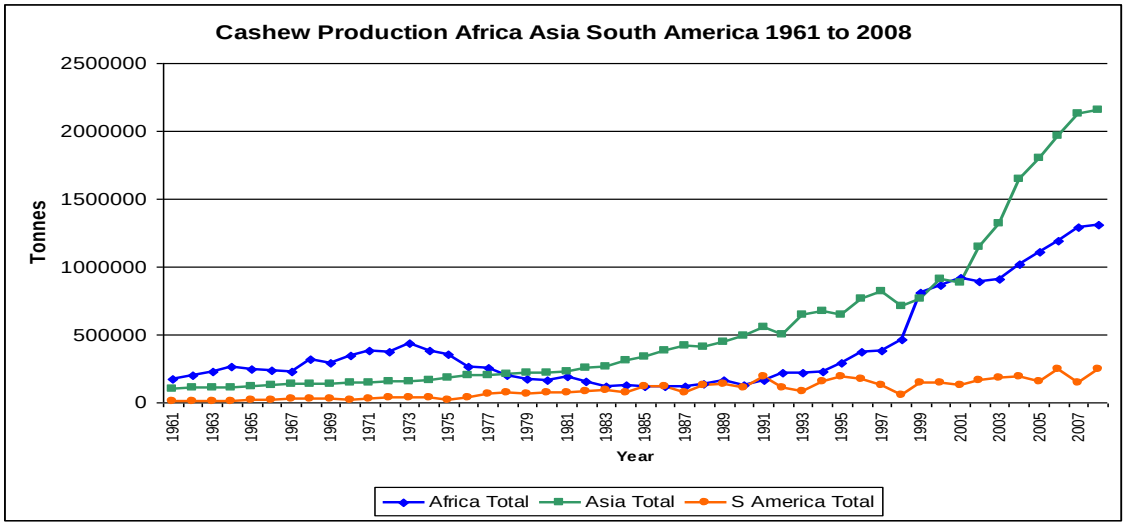
1 Interview with Dr Shamte Shomari, NARI, Mtwara, 17 November 2008.

2 Interview with Dr L.J. Kasuga, NARI, Mtwara, 17 November 2008.

3 The movement of cashew from one actor to the next requires reliable transport.

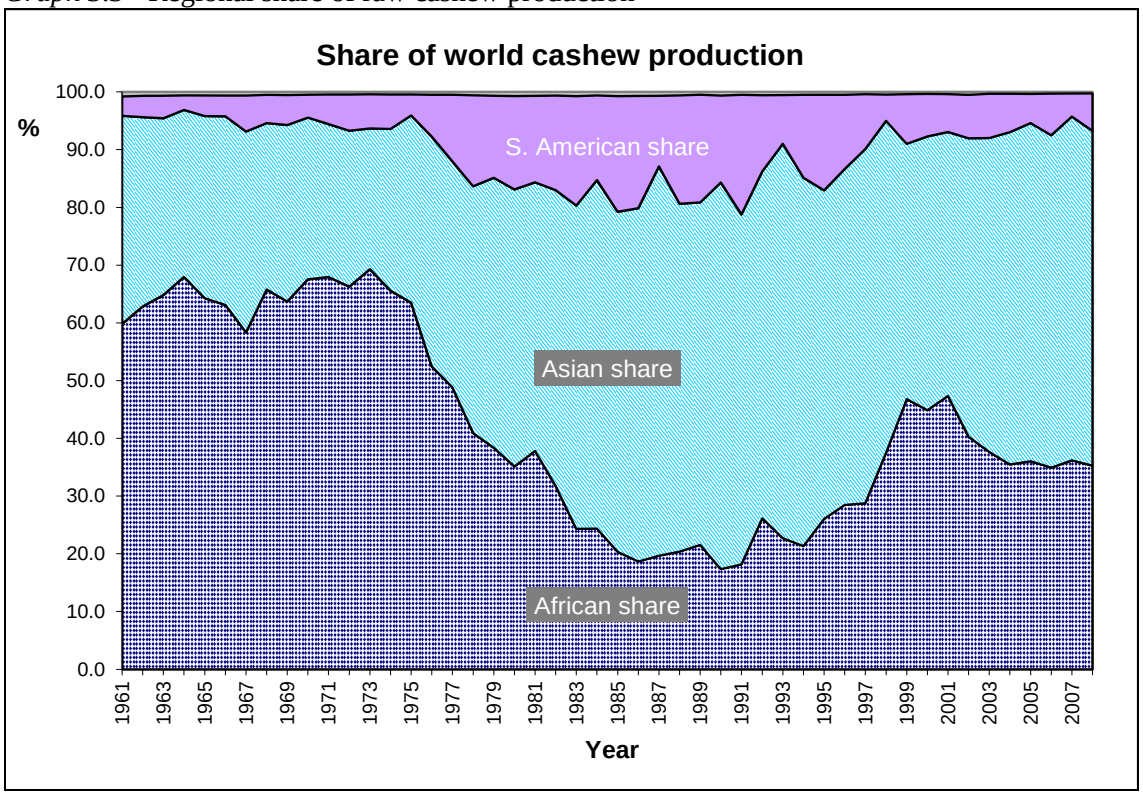
4 Total world raw cashew production with shells was 287,535 tonnes in 1961 and by 2008 this had grown to 3,720,306 tonnes. The global area under cashew cultivation has risen tremendously from about half a million hectares to four million hectares between 1961 and 2008. According to FAOSTAT (2011), the largest area under cultivation today is in West Africa (with Ivory Coast having about 660,000 hectares and Nigeria 330,000 hectares), followed by India, Brazil and Vietnam. Tanzania had 80,000 hectares and Mozambique 60,000 hectares of cashew in 2009. Massawe (interview, NARI 28 January 2011) estimates the area under cashew in Tanzania to be 500,000 hectares.

*Graph 3.2* World regional raw cashew production (1961-2008)




Source: FAOSTAT | © FAO Statistics Division 2010

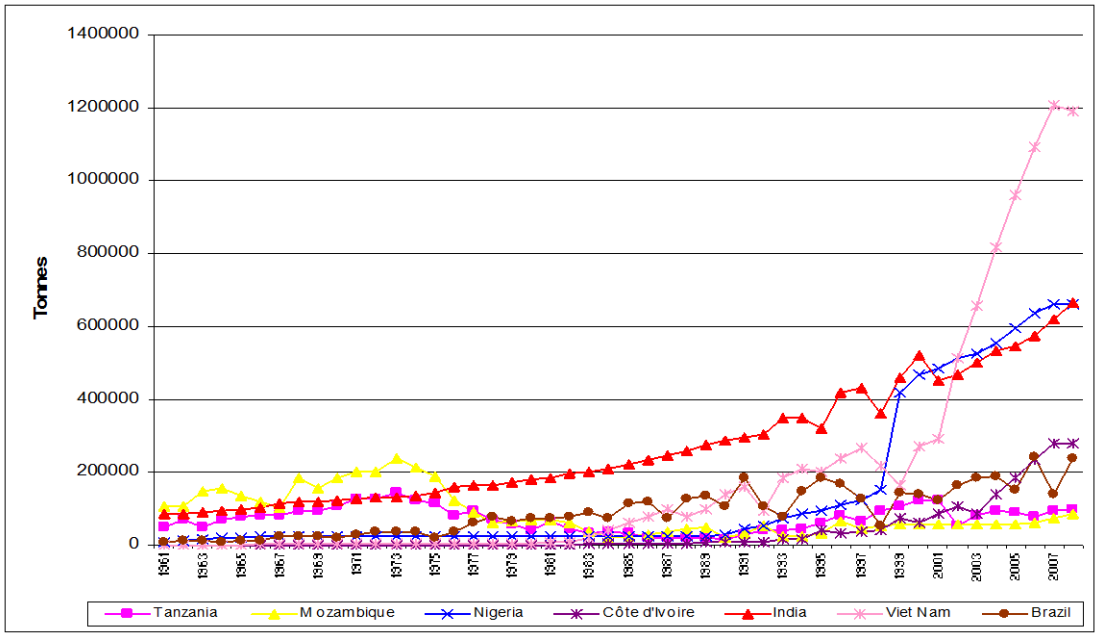
*Graph 3.3* Regional share of raw cashew production




Source: FAOSTAT | © FAO Statistics Division 2010

According to the FAO,[5] Vietnam is currently the leading producer of raw cashew (Graph 3.4), producing more than one million tonnes of cashew annually since 2007, which is about four times the world's total production in 1961. Nigeria and India are second and third in the league of raw cashew producers today and claim to produce more than twice what was produced globally in the early 1960s. Tanzania is presently ranked eighth in the world for raw cashew production, while Mozambique is number ten.

*Graph 3.4* Important raw-cashew-producing countries (1961-2008)




Source: FAOSTAT | © FAO Statistics Division 2010

*The world kernel trade*

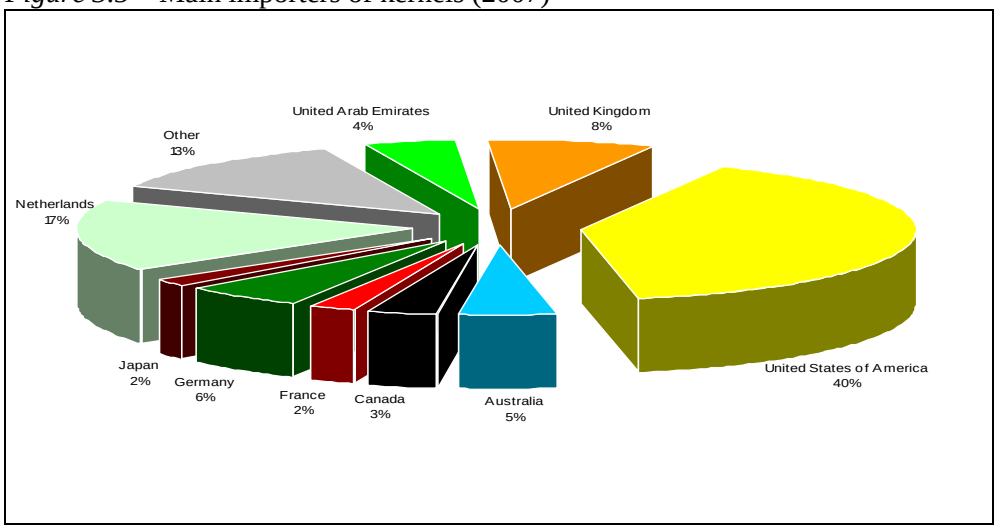
Vietnam, India and Brazil have become the main processors. In 1961 a tonne of kernels fetched less than US$ 1000 but by categorizing consumers and introducing standards, cashew has become a premium quality product and a tonne of kernels has been fetching an average price of more than US$ 4500 for the past two decades (FAOSTAT 2011). The highest quality, namely the processed Whole Whites, fetch the highest prices. For raw cashew-producing countries to increase their earnings, not only do they need to increase production but also to figure out ways of adding value to the product. Initially, India was the leading exporter of cashew kernels but Vietnam took over the top spot in 2007. Vietnam and India

[5] Many researchers, including myself, prefer to use the FAO dataset since it has rich information for many countries for many years. Unfortunately, FAO cashew production data for Vietnam seem to be higher than the official data. This could be due to the inclusion of imported raw cashew as part of Vietnam's production. Though the data are useful, caution is advised when using them.

have bigger processing capacities than their domestic production of raw cashew can supply so they depend on imports of raw cashew to keep their plants running at full capacity.[6] Imports of raw cashew are growing season by season, which suggests that the global demand for cashews is still rising. In April 2010, raw cashew fetched a FOB price of between US$ 750 and US$ 900 per tonne, while kernels fetched a FOB price of US$ 6724 for W240 grades; US$ 6283 for W320 grades and US$ 5842 for W450 grades.[7] See Table 3A1 in the Appendix for the prices of different cashew grades.

Processed cashews, i.e. kernels, are mainly exported to the US (Figure 3.5), as has been the case for more than six decades. Other notable importers are the Netherlands, the UK, Germany, Canada, Australia and Japan. Both the volume and value of these consignments have been on the rise. The US and Western Europe, in particular the Netherlands, mainly specialize in roasting and flavouring cashew kernels[8] and auctioning them for distribution to other (global) wholesalers and retailers. World consumption has also observed changes, with premium consumption still dominant in North America and Europe, and new markets in Asia that are no longer limited to India. China and Russia are also playing a greater role. Consumption in raw cashew-producing countries themselves, notably India, has increased and the Indians take pride in the fact that at least half of the cashew produced in India are consumed locally, while the remainder are exported. Local consumption of processed cashew in India has increased noticeably

*Figure 3.5* Main importers of kernels (2007)




Source: FAOSTAT | © FAO Statistics Division 2010

6 Vietnam and India imposed a ban on exports of raw cashew in the mid-1990s.

7 Cashewinfo.com (2010), *Cashew Week* 19 -24 April, vol. 11, no. 17.

8 Given the advanced infrastructure and logistical qualifications, this costly and complicated task is done by Western roasters. Cashew kernels have a short shelf life after roasting and to maintain their freshness, they have to be roasted and sold within a short period of time.

from 13,000 tonnes in 1960-1961 (from 57,000 tonnes of kernels) to 92,000 tonnes in 1995-1996 (from 160,000 tonnes of kernels) (Bhaskara Rao 1998). These significant increases in consumption show that the cashew crop is probably in a healthy state in terms of future global demand.

Technological advances explain the current demarcation of cashew production, with raw nut producers primarily in Africa and Asia, processors predominantly in Asia (Vietnam and India) and flavouring being done in Western countries (the US and Europe).

The following section analyzes the diverging cashew stories of Vietnam and Tanzania before considering contrasting resettlement stories. It is argued that the price received by farmers is the most important factor influencing production, whether provided by multi-tier state marketing or private traders marketing on behalf of the two countries.

## A tale of two cashew countries: Tanzania versus Vietnam

Tanzania and Vietnam were both socialist countries that liberalized their economies in the mid-1980s. Tanzania did so by adopting economic recovery programmes and Vietnam liberalized through its *Doi Moi* (renovation) policies.[9] This section considers the development of cashew in Tanzania and Vietnam.

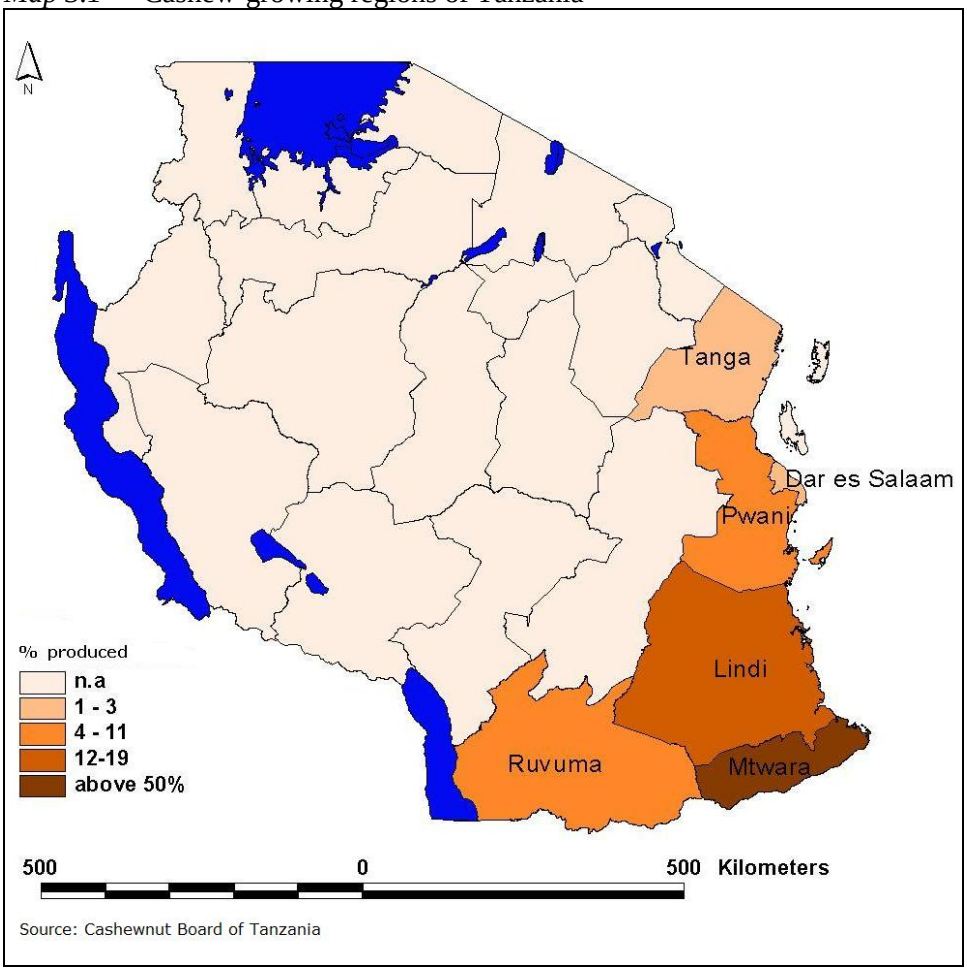
*Photo 3.1* Symbolic signs of the two major cashew producing areas: Mtwara in Tanzania and Binh Phuoc in Vietnam

[9] Both countries experienced resettlement programmes. In Tanzania this involved having people/farmers in villages and providing social services, while the main concern in Vietnam was the provision of land to the landless poor who used to reside in the North.

## Tanzania: Mtwara

In Tanzania, cashew is mainly cultivated in the coastal regions of Mtwara and Lindi in southeastern Tanzania (Map 3.1). Mtwara accounts for 70% and Lindi for about 20% of the country's total cashew production.[10]

*Map 3.1* Cashew-growing regions of Tanzania




Mtwara and Lindi regions are among the poorest in Tanzania. In addition to being the poorest regions, they also lag behind in human development indicators. They rank among the bottom in adult literacy rates, under-five mortality rates and in improved water supplies PHDR (2005); Census (2002).

Mtwara is one of the 26 regions[11] in southern Tanzania and covers 16,707 km$^2$. It came into existence after separating from Lindi in 1971. Makonde are the

[10] Pwani region contributes about 10% and Tanga, Dar es Salaam and Ruvuma contribute the rest. Data from Cashewnut Board of Tanzania (2010).

[11] As of March 2012, Tanzania has 30 regions (with four new regions having been added: Geita, Katavi, Njombe and Simiyu).

main ethnic group found in Mtwara, and Makua, Yao, Mwera and Mawia make up the remaining matrilineal groups (Koda 1998).

The main crops cultivated in Mtwara include both food and cash crops. On the cash-crop side, cashew is the main occupation of most people and sesame, groundnuts and coconut (along the coast) are also produced, while on the food-crop side, cassava, maize, pigeon peas, sorghum, millet, paddy, cow peas and Bambara nuts are produced. For production purposes, labour is the most needed input. As will be seen in Chapter 4, labour is either paid in kind or in cash. In the past, *mkumi* was also used but the practice is rarely seen now in the money economy.

*Photo 3.2* Small traders: *Uhuru Day* in Nanhyanga, Tandahimba, Mtwara

In the 1970s, *Ujamaa* was more intensively implemented in the south than anywhere else in Tanzania (Voipio 1998). Donors who supported Mtwara included Finland, the World Bank, UNICEF, the German Catholic missionaries and the British Overseas Development Agency (*Ibid*.).

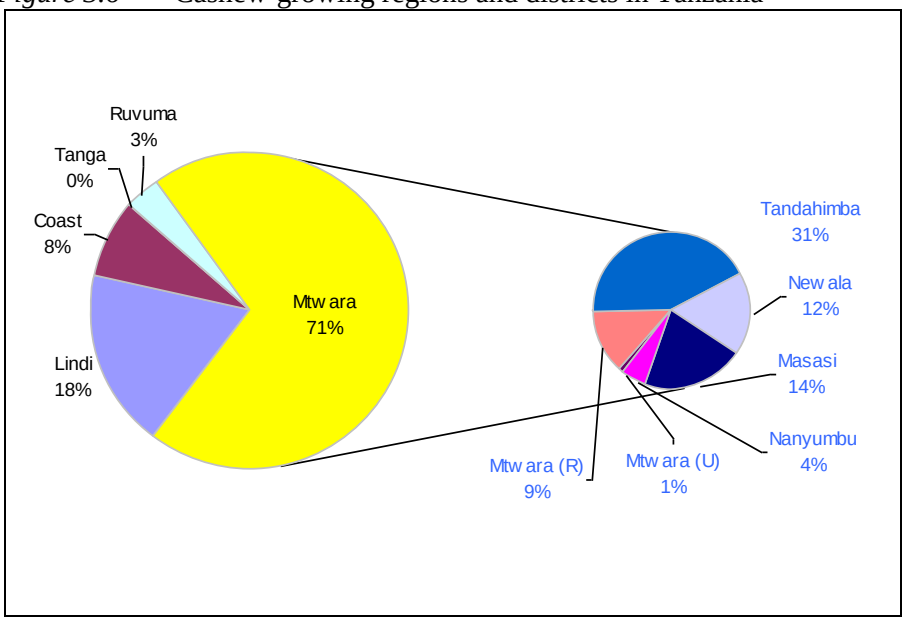
According to the 2002 census, Mtwara has over 1 million people. The percentage of the Tanzanian population living in urban areas increased from 6% to 23% between 1967 and 2002. The same also applies to the Mtwara region. People here mainly live in the rural areas with about 20% of the population residing in urban

areas. The population density in Mtwara has increased from 37 people per km$^2$ in 1967 to 67 people per km$^2$ in 2002. In Mtwara region only 3.7% of the population who are 10 years of age or older are literate in both English and Kiswahili.

Chronic food shortages in the region led to frequent imports of food. There were several food-related deficiencies that hit Mtwara and led to the implementation of programmes of *onjama* in Masasi, *tutumane* in Newala, *kuchakumi* in Mtwara Rural and *kiwami* in Mtwara Urban (formerly known as Mikindani). For years, the food situation saw poor nutrition indicators for children under the age of five, with the highest stunting, wasting and underweight rates in the country. The low population of livestock in the region and only seasonal food sufficiency may partly explain this situation.

There are six districts involved in cashew production in Mtwara (see Figure 3.6 and Table 3A4 in the Appendix). Tandahimba District in Mtwara accounts for 30% of the entire cashew produced in Tanzania.

*Figure 3.6* Cashew-growing regions and districts in Tanzania




Source: Cashewnut Board of Tanzania (2010/2011)

In the early years before a dense canopy has formed, intercropping can be done among trees that are less than five years old (United Republic of Tanzania 1997). Cassava, pigeon peas and groundnuts are some of the crops intercropped with cashew trees as they protect the trees before the first harvest. Young trees require frequent weeding so intercropping reduces the amount of attention the trees need. Once the trees have matured, the space between them can no longer

*Table 3.1* Cashew season: Tanzania (Mambamba)

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rain | ■ | ■ | ■ | ■ | | | | | | | ■ | ■ |
| Weeding | | | | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Prunning | | ■ | ■ | | | | | | | | | |
| Spraying | | | | | | ■ | ■ | ■ | ■ | ■ | | |
| Harvest | ■ | | | | | | | | | ■ | ■ | ■ |

be used for intercropping as the dense canopy does not allow adequate light penetration and hinders growth below it. On average, 40 trees are planted per hectare.

Farmers start by pruning their trees to provide aeration and ventilation. Pruning is often accompanied by sanitation and thinning. These procedures remove the sources of young tissue in the canopy, thus reducing the interlocking canopy and congested trees.[12] Pruning removes all the branches that are close to the ground and allows for easy picking of the cashew in the coming season. It also ensures that rain water reaches the cashew roots.

*Masika*, the heavy rainy season in March and April, provides nutrients for the newly pruned trees and encourages new growth. Sufficient rainfall means adequate flowering and greater output, while insufficient rain results in less flowering and lower output. For instance, Tanzania saw little rain during the 2008/2009 growing season and output was lower than normal. Farmers referred to the period as *likaba*. Towards the end of *masika*, weeding (*kutibulia* and *kulimia*) takes place and the soil is tilled to allow for easy water absorption. The trees are then sprayed with pesticides and nutrients.

Harvesting involves picking cashew nuts from the ground once they have fallen off the trees.[13] Farmers with older local varieties (*miti ya kienyeji*) harvest twice a season. The first harvest in the period of light rains is more plentiful and cleaner than the cashew harvested in the second round in the hot and humid rainy season (*korosho za kifuku*). Harvesting takes place from October to January.

## Vietnam: Binh Phuoc

In Vietnam, cashew is mainly cultivated in the Central Highlands, along the south-central coast, and in the southeast and the Mekong Delta[14] (Map 3.2).

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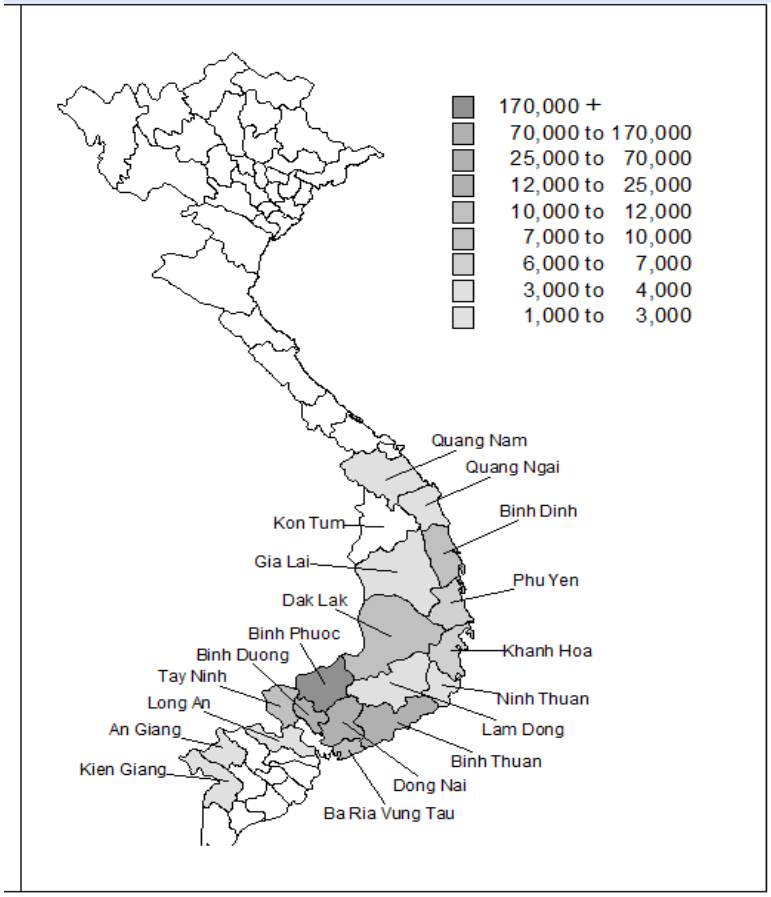
12 Interview with Mark Sijaona, 17 November 2008.

13 Cashew need to be collected immediately so that they do not absorb moisture from the ground. The quality of the nuts depends on their moisture content. To keep the moisture content low, early collection, sun drying and proper storage are important (Westergaard 1968b).

14 The Central Highlands (Kon Tum, Gia Lai, Dak Lak and Lam Dong); the south-central coast (Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan and Binh Thuan); the southeast

Map 3.2 Cashew-growing provinces in Vietnam
(ranked by production in metric tonnes)




Source: VINACAS (2009)

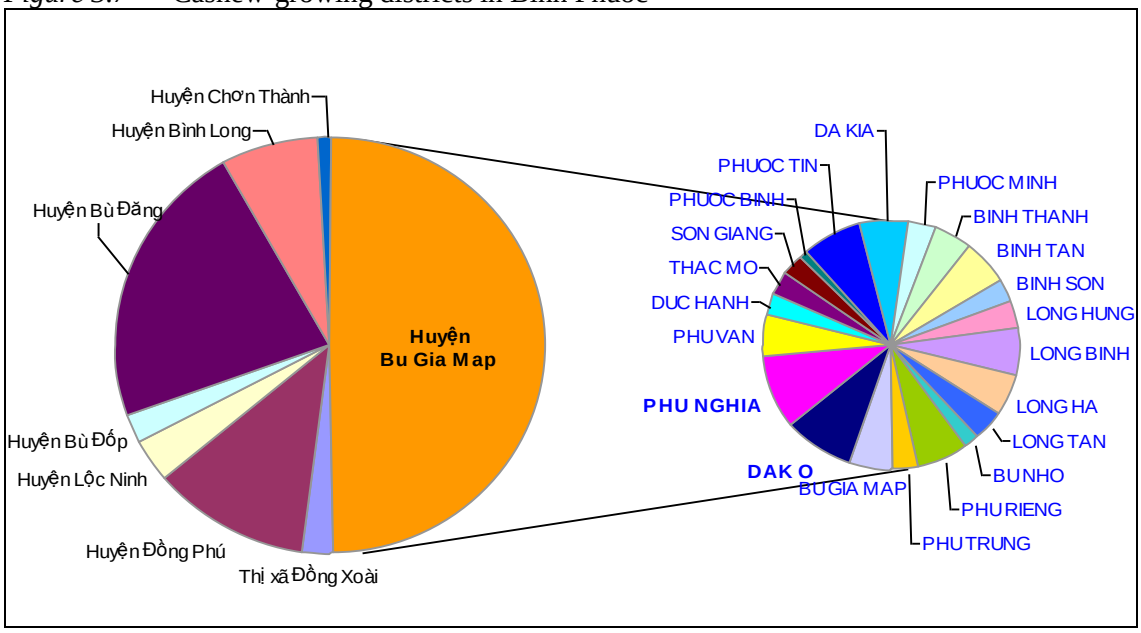
The southeast produces most of the raw cashew, especially Binh Phuoc and Dong Nai Provinces, together with Daklak in the Central Highlands. These three provinces account for more than 60% of the total area under cashew cultivation (VINACAS 2009).[15] Binh Phuoc Province accounts for about 40% of the country's total cashew production. Within Binh Phuoc Province, Bu Gia Map[16] District produces 20% of all Vietnam's cashew, with about 50% of this being produced in Binh Phuoc (Figure 3.7). Dak O and Phu Nghia communes each account for 9% of the output produced in Bu Gia Map District.

(Binh Phuoc, Binh Duong, Tay Ninh, Dong Nai and Ba Ria-Vung Tau); and the Mekong River Delta (Long An, An Giang and Kien Giang).

15 Binh Phuoc has 40% of the total area under cashew.

16 It broke away from Phuoc Long District in November 2009.

*Figure 3.7* Cashew-growing districts in Binh Phuoc




Source: Binh Phuoc Statistics Office (2009)

Cashew is traded on the market by both small- and large-scale private traders in Vietnam and farmers sell their cashew to these traders.[17] Cashew is a smallholder crop in this country and is mainly planted as a mono crop, which tends to result in it being crowded. Vietnamese cashew farmers have about 150 to 400 trees per hectare (Nguyen Minh Chau 1998).[18]

Being in the northern hemisphere, harvesting in Vietnam, as in India, takes place from January to May. Harvesting is then followed by the rainy season, as in Tanzania.

*Table 3.2* Cashew season: Vietnam (Phu Nghia)[19]

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rain | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Weeding | ■ | | | | | | ■ | | | | | |
| Prunning | | | | | | | ■ | | | | | |
| Spraying | ■ | | | | | | ■ | | | | | |
| Harvest | | ■ | ■ | ■ | ■ | | | | | | | |

[17] A golden cashew festival was held in Binh Phuoc Province in 2009 to showcase the success of the cashew industry.

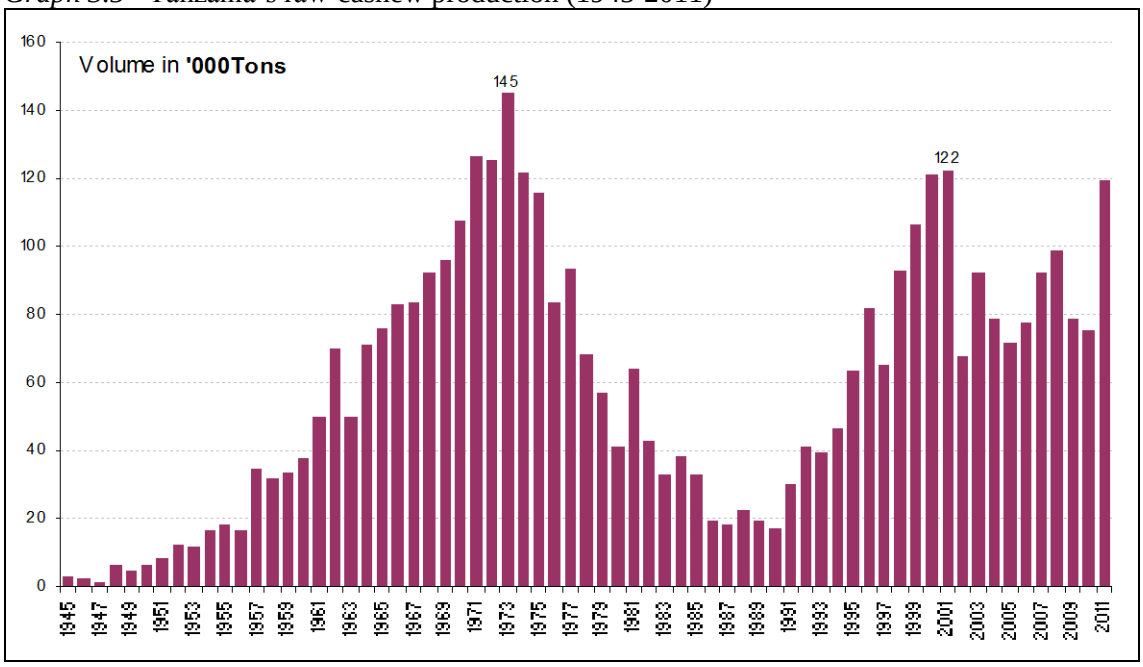
[18] Interviews with farmers confirm this.

[19] Compiled by Hoa Dinh and Duy (2011). Making this seasonal calendar was a challenge as the Vietnamese use a lunar calendar that fluctuates every year and does not necessarily overlap with the international calendar.

## Tanzania: Two peaks, then what?

Cashew was one of the main traditional export crops[20] traded in Tanzania long before the country gained independence in 1961. Production in Tanzania has been erratic but with two notable peaks: one was during the socialist period in the mid-1970s and the other at the time of economic reforms in the early 2000s, although this second peak never reached the level of the earlier one (Graph 3.5).

*Graph 3.5* Tanzania's raw-cashew production (1945-2011)




Source: Output for 1945-1962 from Jaffee & Morton (1995: 165) using data from Northwood (1962) and *Tanganyika Trade Journal* (1963); for 1961-1998 from FAOSTAT | © FAO Statistics Division 2010; and production figures for 1998-2011 from the Bank of Tanzania and Cashewnut Board of Tanzania

Even before Tanzania gained independence, cashew was being produced in small quantities. In 2010, cashew ranked as the fourth largest contributor to GDP among traditional crops (BOT 2011). This section considers the historical explanation behind the trends observed in cashew production in Tanzania where cashew trading has been undertaken by private traders on the free market and by the state's multi-tiered marketing system.[21] Trading mainly occurred in three dif-

[20] Others include coffee, cotton, sisal, tea and tobacco.

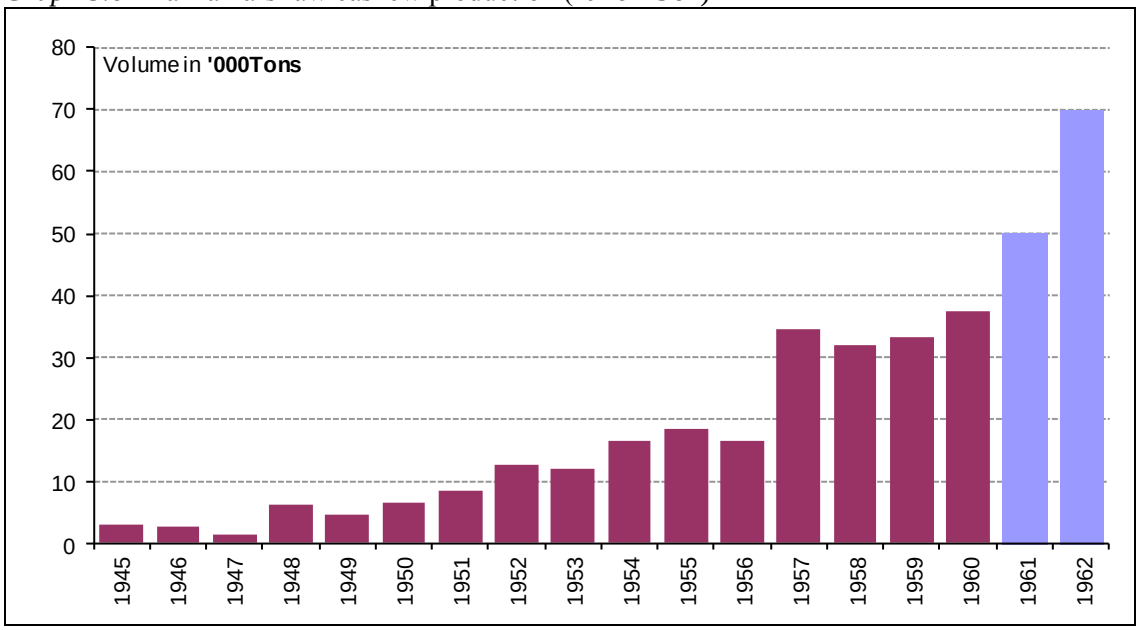
[21] The value of exported raw cashew has been increasing over the years but production did not necessarily peak at the same time. For instance, in 1973, the volume of raw cashew production given by BoT (see Graph 3A1 in the Appendix) was 110,000 tonnes and was valued at US$ 20 m, yet the production level of 60,000 tonnes in 1998 was valued at more than US$ 100 m. Production levels and prices then declined to 65,000 tonnes in 2006 with a value of US$ 40 m.

ferent periods: on the free market in the pre- and post-independence periods; during the *Ujamaa* time; and in the era of market liberalization with the structural adjustment reforms and the Warehouse Receipt System.

*Free market I: Pre-independence and post-independence (1945-1962)*

The first exports of raw cashew were recorded from Mafia Island and the sisal estate in Tanga in the late 1930s (Jaffee *et al.* 1995; Sepalla 1998: 122). The crop then expanded in Mtwara and Ruvuma in the south of the country and production and exports continued to rise rapidly (Graph 3.6). All the raw cashew were exported to India and Indians and Arabs were the main traders, operating shops or transport companies and they either bought or bartered for cashew. Asians were favoured in trading by both Arabs (during slavery) and Europeans (during colonialism by the Germans and British) (Rweyemamu 1973: 29)). During colonial times, racial occupational categorization 'gave Indian traders a legitimate position to trade on behalf of Africans' (Seppala 1998: 122). The Indians at the coast had trade connections with southern India (Seppala 1998) and played a significant role in trade while the indigenous people grew the crops. During colonialism, crops were cultivated in specific areas. For example, coffee was cultivated in northern Tanzania, tea in the plateau areas where there were higher levels of rainfall and cotton was grown in areas with moderate rainfall (Rweyemamu 1973). In some areas, this practice is still enforced. At the time, India already had a flourishing processing industry and needed additional cashew from elsewhere

*Graph 3.6* Tanzania's raw cashew production (1945-1962)




Source: Jaffee *et al.* (1995: 165) using data from Northwood (1962), Seppala (1998: 122) and *Tanganyika Trade Journal* (1963).

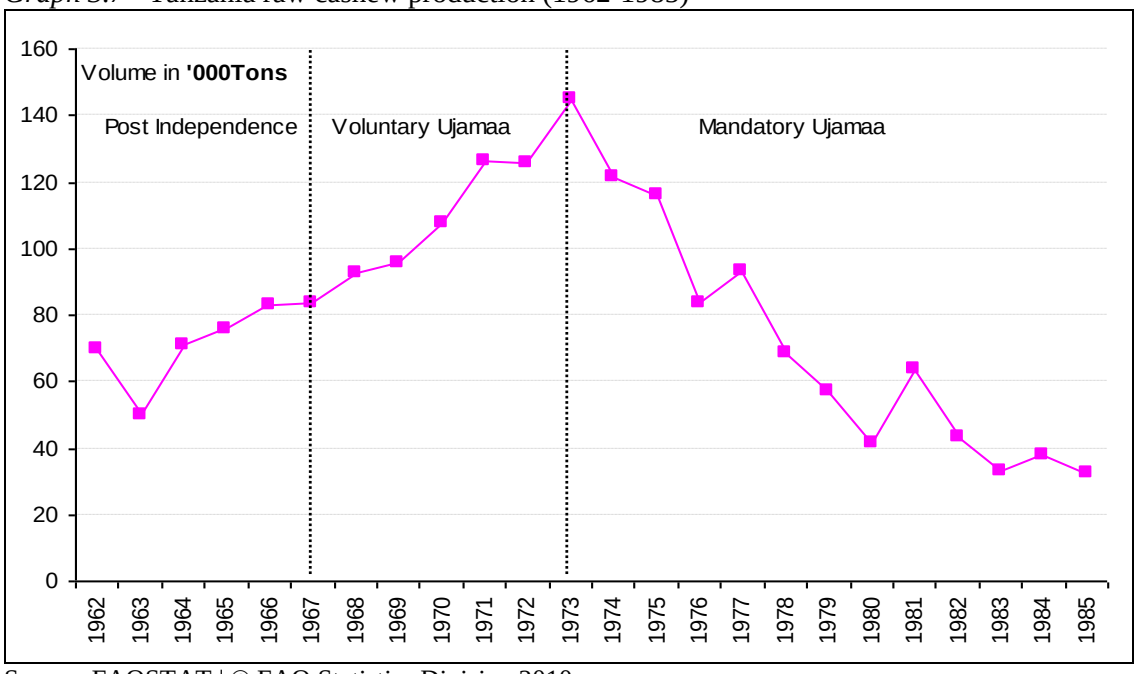
as the local supply was insufficient. Cashew from East Africa, i.e. Tanzania and Mozambique, were thus mainly exported to India.

*Ujamaa period (1962-1973)*

The Southern Agricultural Products Board (SAPB)[22] was established in 1963 with the mandate to export cashew, and the National Agricultural Products Board (NAPB) then took over from it in 1964.

The NAPB, as a cooperative organization, had the monopoly on buying cashew from farmers through cooperative societies. Self-initiated cooperatives existed before independence, for instance in Kilimanjaro and Kagera. The NAPB was a three-tiered marketing system overseeing farmers, cooperative societies and a cooperative union. Prices offered by the NAPB were approved by the Cabinet for each zone.[23] The price offered was a residual payment, calculated by subtracting the marketing costs and non-market deductions from the estimated average sale price (± any subsidy to the growers) (Westergaard 1968c).[24] Production increased in the period from 1962 to 1973 (Graph 3.7).

*Graph 3.7* Tanzania raw cashew production (1962-1985)




Source: FAOSTAT | © FAO Statistics Division 2010

[22] It took over from the Southern Region Cashew Nut Board.

[23] In 1968, the cashew-growing area was divided into four zones: (i) Tunduru, Nachingwea, Masasi I & II and Songea; (ii) Mtwara, Lindi, II, Newala I & II; (iii) Coast Region; and (iv) Kilwa and Lindi I (Westergaard 1968b).

[24] These deductions included export tax, district council levy, any NAPB surplus, union tractor levy, operational costs (NAPB, Cooperative), bags, financial costs, transport from the society to the NAPB warehouse and subsidies for local processes, together with 3% shrinkage.

Grading in this period was commissioned by the Tanzania General Superintendence Company Limited, an independent organization recognized by the buyers (exporters). It was done at the NAPB warehouses in Mtwara and Dar es Salaam where a standard grade fetched a higher price than a lower grade. Regardless of the outcome, farmers were paid the same amount for standard grades and lower grades. Efforts were also made to track output from primary societies (Westergaard 1968). For example, at the beginning of the season, societies were provided with bags marked with codes showing their registration number and the zone they belonged to.

Unfortunately, the NAPB incurred losses due to incorrect drying and grading during post-harvest periods (Jaffee 1995).With increased output, an attempt to develop local cashew processing was envisaged and, in 1964, Oltremare set up the first mechanized cashew-processing factory in Dar es Salaam under TANITA (Tanganyika Italian Company Ltd), with a 12,000 ton capacity.[25] The plant operated at a loss due to low-yielding kernels and Cashco from Japan set up another mechanized cashew-processing factory in Mtwara in 1968 with a capacity of 8,000 tonnes. With a lack of spare parts and insufficient power, the plant was not operational for years and by 1973 still only 10% of cashews were being processed locally. The low level of processing in the country is not only attributed to internal factors but also to the marketing organization. According to Kriesel (1970: 133),

> India is the major processor of cashew nuts taking, at present, 90 percent of Tanzania's output and 80 percent of Mozambique production. Tanzania's harvest happens to come when supplies from elsewhere are at a seasonably low level. As a result, processors in India bid strongly for Tanzania's crop, thereby making it economically difficult for processors to operate in Tanzania. At present NAPB realizes a much lower return from sales to domestic processors than from export.

Processing was therefore developed at the expense of the farmers in the 1970s. If it was going to flourish, the market for kernels had to be thought through, farmers had to receive a high price and Tanzania would have to see intensive investment. Unfortunately not only was the price that was offered insufficient but so too was the technology adopted. Tanzania had failed as Indian buyers needed raw cashew and were still able to bargain for a lower price given their monopoly and the chaotic, non-functioning local processing. This explanation leads one to conclude that the forms of contracting were problematic for farmers. The decline after 1973 was spectacular in every way and so was the radical move by President Julius Nyerere to abolish the cooperative unions and introduce centralization and crop authorities in their place.

[25] http://www.oltremare.biz/azienda.asp?idspag=3

*Ujamaa period (1974-1985)*

Due to huge losses, the cooperative unions were phased out, although they were reintroduced later. A decentralization policy was adopted in 1972 and focused on decentralizing the key authorities and functions of government down to the grass-roots level.[26] The Cashewnut Authority of Tanzania (CATA) was established in 1973, with the aim of investing in large-scale processing and providing extension and grading services. It took over from the NAPB and introduced a tendering system for exports, which marked a move away from self-initiated cooperatives to state-controlled cooperatives. From 1977 to 1982 cooperatives were replaced with crop authorities that were required to market agricultural produce directly from the villages (URT 2005).

At the time, the country was implementing an import substitution strategy and encouraging local manufacturing.[27] The import substitution industries were to provide basic domestic needs under the Basic Industrial Development Strategy and the Small Scale Industries Development Organisation (SIDO). The CATA was busy trying to develop cashew-processing capacity in the country amid the challenges of untrained manpower and mechanical processing.

As seen in the previous chapter, Tanzania had donor support for its public sector and manufacturing in the 1960s and 1970s. Donor aid for social-service expansion was increasingly provided through donor-controlled projects and included a significant technical-assistance component (Semboja *et al.* 1994).

Project support was the main way of providing bilateral assistance and the creation of donor-assisted cashew-processing capacity followed the same trend, one that was happening for other crops too. There was some creation of capacity (Coulson 1982) but little utilization (Wangwe 1983; Wuyts 2001), which meant that these new factories had to hire people at different levels to run the factory and its machinery.

The ill-fated initiative by the World Bank-funded project of 36,400 tonnes of processing capacity for five factories was very expensive. To make matters worse, the government had requested installations for additional capacity and three more factories were put up as well as an additional two paid for by bilateral funding. This brought the total processing capacity in Tanzania to 113,000 tonnes by 1980.

Cashew production reached its highest level in 1974 and then went into free-fall until 1986 (Graph 3.7). The 1985 cashew harvest provided less than 20% of the installed processing capacity so it was not a lack of factories that led to the

[26] For further information, see Jaffee (1995), Ellis (1979) and McHenry Jr (1979).
[27] BIS was implemented between 1975 and 1995.

fall in production. A number of reasons, both socioeconomic and biological, are put forward below to explain the downward trend in production after 1974.[28]

- The latest phase of villagization (*Ujamaa*) involved the compulsory movement of farmers to new development villages. This led to increased distances between their farms and their homes and prevented farmers from tending and harvesting their trees as well as in the past.
- This neglect of farms led to the onset of powdery mildew disease (PMD) and resulted in further declines in yield. The CATA was overstretched at the time and some of its main responsibilities were not fulfilled. Research and extension in particular were given less priority and extension workers even became involved in the procurement of raw cashew.
- With the onset of drought-induced food imports, falls in export volumes and higher oil prices in 1974-1975, the government increased agricultural prices, especially food prices and taxes, and the minimum wage for civil servants (World Bank 1981: 83). Prices of all necessities were fixed by the NPC and farmers started to switch to crops with higher incentives and to neglect cash crops, including, cashew production. The shortage of foreign exchange was aggravated by a fall in the volume of traditional exports. For instance, peasants in Rufiji started to produce charcoal as the market for it was not controlled by the state (Nindi 1991). The government tried to regulate production of other goods by introducing road blocks and other threats, but in vain. Ellis (1979) and Jaffee (1995) showed that, even with increases in international prices of cashew between 1977 and 1982, producers did not benefit. This view is supported by the actions taken by farmers who simply decided not to tend their trees. As mentioned in Chapter 2, the early 1980s were also a time of severe shortages of goods in general (Wuyts 2004) and, in the end, cashew producers were hit by falling incentives in terms of prices and a shortage of goods.
- Processing equipment was operating at below capacity and was subsidized by producers.[29] This led to further losses for the CATA, whose operating costs were increasing not only due to an increase in imported inputs (fuel, spare parts) but also to bad management.

As a result of these problems, processing factories never moved beyond their infancy or offered a good price to farmers compared to their Indian counterparts. The CATA's two-tier marketing system presented too many challenges and had to be replaced. By 1982, Act No. 14 called for the reinstatement of cooperative unions and rural primary societies.

*Free market (1985-1991)*

Cooperatives were reintroduced in 1984 and the crop authorities were turned into crop boards, which marked the return of a four-tier system. This period coincided with the introduction of the World Bank's and the IMF's structural adjustment

[28] For more information, see Ellis (1979), Jaffee (1995), Martin *et al*. (1997) and Poulton (1998).

[29] The World Bank was at the forefront in supporting the processing of cashew in the country. At the time, mechanical processing was preferred, Sepalla (1998) noted that this required less administrative follow-up from donors than implementing social projects.

reforms, which were known domestically as the Economic Recovery Programme. Macroeconomic stabilization and trade liberalization were given priority and 1986 saw the adoption of stabilization policies aimed at reducing domestic expenditure (Wuyts 2004), trade liberalization starting with import liberalization and the adjusting of local prices to world prices.

With regard to raw cashew, the CATA was replaced by the Tanzania Cashew Marketing Board (TCMB) in 1985. The regional cooperative union and the primary societies had the role of buying cashew and abandoned farms were brought back into production by the introduction of the CPIPP (1987-1989) and the CIP (1990-96), both cashew development projects sponsored by the World Bank and the UK's Department for International Development (DFID). The projects were set up to research PMD in the mid-1980s and knowledge about spraying, care and the maintenance of cashew trees was provided to farmers as part of the pilot study.

According to Martin *et al.* (1997: 8), farmers were taught 'bush clearing and weeding; thinning of overcrowded trees, controlling PMD through dusting with sulphur and intercropping with short term crops'. This was possible due to assistance from extension officers who used the T & V (training and visit) system. About 2000 villages were initially covered by the CPIPP and, following its success, the CIP covered all the cashew-growing areas in 1990, with these new procedures first being adopted by large farmers.[30]

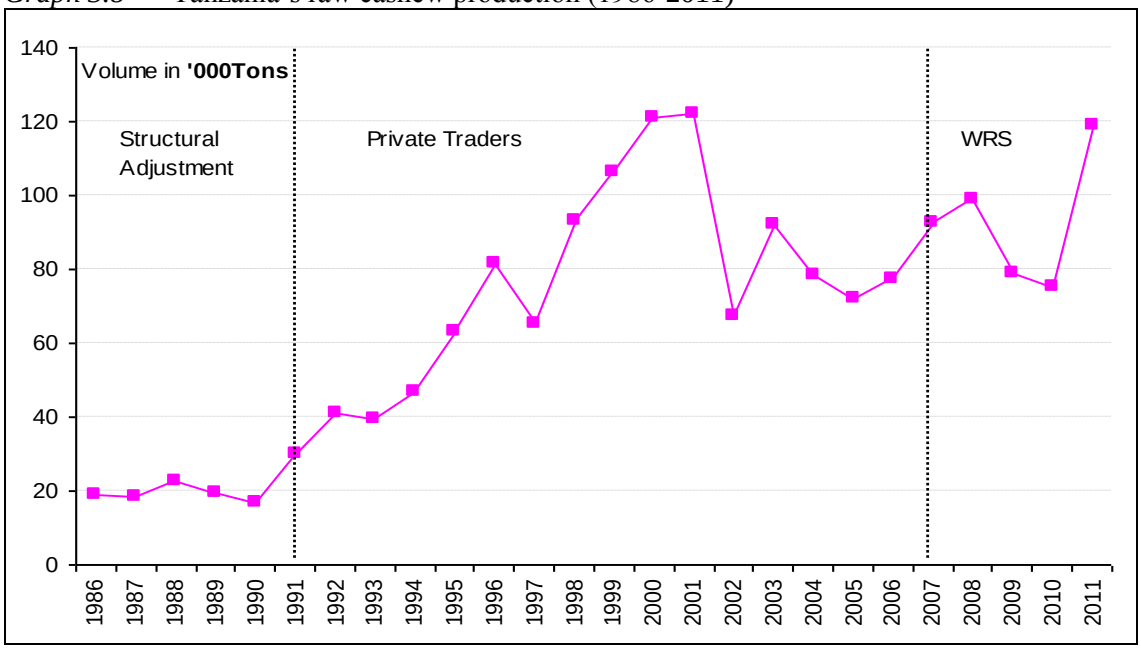
*Free market II (1991-2006)*

Trade liberalization meant that the marketing of both output and inputs was left in the hands of private traders who bought their cashew from the primary societies.[31] The rehabilitation and liberalization process saw total cashew production start to pick up (Graph 3.8).

Traders had to obtain permits from the district office but to encourage easy traceability of levies, only traders who could manage a consignment of 100 tonnes were given permits (Box 3.1).[32] The information in Box 3.1 is also confirmed by Seppala (1998: 127-128) who found that traders started by obtaining trading licences by specifying their buying location and amount. Then they would buy cashew from the primary society by providing initial funds to buy crops from farmers. The primary society was then responsible for buying, weighing and scaling the crop. The primary society and district then charge a levy, while transportation and the exportation of cashew are the responsibility of the trader. With

[30] Large farmers in the areas visited have an average of 25 ha and 660 trees. See also Chapter 4.
[31] Interviews with buyers of cashew by email, 19 December 2011.
[32] Box 3.1 shares an example from a trader who also happens to be a processor.

*Graph 3.8* Tanzania's raw cashew production (1986-2011)




Source: Output from 1986 to 1998, FAOSTAT | © FAO Statistics Division 2010; production for 1998-2011 from the Bank of Tanzania and the Cashewnut Board of Tanzania

*Box 3.1* Buying raw cashew 1991-2006 in Tanzania

As a cashew-processing company, OLAM Tanzania Limited was registered in 1994. OLAM is a subsidiary of OLAM International Limited with its headquarters in Singapore. Apart from processing and trading 20,000 MT of cashew annually from Mtwara, Lindi, Tunduru and Nachingwea, OLAM also trades cotton (15,000 MT) from Mwanza and Shinyanga, coffee (10,000 MT) from Mbeya, Songea, Bukoba, Kigoma and Moshi, cocoa (3000 MT), sesame (15,000 MT) from Mtwara and Lindi, and timber (8000C BM). OLAM thus operated in Mbeya, Mtwara, Mwanza, Musoma, Kagera, Shinyanga, Moshi, Igunga and Dar es Salaam. The produce is transported by hired market lorries of up to 5 to 12 tonnes.

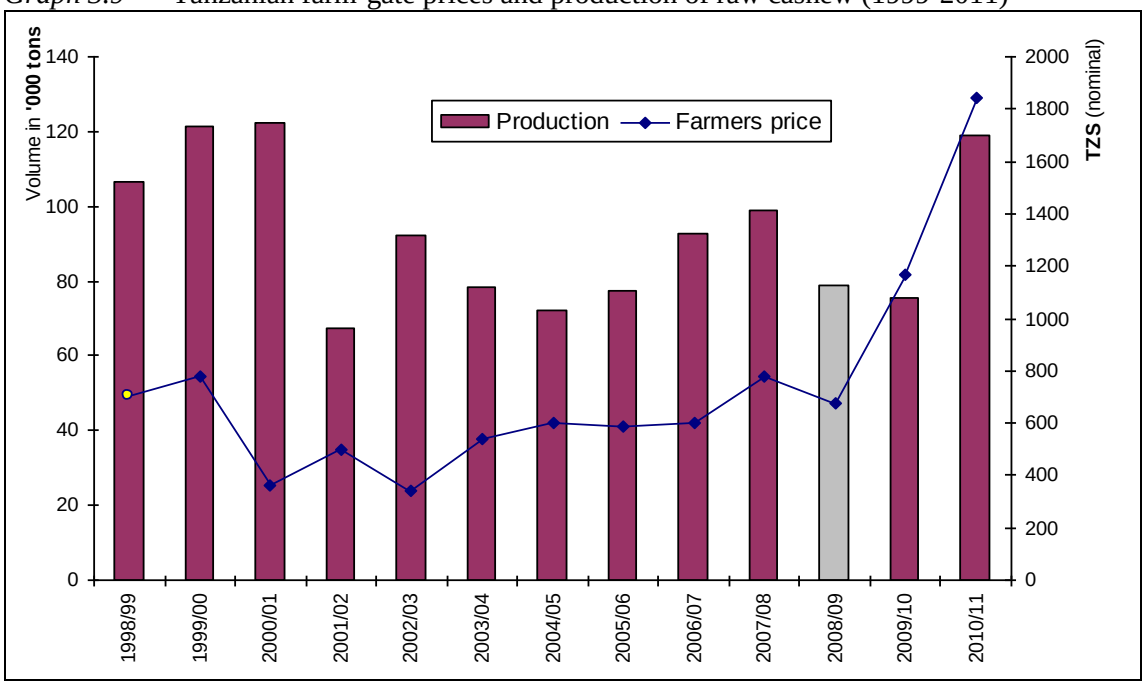
We sourced out our own credit and bought cashew directly from the primary society. Before going to the primary society, approval was obtained first from the Cashewnut Board for the company, then regional approval followed. Additional approval was obtained from the District Business Officer for Crop Shipment but this was very bureaucratic and good personal relations were needed to get it on time.

Once this annual licence was obtained, all accredited companies were required to deposit cash for procurement at the primary society and no limit or floor was sanctioned. A list of all companies with their specific buying dates was kept at the primary society, a list that will remain intact whenever prices are equal. The exception was when prices changed and whoever offered a higher price was given priority. Most primary societies had strong and credible people with little chance of loss of money. In case of theft, the stolen amount was deducted from the levy to be paid to the village. There was no official grading at the time, and cutting, location and time of trading were the best way to grade cashew nuts. Nachingwea and Tunduru cashew nuts were the best, while Liwale and Tandahimba were graded lower. Trading in the rainy season and the month of trading usually impacted on the quality of the cashew.

Source: Traders from OLAM. Interview by the researcher.

time, this system unfortunately led to clash among big traders and, at the beginning of the season, traders would offer high prices and mid-season prices would then fall or even collapse. The worst season was 2000/2001 when farmers received TSh 150, which was less than a quarter of the price received in the three previous years due to a fall in world prices but also to the CBT insisting on the use of sisal bags (Mitchell 2004).[33] The sharp fall in the price received by farmers meant that they could not tend their farms the following season. This is supported by the fall in production after 2001, as shown in Graph 3.8. The prices received by farmers in the early 2000s were never high enough in relative or absolute terms compared to those received prior to 2001 (Graph 3.9). Traders' failure to buy raw cashew with any sort of predictability led to an outcry among farmers. On the other hand, the supply of inputs, which are crucial for assuring output, rarely attracted traders. The government intervened and set up an input fund to replicate the Tunduru Input Fund and provide timely and reasonably priced inputs for producers.

*Graph 3.9* Tanzanian farm-gate prices and production of raw cashew (1999-2011)




Source: Records from the primary society in Nanhyanga (various years) and cashewnut board of Tanzania

[33] Interviews with farmers confirm this.

*Free market III (2007-present)*

During the 2005 Tanzanian presidential campaign, the then presidential candidate Jakaya Kikwete promised to solve the marketing problem and offer better prices. Once he was in power, the Warehouse Receipt System (WRS) was introduced in 2007 with the Warehouse Receipts Act No. 10 of 2005, the Tanzania Cashewnut Marketing Board Act No. 21 of 1984, the Cashewnut Industry Act No. 18 of 2009 and the Cooperative Societies Act No. 20 of 2003. Under this system, cashew producers would send their cashew to an approved warehouse and receive payment when their goods had been auctioned. To curb delays on payments, an agreement between depositors and financial institutions was set with government guarantees whereby depositors received a percentage of an indicative price and once the produce was sold, the buyer would clear it with the bank and the depositor would receive the remaining percentage of the price from any cashew sold. The depositor is a farmer and the buyers are mainly processors and exporters, and the Cashewnut Board of Tanzania oversees the quality of the cashews that are produced by the farmers and kept in the warehouse before being sold on to buyers.

This led to a combination of marketing for cashews and the provision of inputs. The WRS began as a pilot project in Mtwara and was later expanded to all cashew-growing regions. At the beginning of the season, an indicative price is provided and remains the same throughout the season. Farmers sell their output through the WRS or *kangomba* and a farmer is initially provided with a part of the suggested price, with the remainder being paid after auctioning has taken place.[34] Farmers also sell to other traders in the communities that play an important role for those farmers who need cash before the official opening of trading in the primary societies. The unofficial buying of cashew[35] is known as *kangomba*,[36] but by selling *kangomba*, farmers forego subsidized inputs that would have accrued to them. The government has repeatedly condoned the act, but it still persists.[37] Since the introduction of the WRS, a certain part of the price is

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34 Chapter 5 describes the WRS in relation to cashew marketing in more detail.

35 The Weights and Measure Act No. 20 of 1982 stipulates the international system of units (SI) to be used in trade. The Act also 'direct[s] that a person who has received an advantage under such contract, bargain, sale or dealing so declared to be void shall restore it or make compensation for it to the person from whom it was received'.

36 In *kangomba*, the traders set the price of cashew per kilo. Traders, especially large-scale farmers, place a set of weighing scales in front of their house to indicate that they are buying cashew. By selling through *kangomba*, farmers get paid the full cash price on the spot. Though *kangomba* is illegal and the amount paid is less than that offered by the official primary society, farmers needing instant cash have no other alternative.

37 For instance, while answering a supplementary question (no. 230 in Session 8 on 17 July 2007), the then Deputy Minister for Industries, Trade and Marketing, the Hon**.** Chibulunje informed Parliament that 'it is prohibited to use unauthorized measurements including *kangomba, lumbesa,* etc.' for trade. He then added 'I continue to insist by stipulating the government stance that whoever will be found

deducted for the advance purchase of inputs for the next season, TSh 10 per kilo for village development and TSh 10 per kilo for security.[38] With the exception of deductions for inputs, the other deductions are agreed upon beforehand and thus differ between villages.

The fall in production in 2008 was the result of insufficient rainfall, whilst the drop in price was due to the world financial crisis. Graph 3.9 shows that, following a change in price, the next season's output is affected. For instance, when the price dropped in 2000/2001, output dropped in 2001/2002; and a rise in price in 2009/2010 subsequently led to increased production in the 2010/2011 season.[39] This implies that price is the single most important determinant of production. This cobweb behaviour by cashew farmers, for example not clearing under trees after a fall in prices, shows that farmers are heavily influenced by prices.

The suggested price received by farmers per kg of cashew includes deductions (Table 3.3 and Table 3A3 in the Appendix) associated with operating costs, marketing costs, financial costs and those for purchasing cashew. The operating costs of the primary society, the union and district councils account for most of the costs. The operating costs have been on the rise since the introduction of the Warehouse Receipt System in the 2007/2008 season. While the amounts paid to the primary society and the union were fixed at TSh 50 and TSh 21 respectively, the amount paid as a levy to the district council has been rising and reached TSh 40 in the 2010/2011 season. Marketing accounts for the second highest set of costs and transporting the cashew to the warehouse is the biggest part of the marketing costs involved. Transport costs are twice as high as those the primary society levies. Marketing costs also include shrinkage that is valued at 2% of the suggested price. This is paid, like all the other items, irrespective of whether there has actually been any shrinkage and regardless of the amount of shrinkage.

*Table 3.3* Percentage of deductions for cashew marketing costs in Tanzania (2007/2008-2010/2011)

| | 2007-8 | 2008-09 | 2009-10 | 2010-11 |
|---|---|---|---|---|
| Operating costs | 36.8 | 42.0 | 42.6 | 45.4 |
| Marketing costs | 35.1 | 39.1 | 35.3 | 34.0 |
| Finance costs | 8.9 | 3.2 | 7.2 | 7.4 |
| Cost of purchasing cashew | 19.3 | 15.7 | 14.9 | 13.2 |

Source: CBT and author's calculation.

using these measures is breaking the law and should be prosecuted. I call upon all of us in charge of this issue, to collaborate to ensure that informal measurements are not used.'

38 Interview, Hamidu Rashid Mahundo, Deputy Secretary Mambamba AMCOS, 16 December 2008.

39 The effects of the price spike in 1999 due to crop shortfall led to intense upward pressure on prices and production in the following season. On the same note, the price plunge in 2000/2001 reflected higher worldwide supplies.

The cost of bags accounts for more than 80% of the cost of purchasing cashews.[40]

In summary, the existence of a thin market (one with few buyers and sellers) led to an interventionist approach in an attempt to solve the failure of the cashew market in Tanzania. The country opted to have boards such as the SRCB, the CATA, the TCMB and the CBT to oversee the sector. The first peak occurred in a period of good producer prices and grading and when few inputs were needed. The subsequent decline was due to a fall in producer prices in favour of food crops, compulsory resettlements in *ujamaa* villages (especially in cashew-growing regions) and problems with powdery mildew disease that led to plants being neglected. Scientists were thus involved in PMD research from the late 1980s until 1986 when production hit rock bottom. A recovery was then seen.

With trade liberalization in the early 1990s, the government stopped intervening in the sector. Paradoxically, liberalization led to an absence of higher payments for better quality crops. Production increased but markets remained limited with traders (cartels) in raw cashew and none in input-related services. Rehabilitation and favourable prices led to a peak in output at the end of the 1990s but when prices collapsed at the end of 2000, farmers were not protected and were hit hard, earning less than expected. This led to a fall in production in subsequent years. Falling revenues meant that income from cashew could not finance maintenance, particularly in the absence of credit. Furthermore, liberalization implied the absence of any grading of output and cashews were not sold at different prices depending on quality (the 'Problem of Lemons'[41]). In 2007, WRS was introduced and grading was reintroduced. There is little processing capacity in Tanzania and most of the cashew crop is exported in its raw form to India.

## Vietnam: The whirlwind

The cashew tree arrived in Vietnam in the 18th century and was initially grown in household gardens and on plantations.[42] In 1975, it was chosen as a tree suitable for covering bare hillsides to prevent soil erosion. Political discussions began in the early 1980s when cashew was selected as a prospective export crop. A foreign trade conference was held in Song Be (now Binh Phuoc and Binh Duong) in 1982 in the presence of the then Prime Minister Pham Hung. Researchers subsequently started to develop processing technologies from scratch, coming up with a raw-cashew nut-splitter that uses both hands and feet.

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[40] See Table 3A2 in the Appendix for Tanzania's kernel production from the 2005/2006 to 2009/2010 seasons.

[41] A persistent fall in quality.

[42] Information in this section is courtesy of Mr Hoang Giang, General Secretary of VINACAS. Additional information was obtained from VINACAS video tapes viewed in November 2009 and April 2010.

*Photo 3.3a* Shelling cashew in Vietnam

*Photo 3.3b* Shelling cashew in Tanzanian facilities

The *Doi Moi* reforms of 1986 gave farmers and producers more say about what to produce and more control over their earnings. And, importantly, a resettlement programme (from the North to the South) was introduced allowing for the concentrated production of cashew.

The Vietnam Cashew Association (VINACAS),[43] which was established in 1990, plays a coordinating role for all cashew stakeholders. It is a socio-professional organization made up of enterprises in the field of cashew production, processing and trading, and assists members with coordinating trading activities, promotes production development, guarantees reasonable prices for cultivators and advises on exports. In general, it aims to raise the product quality and trading efficiency of the Vietnam cashew sector. Its formation went hand in hand with the start of official statistics on cashew production.

Cashew gained prominence as an export crop[44] in Vietnam in the late 1980s. While occupying Cambodia from late 1978 to 1989, Vietnam did not trade much globally and it was only in 1992 that it moved into the Chinese market and in 1994 into the US market. In the early 1990s, China became the main importer of Vietnamese kernels but Vietnam banned all exports of its raw cashew in 1996 to concentrate on the increasing needs of its own processors. It also started importing raw cashew from other countries, especially Africa. The shortage of raw cashew has been solved by importing from Ivory Coast, Nigeria, Indonesia and Ghana.

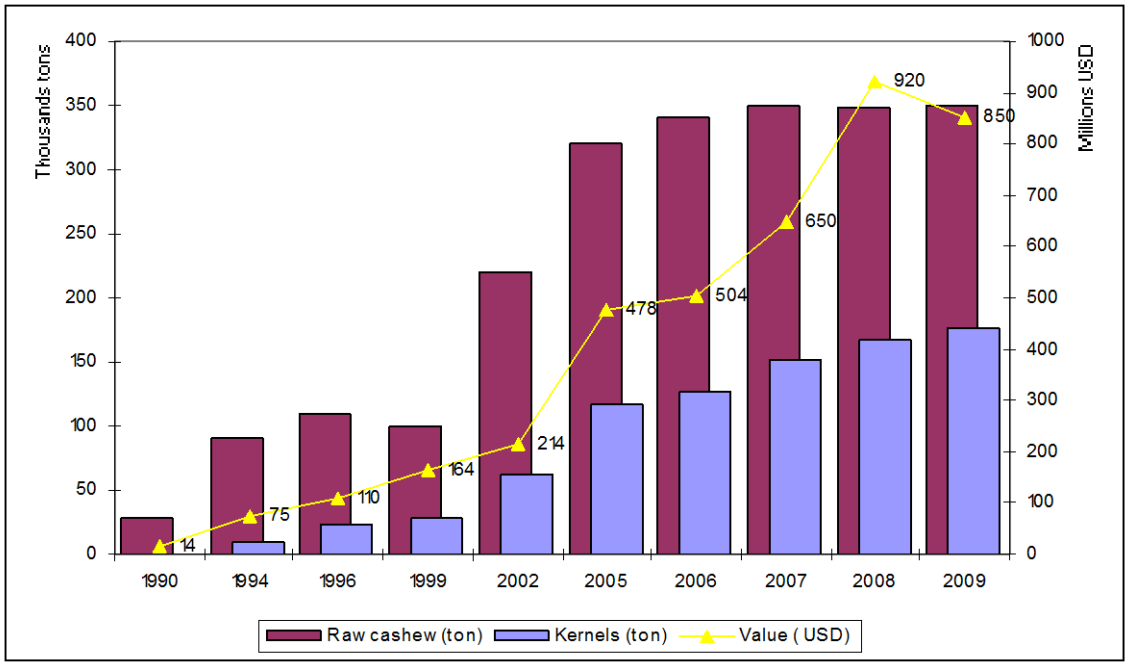
Vietnam has been the world's leading kernel exporter and top earner from cashew since 2006 and currently has more than 300 cashew processors (VINACAS 2009). Its main markets for kernels are now China, the US and the Netherlands. Production has been on the rise since 1990 and more than 200,000 tonnes of raw cashew and more than 60,000 tonnes of kernels were being produced annually by 2000 (Graph 3.10).

On 7 May 1999, the government approved Decision No. 120/1999/QD-TTg for a cashew development project that would run until 2010. This aimed to increase productivity and expand the area under cashew cultivation by improving the provision of credit for farmers, using better varieties and training cashew experts.

Vietnam continued to see an increase in production of both raw cashew and kernels. Since 2006, annual production levels of raw cashew have stabilized at around 350,000 tonnes while the volume of kernel production has increased from 115,000 tonnes in 2005 to 180,000 tonnes in 2009 respectively (Graph 3.10). The value of exported cashew (both raw and kernels) has also been increasing over

[43] Decision 346 NN-TCCB/QD, taken in Ho Chi Minh City on 29 November 1990.
[44] Others include rice, coffee, rubber and pepper.

*Graph 3.10* Vietnam: Raw cashew production (1990-2009)




Source: General Statistics Office of Vietnam GSO; Vietnam Cashew Association (VINACAS)

the years and is outperforming production, with kernels having a higher value than raw cashew. In 1990, the first year for which data are available, earnings of around US$ 14 million were recorded, despite fewer than 30,000 tonnes of raw cashew being produced. As the leading processor of kernels, Vietnam saw its exports more than triple between 2000 and 2007. Vietnam exported 153,000 tonnes of kernels in 2007, while it only exported 40,000 tonnes in 2000 and about 27,000 tonnes in 1990. By 1999, the value of its cashew crop had increased more than tenfold to US$ 164 million as production tripled. And for the years 2007 to 2009, earnings went up from US$ 650 million to almost US$ 1 billion, dropping to US$ 850 million in 2009. In 2008, there were 420,000 ha under cashew cultivation, with an average productivity of about a ton per hectare. This resulted in a turnover of US$ 920 million, as is shown in Graph 3.10. Even though the cashew sector was a business valued at over US$ 1 billion in 2008, it is still considered a smallholder crop in Vietnam.

Raw cashew production stabilized in 2005 at 350,000 tonnes per year (although this conflicts with FAO data), while kernel production kept growing, fuelled by imports. The Ministry of Agriculture and Rural Development issued Decision No. 39/2007/QD-BNN on 2 May 2007. It is planning to expand its cashew development plan from 2010 to 2020 and increase the amount of land and output production of raw cashew and stabilize the production of kernels from 2010 to 2020. The aim was to reduce the number of small processors and have

more large processors that are easier to monitor regarding adherence to food hygiene and safety. For 2010, the targeted output for raw cashew was 500,000 tonnes and 140,000 tonnes of kernels, with an area under cashew of 450,000 ha with an average yield of 1.4 tonnes per hectare. These targets were met and even exceeded, with the exception of the production of raw cashew which has stabilized (Graph 3.10**)**. The goal for 2020 is to have an export turnover of US$ 820 million.

In summary, Vietnam opened up its economy and started trading in both raw cashew and kernels in the early 1990s after setting up VINACAS. Its enormous processing capacity and earnings from cashew are due to value addition.

## Contrasting resettlement stories

People have been moved from one area to another in the country as part of development projects that will improve the lives of relocated citizens, and the nation as a whole. To undertake these projects, the government has had to convince the community to move by ensuring the provision of added benefits. People were mostly convinced to move voluntarily but in some cases compulsory relocation has been forced on villagers. According to International Financial Corporation (IFC), the resettlement policy needs to ensure that people who are physically or economically displaced as a result of a project end up no worse off, and preferably better off, than they were before the project began. Examples of development projects leading to resettlement include dam building, road building, mineral extraction and community building. All have called for the movement of people against their wishes and have needed to employ different means of persuasion. When persuasion and inducement have failed, force has been used.

Resettlement is involuntary when it occurs without the informed consent of the persons being displaced or if they give their consent without having the power to refuse resettlement (IFC 2002). People have little recourse to oppose the government's expropriation regardless of their desire to continue occupying or using the land in question.

*Tanzania*: By adapting to the ideal of African Socialism in 1967, Tanzania endorsed the implementation of socialism and self-reliance (*Ujamaa na Kujitegemea*). All major means of production were nationalized and a countrywide rural resettlement scheme was implemented that involved persuading people to move to new villages equipped with all the necessary social services. When persuasion and inducement produced negligible results, force was used. Making people live together was not such a challenge but having them work together was (McHenry Jr 1979) because regardless of the effort they put in, all the members of the community were to earn the same amount of money. People had to leave the homes they had invested in all their lives and to start from scratch.

*Vietnam*: After the reunification of North Vietnam and South Vietnam, fighting poverty was a top priority for the Party. To cater for the poor in the north, the Vietnamese government provided credit and input incentives for all farmers who wanted to relocate to less densely populated areas in the centre of the country. Many farmers have thus migrated from the north to the cashew-growing areas in Binh Phuoc, attracted by land suitable for cultivation as part of the village resettlement scheme. Most of them migrated about nineteen years ago from Thanh Hoa and Nam Dinh Provinces and also Ben Tre, and many heads of household today reside in an area that is different from their place of birth.

There has been a concerted effort in Vietnam to increase raw cashew production as it is seen as a way out of poverty. Interestingly, both the Tanzanian and Vietnamese governments undertook involuntary resettlement programmes of the rural peasantry but in different contexts and with different purposes, leading to quite different results. In Tanzania, villagization, which also involved compulsory local resettlement leading to the grouping together of people regardless of their wealth, aimed to deliver social services (and, some argued, central control) to newly constituted villages. Production featured little in its set-up but suffered the most. Resettlement in Vietnam aimed to disperse the entire population into several hundred 'agro-industrial districts', with poor people and households from the north being given access to land in the south and programmes to help them settle.

## Discussion of findings

The demand for cashew is growing worldwide and as producers take advantage of this healthy situation, incentives are important. In the case of Vietnam, interventions by the state have ensured higher yields and increased output per tree has proven to be crucial, while interventions by the state, or the lack thereof, in Tanzania have resulted in sporadic production, which signals a failure of coordination. Interventions have aimed to coordinate the market and focused less on non-market coordination. As a result, Tanzania has ended up being trapped in a cycle of low production. Options for overcoming this include supporting all the actors within the cashew sector, increasing investment that will expand economic activities, especially those in the private sector, and encouraging the adoption of new technologies that will increase productivity (Poulton *et al*. 2006). Increases in productivity need to be supported with the right incentives, such as the availability, accessibility and affordability of inputs together with improved quality, that will result in better prices and returns for producers. As suggested in PHDR 2005 and 2007, integrated producer systems are also a viable option.

The market in Tanzania has changed from being a liberalized market to a monopoly market and better incentives are required at different levels. The Ware-

house Receipt System gives traders a monopoly and there is therefore the need to disentangle parts of the system to allow for more competition. Efforts need to be directed to encourage the smooth coexistence of all actors, with producers (both farmers and processors) at the centre of the decision-making process. When the economy was led by the state, the cashew authorities/boards provided coordination between producers and buyers, supplying inputs and providing credit and an assured market for farmers. In the free market era, there was a market for outputs but one for inputs has never developed. A monopoly situation tends to create dependency among the excluded and this in turn creates an interlocking market where, for example, farmers find themselves with less control regarding the procurement of farm inputs. And in *kangomba*, farmers in need of cash sell their produce to large-scale farmers not only at a lower price but they also forgo inputs. Ashley *et al*. (2003: 17) note that 'interlocking markets are particularly open to abuse because the terms of all transactions are inter-related and the low returns offered are much easier to conceal from the moral and competitive scrutiny of others in society'. Tanzania lacks a clear provider of credit and farmers mainly depend on earnings from cashew as their sole supplier of credit (see Chapter 4). Credit availability in Tanzania would therefore be beneficial for producers and a better solution for farmers than the current residual payment system through the WRS, which does not encourage effective and efficient reductions in the transaction costs associated with marketing.[45] Credit is important for maintaining cashew trees as money is needed not only to buy inputs but also to hire labour and tools. Reaching remotely located cashew farmers remains a challenge.

Tanzania's cashew value chains were governed by *captive* means during the period of liberalization. On the other hand, Vietnamese cashew value chains are governed by *relational* and *market* means, given that the price is always important for farmers.

Resettlement in Vietnam led to a boom in production while in Tanzania it disrupted production. It follows that 'redistribution policies introduce distortions and thereby reduce potential growth' (Alesina *et al*. 1994: 479). Proper preparation for resettlement of any size is crucial: 'Countries that experienced a land reform and hence reduced the inequality in land ownership should have had higher growth than countries with no land reform' and 'there will be a strong demand for redistribution in societies where a large section of the population does not have access to the productive resources of the economy' (*Ibid*.: 483-484).

[45] It is good that marketing is being centralized to protect farmers. They need more say in marketing especially on issues such as jute bags, shrinkage and transportation. There should be more competitive suppliers of jute bags and transport and primary societies require more education on managing finances. Lack of credit is also a complaint from processors who are finding raw cashew more expensive given the additional transactional costs. Since local processors are competing with foreign traders to obtain raw cashew, it is becoming costly to store a year's stock.

The observations from Vietnam present a challenge for Tanzania to replicate due to the level of its technology and its limited availability of credit. Tanzania could consider improving the different bottlenecks in its production process by providing incentives to all actors, thus expanding its economic activities. There is more room for expansion in Tanzania but this mainly depends on the availability of credit and the flexibility of research institutions and other coordinating bodies in the cashew sector. Investment in cashew is a continuous process and the availability of credit is crucial. This chapter has shown that cashew productivity depends much more on structural factors and that, for producers, the price is the most important factor influencing their decisions.

To maintain its status as a leading kernel exporter, Vietnam needs to sustain or even improve the quality of the kernels it exports. African countries have also started expanding their processing capacities, which means that Vietnam will be faced with the challenge of obtaining sufficient raw cashew in the near future.

With the volatility of cashew prices, producers need to be shielded to sustain the industry. The growth of the middle classes in China, India and other countries with emerging markets will lead to a rise in demand for cashew and countries such as Tanzania and Vietnam will need to produce more than they currently do. It is to be hoped that the cashew price will increase enough for consumers to continue buying it and for producers to continue producing it. If there is a fall in prices, producers will be likely to neglect or abandon the crop.

# 4

# Differences in sunk costs, output performance and input usage

## Introduction

Cashew offers an important source of income and employment in both Tanzania and Vietnam. At the national level, there is a divergence in production of cashew between the two countries. This chapter aims to identify the differences between raw cashew producers in terms of sunk costs, output performance and input usage at household level. The key question is how they differ. Although the same crop is grown in both countries, the differences in output may be explained firstly by how the crop is arranged, secondly, by how factor inputs are utilized and, thirdly, by how institutions administer the crop. Different methods explain the differences in agricultural productivity among countries. Studies have estimated average metaproduction functions to explain intercountry agricultural productivity differentials. Agricultural land and labour productivity are rising faster in developed than in developing countries. This chapter explores crop arrangement and factor input. The institutional set-up is dealt with in Chapter 5 on market dynamics. A combination of factor inputs allows the use of the induced technical change in agriculture model by Ruttan & Hayami (1985), which provides handles that link the accounting framework that is used to understand the divergence in production at household level. Their 1985 work points to dynamics of productivity where there is interaction between resource endowment, cultural endowments, technology and institutions.

## Induced technical and institutional innovation[1]

Ruttan & Hayami's (1985) induced technical and institutional innovation model is an endogenous model and points out the innovations that are a dynamic response to changes in resource endowment in line with reality and to growth in demand. Shifts in demand for institutional change are induced by changes in relative resource endowments and by technical change. Knowledge and cultural endowments affect supply on institutional change. According to Ruttan (1989), the increasing pressure of population against scarce resources leads to a rising economic value of labour that in turn leads to a shift in demand for institutional innovation and performance. Collective action through the distribution of political resources, the cost of achieving social consensus, cultural endowments and advances in knowledge result in a shift in the supply of institutional innovation. This means that advances in the natural sciences reduce the cost of technical change while those in the social sciences reduce the cost of institutional change.

Testing for technical change and resource endowments can be done by showing how a change in the price ratio of factor inputs induces new technology that increases output at minimum cost. However the testing of the relationship between cultural endowment and either technical change or institutional change remains a challenge. The former is covered in detail in this chapter. Technological substitutions occur between scarce factors that are expensive and an abundant factor that is cheap.

An increase in the price of land might encourage producers to use land-saving innovations. Land and water resource development, modified varieties and (organic and inorganic) fertilizer represent land-saving biological innovations and allow an intensification of the area used for production. According to Ruttan (1989: 1376), this means that an increase in the 'price of land in relation to the price of labour induces technical change designed to release the constraint of production that from an inelastic supply of land and at the same time induces institutional changes that lead to greater precision in definition and allocation of property rights in land'. These improvements often entail little reorganization of agricultural production as they lead to an increase in output per area. Examples include crop rotation, zero grazing and extensive farming.

Likewise, an increase in the price of labour induces producers to use labour-saving innovations. Technological advances, such as animal and mechanized power, are mechanical labour-saving innovations that allow the area operated per worker to increase. These new technologies act as a catalyst for substitution. According to Ruttan (1989: 1376), this means an increase in 'the price of labour in relation to the price of land (or natural resources) induces technical changes de-

[1] This section is mainly informed by Hayami & Ruttan (1985).

signed to permit the substitution of capital for labour and, at the same time, induces institutional changes designed to enhance the productive capacity of the human agent and to increase the workers' control over the conditions of employment'. It is important to note that a series of improvements follows after an inducement, leading to the reorganization of the agricultural production system and further increases in productivity. Since labour is flexible, an efficient and effective plan for undertaking the tasks mechanically is needed to maximize the increase in productivity. This may entail improving mechanical technologies to better suit the operation of the farm.

Analysis of cultural endowments can be done in a multidisciplinary way, where culture shifts the supply of institutional innovation by varying the cost of institutional change. 'Culture endowments make some forms of institutional change less costly to establish and impose severe costs on others' (Ruttan 1989: 1385). For example, the culture of *mkumi* in Tanzania, which represents a form of cooperation that used to assist in tending cashew farms, is an important cultural resource that is declining. This chapter will mainly focus on technical innovation.

Hayami & Ruttan (1985: 91, Figure 4-2) illustrate the induced technical change in agriculture using two factor inputs (land and labour) and investments in technology. For the purpose of illustration only, a single improvement is assumed in this dynamic process of either induced mechanical technology or induced biological technology. A combination of inputs is required for output. In the long run, production is enveloped by steadier isoquants, representing possible input combinations.

For *mechanical technology*, initially, at time zero, output is produced along the so-called innovation possibility curve (IPC), an envelope of isoquant representing a technology, for instance bush knives for pruning. The use of the bush knife represents an initial mechanical invention given a prevailing price ratio for the optimal combination of land, labour and the operation of the bush knife. A technology that would allow larger coverage per worker requires greater mechanical power represented by the land and power combination, which implies land and power are substituting labour due to a rise in wages. At time period one, output is produced along the IPC of isoquant representing a new technology. Shifting from the initial to the first period, labour is further constrained, with the price of power falling, leading to a change in price ratio and thus inducing another technology, allowing farmers more coverage using greater power. This change in factor price shows complementarity between land and mechanical technology, where a rise in the price of labour is followed by innovation that encourages increased production utilizing land and mechanical technology. With labour being more expensive, labour-saving technologies are required to make it possible to use more land

and less labour when production is along the first isoquant. Labour-saving technologies involve using tools and machines. For instance, the use of bush knives or saws requires time and labour to clear a plot, while engine-powered machines take less time and require less labour.

For *biological technology*, initially, at time zero, output is produced along the IPC using for instance a simple variety of local cashew seeds from the farm. The use of local seeds represents an initial biological invention given the prevailing price ratio for an optimal combination of land, fertilizer and local seed. When land is limited, this leads to a rise in the price of land relative to that of fertilizer. With land being expensive, the discovery of land-saving technology is made possible by biological technology, which leads to an increase in fertilizer usage. When the price of land is high and the price of labour is low, the prevailing factor price induces another technology, and this new technology allows for the adoption of new varieties. The change in factor price shows complementarity between labour and biological technology, where a rise in the price of land is followed by innovation that increases production using a combination of labour and biological technology. Biological technology encourages better-producing varieties that require smaller areas and increases the usage of fertilizer. A technology that substituted fertilizer for land requires better control of water and land, thus proposing a complementarity between fertilizer and land combination. Using old local varieties requires more land and a longer time before maturity, while new or improved varieties use less land and mature more quickly.

The mechanical and biological technologies show innovative possibilities for the production of crops and reflecting long-term adaptation. For instance, with regards to mechanical innovation on pruning, from using bush knives to engine powered slashes, and for biological innovations from upgrading the existing variety or using a high-producing variety of cashew at the start of production. Investment depends on its specificity concerning a particular crop or range of crops. Specific tools hinder or encourage switching between crops. Mechanical technology innovations create tools that are non-specific and can therefore be used for a range of crops, for example saws and shears for pruning can be used for different tree crops. Specific biotechnology makes switching to another crop costly as one will incur deeper sunk costs, for instance, if one switches from cashew to rubber. Disinvestment may also occur. For instance, the assumption that labour is abundant in Tanzania is wrong. As will be shown, households that have less labour tend their farms irregularly, which in turn affects production. Whether this is due to having the ‘economy of affection’ (Hyden 1980, 1983) where peasants refuse to have the state capture their surplus or to other reasons is not clear.

Sunk costs are irreversible costs and differ according to the type of investment. For example, before the first harvest, farmers must learn from training or by practice how to care for their plantations, obtain seedlings and invest in labour. Additional costs incurred before a first harvest include fumigation, weeding, fertilization, pesticides, water to dissolve/mix pesticides, irrigation and labour costs for the whole year prior to the first harvest. If a farmer should decide to pull out, all the initial costs made will be lost. These costs are different for farmers who produce seasonal crops from those who grow permanent crops. Lambson *et al.* (1995) show the instances of differences of magnitude in the sunk costs of orchards compared to seasonal crops.

Investors are often careful not to fall into the sunk cost fallacy by believing that they simply have to invest more money even if it is irrational to continue as no profits are going to be realized by doing so. In such a case, the only option is to quit (Baliga *et al.* 2009).[2] Once a cost has been incurred, an investor has to wait until the first harvest for payments to emerge. Rutherford (2002: 274) defines the hold-up problem as a 'problem of contracting arising from the making of investments prior to concluding a transaction and the unknown form of an optimal transaction'. The waiting-in-contract theory is known as the hold-up problem where producers (farmers) become dependants – and thus vulnerable once they have incurred sunk costs (Freeland 2000; Mackintosh 2001). Various experts have put forward a number of arguments concerning the vulnerability of investors when they have incurred sunk costs (Noldeke & Schmidt 1995; MacLeod & Malcomson 1993). Sunk costs matter as they make the producer vulnerable to contract changes and specific investments are lost if he switches to an alternative crop.

Ruttan & Hayami (1985) saw the induced technical and institutional innovation model of agriculture as providing useful variables to account for the differences between the cashew-producing areas of Tanzania and Vietnam. Land and labour as inputs are very important in this model. Improved seedlings (biological technology) and improved tools (mechanical technology) are also important as technological improvements imply intensive investment. Two conclusions can be drawn here. First, operating in a different innovation possibility curve (IPC) means differences in output. For Tanzania, with its abundance of land, labour-saving technologies are required to improve production. But in Vietnam, which has less land and where labour is less readily available, both land-saving and labour-saving technologies are required. Second, this framework of analysis highlights other factors in addition to labour and land, in particular investment in technology adaption. When looking at biological technology, this refers to varieties used as either initial seedlings or upgrades and this leads to the issue of tree

[2] This is also referred to as the Concorde Effect due to the escalation of commitment that is involved.

density, i.e. the number of trees per hectare. The absolute variable of output per household says little about variations among households regarding land and tree ownership. This model includes the output produced per hectare (yield) and output per tree (productivity) by each cashew-farming household. Tree density or output per tree reflects the amount of investment undertaken by a primary producer to obtain a certain yield (i.e. output per hectare). As Ruttan & Hayami (*Ibid*.) have shown, yield increases with increased land size, labour size or induced technology.

An increase in the price of a tree crop's output, for instance, entails better future revenue, which in turn means better or more production in the following season and a better price leads to increased production in the future. Thus when prices are high, assuming all things are equal, farms will be better tended or managed and new input-saving technologies will be adopted. Leading farmers try to discover new varieties first and all producers are likely to demand innovative ways – to be discovered by research institutions – to improve production. On the other hand, a reduction in price suggests poor future revenue, which in turn means less production in the following season and less well-maintained farms.

Studies have shown that these technologies are invented by either farmers or research institutions (Hayami & Ruttan 1985) and are later tested by respected research institutions before being rolled out for producers (Diyamett *et al.* 2006). For this to take place, good coordination is needed between the inventor of any appropriate tools and the distributor of these tools to producers/farmers. The institutional arrangements that make production and distribution possible are dealt with in Chapter 5. It is worth noting that decisions about production can also be affected by research organizations' efficiency and willingness to invent and distribute better technology to farmers. The organization of actors in the value chain analysis is discussed in the next chapter.

## Methodology

Two comparative surveys of cashew producers were organized, one in Vietnam and the other in Tanzania, in the highest cashew-producing regions in both countries (Mtwara in Tanzania and Binh Phuoc in Vietnam) that are differentiated by the relative size of their land/tree holdings. As already mentioned, households were categorized by location and type of farmer (small-, medium- or large-scale) to understand the variations in cashew production.

*Farmers sampled*

Farmers were sampled from the highest cashew-producing districts in Mtwara in Tanzania and Binh Phuoc in Vietnam.[3] Cashew-growing households were randomly sampled from the hamlets within the villages in proportion to the total number of households. The sample was stratified by size, using the number of trees and land size for Tanzania and Vietnam respectively. Of the sampled farmers in each hamlet, large-scale farmers comprised 20% of the sample, medium-sized farmers made up a further 30% and the remainder (50%) were small-scale farmers. The results are presented by country within each category of farmer.

The data used here are from research done while on fieldwork in Tanzania and Vietnam between November 2008 and February 2010. Household surveys were undertaken in both countries in a total of four villages in the highest cashew-producing areas.[4] Two-hundred cashew-growing households were sampled in each country, making a total of 400 households (see Table A1 in the Appendix). In each village, 50 households were sampled in proportion to the total number of households in the hamlets that make up the village. Sampling was undertaken using a list of all the cashew farmers and the number of trees they owned that was on the board in the Village Executive Office in Tanzania, while the Village Officers in Vietnam had a list of the cashew farmers in their area and the amount of land they had. It would have been ideal to use the same variable, i.e. the number of trees or amount of land in hectares for both countries, but they only had the number of trees at the village offices in Tanzania and the amount of land in Vietnam. In Tanzania, the likelihood of error is small as there is little variation in the number of trees per hectare and stratification by number of trees is thus equal to stratification by land as trees and the area of land are proportionally related.[5] The lists were used to select small-, medium- and large-scale farmers from different hamlets in the selected villages. The household survey undertaken provides information from the better-performing regions in Tanzania and Vietnam, and allows a comparison of relatively small-, medium- and large-scale farmers in their respective contexts.

Mtwara is about 575 km south of Dar es Salaam on the Indian Ocean and borders Mozambique to the south, Lindi Region to the north and Ruvuma to the west (Map 4.1). Tandahimba is one of the six districts that make up Mtwara Region[6] and Tandahimba District is about 95 km west of Mtwara town, bordering Newala

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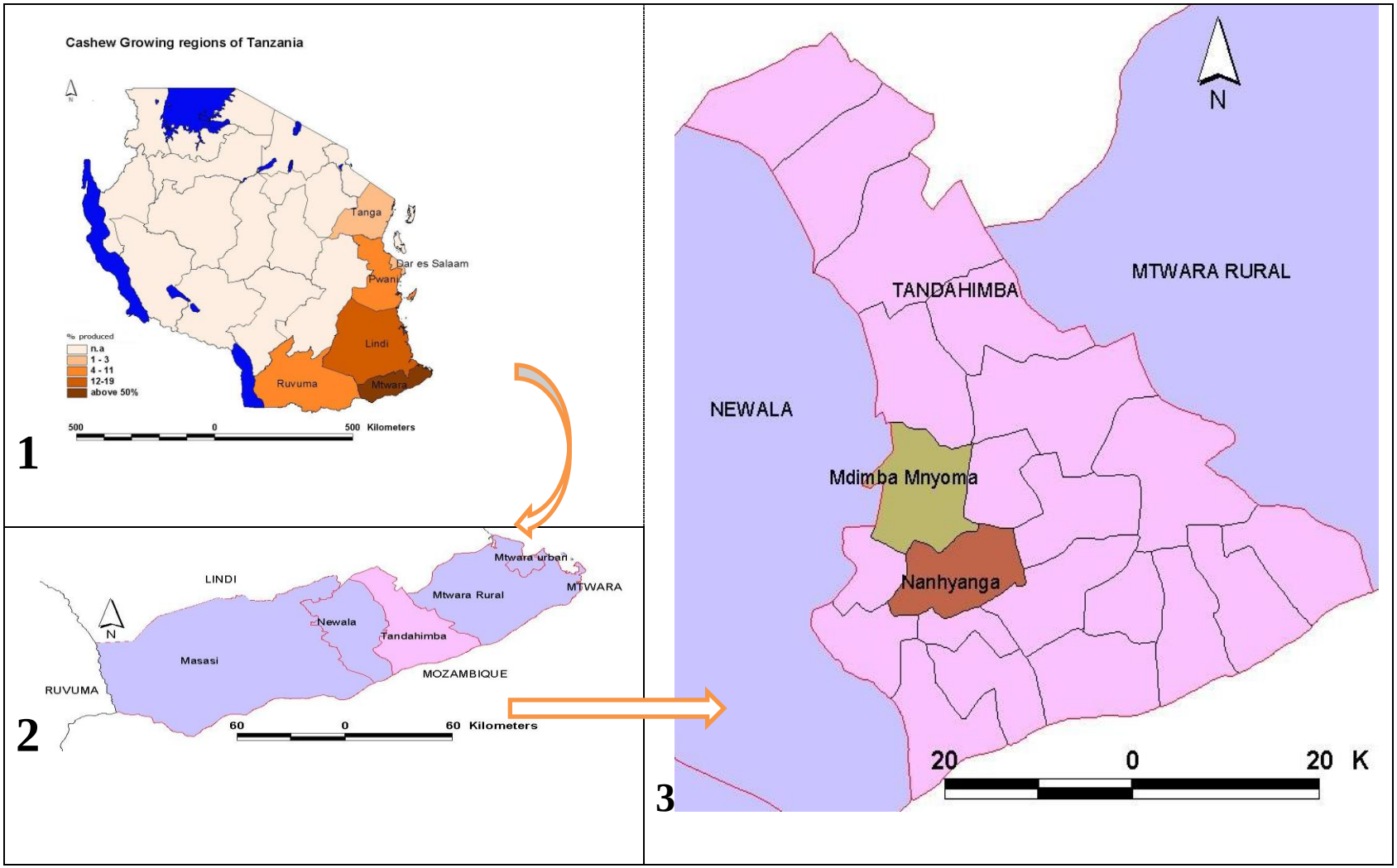
3 The two highest-producing wards in the two highest cashew-producing villages were selected.

4 Within the highest cashew-producing region, the two highest cashew-producing wards were selected, from the highest-producing district in the region.

5 Farmers in Tanzania tend to have similar numbers of trees per hectare as a result of the advice on spacing that is provided to farmers by research institutions. This is described in more detail later.

6 The others are Masasi, Nanyumbu, Newala, Mtwara Urban and Mtwara Rural.

*Map 4.1* Visited cashew-growing areas of Tanzania




Key 1* Cashew-producing regions of Tanzania; 2* Districts making up Mtwara region and 3* Wards making up Tandahimba District

in the west, Mtwara rural district in the east and Mozambique to the south. Mdimba and Nanhyanga wards were selected from Tandahimba and two villages were chosen in each ward. In Mdimba ward, Mambamba and Tukuru villages were selected and Nanhyanga A and Nanhyanga C villages were chosen in Nanhyanga ward. A sample was taken from all the hamlets in these villages.

Binh Phuoc is one of the 58 provinces in Vietnam and is located in the southeastern part of the country, 110 km north of Ho Chi Minh City. It borders Cambodia to the northwest, Dong Nai and Binh Duong provinces to the south, Tay Ninh to the southwest, and Dak Lak and Lam Dong in the east. Bu Gia Map District is one of seven districts that make up Binh Phuoc Province.[1] Bu Gia Map is 120 km from Dong Xoai, the capital of Binh Phuoc Province, and was created in November 2009 by dividing Phuoc Long District. It borders Cambodia to the northwest. Dak O and Phu Nghia communes (the equivalent of Tanzanian wards) were chosen from Bu Gia Map. Thon 6 and Dak Lim villages were selected in Dak O commune and in Phu Nghia commune, Khac Khoang and Duc Lap villages were chosen. A sample was made from all the teams (the equivalent of Tanzanian hamlets) in these villages.

*Photo 4.1* Dak O market in Bugimap, Binh Phuoc

[1] The others are Dong Phu, Hon Quan, Loc Ninh, Bu Dang, Bu Dop and Chon Thanh Districts with the municipalities of Dong Xoai, Phuoc Long and Binh Long.

Data collected during interviews with cashew-producing households were at three levels, namely farm, household and individual members of households. General information and the activities undertaken by individual household members were collected at household level as was information on household characteristics, land ownership and the history of the cashew crop (initial seedlings, maintenance and earnings). In addition, information on production from the previous season and on the best and worst seasons was gathered. Information on the price received by farmers in the previous season was collected by means of a questionnaire. At farm level, data on the farm workers and their activities were collected regardless of whether they were members of the household. Additional qualitative information came from focus-group discussions in the villages concerned.

*Photo 4.2* Cashew farmers

*Data description*

A number of variables need to be defined, which is shown in Table 4.1.

*Table 4.1* Variables

| | Variable name | Definition of the variable |
|---|---|---|
| 1 | Land (H) | Plot of land measured in hectares (ha) |
| 2 | Trees (T) | Total number of trees owned by the household |
| 3 | Labour (L) | Total number of farm workers used by household |
| 4 | Production (P) | Output per household in kilogrammes (kg) |

*Initial observations*

This section considers the data collected from the rural fieldwork starting with what was observed. For a better understanding of the phenomena observed, the nature of tree-crop production and the costs associated in investment are explained first. The different types of farmers and the sources of labour for farm work are also discussed. Boxes 4.1 and 4.2 present the overall picture in Tandahimba and Binh Phuoc.

*Box 4.1* Cashew areas visited in Tanzania

*Tandahimba*: Proceeding 95 km from Mtwara town along a non-tarmac road, cashew trees make up the scenery all the way and cover large areas of land, with small towns appearing every now and then. The cashew trees have huge trunks, big branches and a canopy that indicate the age of the trees. However in some areas, the big cashew trees have smaller branches, suggesting that upgrading has been done by using a top-work (grafting) method.

The smell of apples starting to ferment is pervasive and indicates that it is harvesting season. Women and children can be seen carrying buckets full of cashew already separated from their apples as they leave the farms and head towards the small villages where there are simple, small houses. The busiest places are the little shops selling groceries and a *genge* (small market) along the roadside where traders sell kerosene and petrol.

Weighing scales can be seen in front of some of the houses, which shows that the owner is prepared to buy cashew (*kangomba*). These are wealthier traders, mainly big farmers, who tend to buy cashew from small farmers before official trading starts at the formal trading centres, the primary society.

Source: Mtwara-Tandahimba route; researcher's own observations.

*Box 4.2* Cashew areas visited in Vietnam

*Bu Gia Map*: After proceeding 60 km from Dong Xoai town along a two-lane tarmac road, there is a detour along an unmaintained tarmac road for 30 km. It is at this point that one sees that the cashew trees making up the forest scenery interchange with rubber trees in places. There are occasionally small towns along the way. The cashew trees have small trunks with medium to small branches and small canopies, which shows that the trees are not very old. They are close together, which reflects their age and the fact that they are of a modified variety. The road becomes a non-tarmac road before it arrives in Bu Gia Map.

Colourful yellow, orange and red cashew trees can be seen and the smell of apples is everywhere as it is harvest time. As well as seeing women and some young men on motorbikes carrying sacks full of cashew nuts already separated from their apples leaving the farms and heading towards the small villages, a woman could be seen one night loading her cashew on her motorbike to take them to the shops in the village centre. Trading is done both during the day and at night and there is electricity everywhere in all the villages visited.

Just as in Tanzania, the houses in these small villages of Bu Gia Map stand next to each other and away from the farms. Black pepper is being cultivated on household plots. The busiest places have little shops selling groceries, kerosene and petrol for tools.

Source: Binh Phuoc-Bu Gia Map route; researcher's own observations.

*Type of farmers*

Cashew is a smallholder crop. The differences between farmers in Vietnam and Tanzania are presented here as well as what is done differently by farmers from the same country. Farmers were purposely sampled to include smallholders as well as a representative sample of medium- and large-scale farmers. In the sample, 20% in each hamlet were large-scale farmers; medium-scale farmers made up 30% of the sample and the other 50% were small-scale farmers. The household survey offers the opportunity to learn from better-performing regions in both Tanzania and Vietnam and the chance to compare small-, medium- and large-scale farmers in their respective contexts. If only random sampling had been done, there would have been a good chance that the medium-sized and larger cashew-farming households would have been excluded because they are relatively few in number.

The averages computed in this thesis need to be interpreted with caution as they give an indication of how certain factors (variables) perform but not necessarily the exact magnitude. This caveat could have been solved by using weights from country-specific agriculture surveys but the secondary data/ information obtained was unfortunately not robust enough to show the correct weights. But even with this weight, the selection of the proportion that was used would probably have overestimated the biggest and medium-sized farmers in Tanzania.[2] Classification of farmers according to the number of trees they owned and the size of their land are shown in Table 4.2. Table 4.3 illustrates the household indicators observed in small and large households in Tanzania and Vietnam.

Small-scale farmers in Tanzania have land plots of about 7 ha while medium-sized farmers have 10 ha and large-scale farmers have more than twice the amount of land the medium-scale farmers have (see Figure 4A1 in the Appendix). Half of the households in Vietnam have 800 trees, with an average of 1109 per household (see Figure 4.A2 in the Appendix). Medium-sized farmers in Vietnam have double the number of trees of small-scale farmers and large-scale farmers have three times the number of trees of small-scale farmers. Large farmers have twice the amount of land their medium-sized counterparts have and al-

[2] Data from the Tanzania Agriculture Sample Census of 2003 (ASC) shows some skewedness with about half of the households in Mtwara having a median of 50 matured trees and each household having about 79 trees compared to Tandahimba District where half of the households have a median of 56 trees and each household has an average of 91 trees. The fact that the median is less than the mean shows that the data is skewed to the right, implying that there are more small farmers. In the area where the survey was undertaken, half of the households in Mtwara have 214 trees with an average of 332 trees per household. The mean is higher than the median, meaning that the survey undertaken has a higher representation of medium- and large-scale farmers. And in comparison with the ASC of 2003, the farmers selected are not only far above average farmers in Mtwara but also bigger, with small farmers having an average of 200 trees, and 316 trees and 668 trees for medium- and large-scale farmers respectively (see Table 4.2). In Vietnam, the selection made would probably be normally distributed due to the resettlement programme (mentioned earlier) that normalized allocated farm sizes.

most four times that of their small-scale counterparts, as is shown in Table 4.2. Coinci dentally, the large-scale farmers in terms of numbers of trees in Tanzania are the small-scale ones in Vietnam. Yet large-scale farmers in Vietnam have less land than small-scale farmers in Tanzania.

*Table 4.2* Categorization by type of farmer

| Farmer type | Unit | Country | |
|---|---|---|---|
| | | Tanzania | Vietnam |
| Small | no. | 85 | 113 |
| | % | 48.0 | 56.8 |
| | trees | 200 | 617 |
| | ha | 7.2 | 3.0 |
| Medium | no. | 57 | 50 |
| | % | 32.2 | 25.1 |
| | trees | 316 | 1550 |
| | ha | 10.3 | 6.0 |
| Large | no. | 35 | 36 |
| | % | 32.2 | 25.1 |
| | trees | 668 | 2040 |
| | ha | 25.2 | 11.0 |
| Total | no. | 177 | 199 |
| | % | 100 | 100 |
| | trees | 332 | 1109 |
| | ha | 11.8 | 5.2 |

Source: Author's household survey data.

*Photo 4.3* Cashew farmers on their farms

*Table 4.3* Household-based indicators

| | | *Tanzania* | *Vietnam* |
|---|---|---|---|
| Small-scale | Size of household | Have about five household members. Of these, three make up the theoretically active population, (i.e. members aged between 15 and 64 in the household). | The household sizes of cashew farmers are higher than the national averages.[3] Small-scale farmers have 4.3 members per household. Of these, three make up the active population, (i.e. members aged 15 to 64 in the household). |
| | Marital status | 75% of small-scale farmer heads of households are living with a partner. Widows' account for 9% and 11% are polygamous households. | 93% of small-scale farmer heads of household are living with a partner. |
| | Age | The average age of a small-scale farmer in Tanzania is 51, with 95% confidence interval of 49 to 54 years. | The average age of small-scale farmers is 45, with 95% confidence interval of 42 to 47 years. |
| | Education | One in every five heads of household has no formal schooling. 50% of the small-scale farmers interviewed had completed at least primary school. | About half of small-scale farmers have completed at least primary school. |
| | Average date of starting residence | 1958 | 1991 |
| | Average date of starting cultivation | 1982 | 1995 |
| | Cultivation | 20% of the farmers inherited their trees. Seedlings are often provided for free while own sources and in-kind payments are the most-often used modes of payment. | Seedlings are obtained for free and at times both small- and large-scale farmers have loans. |
| | Labour | Small-scale farmers have on average 8 farm workers. Of these three are from within the household. Small-scale farmers use more labour in weeding (7 workers), cleaning (5 workers) and picking cashews (5 workers) per household. | Small-scale farmers use on average 5 farm workers. Of these, two are from within the household. These farmers use labour for picking (4 workers), weeding (3 workers) and cleaning (2 workers) per household. |
| | Land | 7 ha (average) | 3 ha (average) |
| | Trees | 200 trees (average) | 618 trees (average) |

*Ctd>>>*

[3] Vietnamese Household Living Standard Survey (2006).

*Table 4.3* Household-based indicators (*continued*)

| | | *Tanzania* | *Vietnam* |
|---|---|---|---|
| Large-scale | Size of household | Seven members of household. Of these, four make up the active population, (i.e. members aged 15 to 64 in the household). | Five members of household. Of these, four make up the active population, (i.e. members aged 15 to 64 in the household). |
| | Marital status | 97% of large-scale farmer heads of household live with a partner. In Tanzania two-thirds of larger households are polygamous. | All heads live with a partner. |
| | Age | The average age of large-scale farmers is 59, with a 95% confidence interval of 54 to 64 years. | The average age of large-scale farmers is 50, with a 95% confidence interval of 46 to 53 years. |
| | Education | One in every five heads in Tanzania has no formal schooling. 30% of the large-scale farmers interviewed had completed at least primary school. | More than 80% of the large-scale heads of household have completed at least primary school. |
| | Average date of starting residence | 1952 | 1988 |
| | Average date of starting cultivation | 1973 | 1993 |
| | Cultivation | Family influences start of production and inheriting trees is rare among large-scale farmers. Seedlings are often provided for free; at times own sources and in-kind payments are the modes of payment used. | Seedlings are obtained for free and at times both small- and large-scale farmers have loans. |
| | Labour | Large-scale farmers use about 17 farm workers. Of these, three are from within their household. Labour for weeding (14 workers), cleaning (11 workers) and picking cashew (10 workers) and packaging (5 workers). | Large-scale farmers in Vietnam use about 10 farm workers. Of these, three are from within the household. Labour for picking cashew (9 workers), weeding (4 workers) and cleaning (4 workers). |
| | Land | 25 ha (average) | 11 ha (average) |
| | Trees | 672 trees (average) | 2040 trees (average) |

Evidence of migration can be seen from the differences in current residence from place of birth. Many cashew farmers in Vietnam migrated from the north to Binh Phuoc under the village resettlement schemes for the *stieng* (a minority people), attracted by incentives and land suitable for cultivation. In Binh Phuoc,

migrants are from Thanh Hoa and Nam Dinh Provinces. Efforts have been made in Vietnam to increase raw cashew as a way out of poverty, as will be seen later.

*Sources of labour*

Labour from within the household is the primary source of labour for cashew farmers in Tanzania and Vietnam, with household labour spending more hours/days on the farm. The preference for family-based labour is supported by the Agricultural Sample Census Survey of 2002/2003 (PHDR 2005: 83). Dorward *et al*. (1998: 24) noted that 'the incentives problem associated with hired labour explain the predominance of family labour where there are no significant economies of scale in production or processing'. For cashew farmers in Tanzania, additional sources of labour include relatives and informal organized groups, casual workers and contractual workers. Casual workers in Vietnam are a source of additional labour for picking cashew. The unique aspects of these different kinds of labour are discussed below.

Casual workers are commonly used in both countries to assist in cleaning, sanitation, pruning, thinning, weeding and picking cashew. Work is provided at piece rate as it is cheaper in terms of monitoring and is a win-win situation for both the farmer and the labourer.

Casual labourers in Tanzania are paid by the *kipande* system (piece rate) whereby an agreement is reached for a fixed weeded portion of land or a specific number of tended trees, irrespective of how long the work takes. Pruning costs about TSh 500 for big trees and TSh 350 for smaller trees.[4] A plot can be divided into smaller portions of 10 x 10 steps or 15 x 15 steps, with each portion costing a farmer between TSh 500 to TSh 1000 to weed, while the harvesting of one bucket of raw cashew costs TSh 500. Casual labourers take work they can handle in a day and are paid in cash or sometimes in kind (e.g. pieces of cloth, *khanga*, *kitenge*, *jora*, salt, sardines (*dagaa*) and/or flour).[5] Between 1998 and 2004, casual labourers known as *mambwana* came from Mozambique and assisted in farm activities[6] but when Mozambique's economy started to improve they stopped coming.[7]

In Vietnam, labour for maintaining farms mainly comes from within the household. Additional labour is hired at harvest time and for cleaning by households with bigger farms. Labour is primarily used to pick cashew and these

[4] US$ 1 = TSh 1300, January 2009, Bank of Tanzania.

[5] Focus-group discussion with women in Mtegu village, 19 January 2009 and men in Mambamba village.

[6] Interview with Mustafa Chiwile of Tandahimba AMCUs, 20 November 2008 and 6 October, 2011.

[7] Interview with Mustafa Chiwile of Tandahimba AMCUs, 20 November 2008 and 6 October 2011.

workers are paid a daily wage rate. A farmer pays VND 100,000 per day to hire labour for pruning, weeding or harvesting.[8]

Relatives,[9] including young children, are used for picking cashew in Tanzania and they also assist in pruning. The children are paid in sort and are allowed to choose cashew that fill a 10-litre *sadolin* bucket as payment (*kutomolela*), regardless of how much they collect a day. Children in Vietnam also assist their families with harvesting at times although some families only take their children to their farm once they are 12 years old.[10] If children work on farms other than their own, they are paid 80% of the adult daily wage.[11]

Contractual workers are wage workers and operators who spray pesticides. Operators[12] are the only labour hired by all farmers, while wage workers are mainly hired by large farmers in Tanzania. The households that hire wage workers tend to have fewer labourers on their farms than those that engage labourers through the *kipande* system. In Tanzania, the price charged by operators depends on the size of the trees being tended: about TSh 70 for a big tree and TSh 50 for smaller trees.[13] They are paid in cash or may sometimes be given a chicken or inputs instead.[14] Operators prefer to be paid in full without delay and this can be a challenge for smaller households that tend to hire out their services on credit. In Vietnam, labour for spraying costs more than other farm workers who receive VND 160,000 a day.[15]

*The relative importance of cashew*

Cashew is an important source of revenue for farmers in Tanzania and Vietnam in the areas visited for this research project. Revenue from cashew accounts for more than 50% of all farmers' total revenues. In Tanzania, 72% of the farmers interviewed depend on cashew for more than 75% of their income, with, large farmers depending on the crop more than small- and medium-sized farmers. Most large farmers (80%) depend on cashew for more than 75% of their income, while 70% of medium- and small-scale farmers depend on it providing more than 75% of their income.

In Vietnam, 60% of the farmers interviewed depend on cashew providing at least 75% of their income. Small-scale farmers' dependence on revenue from

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8 US$ 1 = VND 18,500, March 2010, State Bank of Vietnam; Interview with Duy, 7 July 2010.

9 There are other informal rotational arrangements for weeding, e.g. *mkumi*, that involve shared labour and a meal prepared by the host afterwards. Popular in the 1980s and 1990s, *mkumi* is becoming less common because of problems with free-riding.

10 Interview with Duy, 7 July 2010.

11 Interview with Duy, 7 July 2010.

12 The operator owns a hand pump and charges farmers for renting it and spraying their trees.

13 Interview with Rashid, pump operator, Tandahimba, 16 December 2008.

14 Focus-group discussion with women in Mtegu, 19 January 2009.

15 Interview with Duy, 7 July 2010.

cashew is higher than that of large and medium-sized farmers. This reflects the limited options available for Tanzanian farmers, while Vietnamese farmers have access to credit via poverty-alleviation programmes and private banks.

*Sunk costs*

Cashew last for many seasons but it is a few years before the first nuts can be harvested.[16] Cultivating cashew is a long-term investment: there is the initial investment, then the gestation period and re-investment is also required for maintenance.

The decision to grow cashew is made like any other financial decision and it is expensive to reverse it at a later date (Dixit 1989). Costs incurred before the first harvest are known as sunk costs. The support systems needed for seasonal crops or permanent crops differ in the case of research and development and marketing (see Chapter 5). It should be noted that a good price at the start and good output will encourage future output as a result of money being available for maintenance. The opposite is also true: a poor initial price or low output is likely to lead to lower revenue and create obstacles when it comes to future maintenance.

Cashew farmers in both Tanzania and Vietnam receive most of their initial seedlings free of charge. A decision to cultivate cashew is more likely to be influenced by the village a person lives in in Tanzania and it is usually a family or private/personal decision in Vietnam. The 'village decision' in Tanzania is strong and may have historical roots, with different areas in Tanzania having been designated to cultivate certain crops in colonial times, a practice that still exists today. Most farmers inherited their trees from a family member, usually their father or husband. Vietnamese farmers acquire their initial seedlings from neighbours. If farmers suddenly decide to pull out of cashew production, the training costs incurred are sunk costs as are those related to any specific skills that cannot be used in another field. However, the way in which a farmer stops cultivating cashew can differ: some uproot their trees and switch to more lucrative permanent crops or they may alternatively just decide to neglect part of or their entire farm after a period of bad harvests or low returns.

In Vietnam, if only a few farmers produce cashew, then processors will pay a higher price. However, the presence of alternative crops with better returns, such as rubber, provides a credible threat to processors and a choice for farmers who can switch whenever cashew processors do not meet their side of the bargain, i.e. they offer unattractive prices. Processors, who have already invested in machinery for processing cashew, prefer to have farmers producing cashew locally and, as they have already invested in the necessary machinery, they want to pay a reasonable price to local farmers. This is a reputation processors need to develop as

[16] See Table 4A4 in the Appendix for average growth times of cashew trees.

they require local supplies of raw cashew. Processors thus find themselves 'held up'. Hold-up 'occurs when investors in specific assets face less favourable contract terms after the investment is made than the terms agreed beforehand' (Mackintosh 2001: 231). Taking all this into account, processors are left with no choice other than to pay a better price all the time. In contract economics, it would be expected that once a farmer had made a decision to invest in cashew, he would be vulnerable since a farmer is a 'price taker'. Vietnam demonstrates the opposite with processors, in principle, always having to provide a good price. Investment undertaken by processors keeps them on their toes and they know that, as far as farmers are concerned, they can switch to non-cashew crops at any time.

The situation is different in Tanzania. Once farmers invest in cashew, they stick with the crop and the lack of alternative means that farmers react differently. Following a bad season, farmers here resort to either neglecting some of their trees or to tending them half-heartedly.

The fate of Tanzanian cashew farmers is in the hands of the buyers, while farmers in Vietnam are still in control and thus have a degree of bargaining power. Even though both invest in their trees, farmers in Tanzania frequently encounter hold-up problems, unlike their Vietnamese counterparts who see processors having the hold-up problems. The difference in mentality of those involved in cashew production in the two countries may be explained by looking at the productive resources, namely either land or a lack of alternative. Vietnamese farmers appear to send a clear message to their processors, namely that switching to a crop other than cashew is a credible option.

Cashew farmers in Vietnam are less vulnerable and can easily switch to producing rubber, ignoring the initial costs and any sunk costs incurred, and even move on to a new permanent crop that will also have its own sunk costs. Farmers in Tanzania, as well as many other documented investors, are more vulnerable and remain with the 'sunk-cost fallacy'. Whether this is due to a lack of alternatives or missing a market is explored in the next section.

*Investment indicators*

This section considers investment indicators as proxies for sunk costs. So far, all the information has been observations seen or collected from the rural fieldwork undertaken in Tanzania and Vietnam. Producers limited by land availability may well seek better varieties by using top work[17] or grafting[18] techniques, which are innovations that increase productivity (Photos 4.4 and 4.5).

[17] A technique of upgrading old trees to a different and more productive variety.

[18] A technique of joining trees where the tissues of one plant are encouraged to fuse with another (seedlings).

*Photo 4.4* Top work

Samples of tree upgraded using top work *kubebesha* in Tandahimba, a procedure used on old trees.

Farmers limited by labour are likely to adopt technological advances, such as using animals or mechanical power, to save labour (Ruttan & Hayami 1971, 1985). To increase output when land is the constraint, biological technologies will be used while mechanical technologies are applied to increase output when labour is the limiting factor. In cases where both land and labour are limited, one would expect land-saving and labour-saving technologies to be adopted.

This section presents facts and figures showing general production levels of cashew in the two countries. It provides empirical evidence with respect to household investment indicators, mainly trees per hectare and output per tree in

*Photo 4.5* Grafting

1. A selection of seeds. 2. Dampening seeds. 3. Preparing soils for planting. 4. Sharpening a siyon. 5. A siyon infused with young plant. 6. A siyon and a young plant wrapped together. 7. Plants watered and allowed to grow under a thatched shady area

Tanzania and Vietnam (Table 4.4). Farmers have fixed numbers of trees but they may be crowded or sparsely scattered over their plots. They can also have significant output from many trees or fewer trees.

*Table 4.4* Geometric means of tree density: Output per tree by type of farmer and country

| Country | Type of farmer | Density (T/H) | Output/tree (O/T) |
|---|---|---|---|
| Tanzania | Small | 29.7 | 4.1 |
| Tanzania | Medium | 33.6 | 6.4 |
| Tanzania | Large | 27.2 | 5.9 |
| Vietnam | Small | 191.4 | 7.3 |
| Vietnam | Medium | 233.5 | 5.6 |
| Vietnam | Large | 162.1 | 8.2 |

Source: Author's Household Survey Data.

Tree density is much higher in Vietnam than in Tanzania and there is a huge discrepancy in cashew trees per hectare (tree density) between the two countries. Tanzania has sparsely planted areas while Vietnam has high-density planting. Tree density rates are about 30 trees per hectare in Tanzania, while the figure in Vietnam is 150 or more (see Table 4A2 and Figure 4A6 in the Appendix for distribution). The discrepancy in tree densities between the two countries reflects the advice and instructions provided by the research institutes in the countries themselves.

Initial observations from Table 4.4 indicate that Tanzanian farmers have similar numbers of trees per hectare regardless of whether they are small, medium or large in size. Farmers in the study area in Tanzania are instructed to cultivate 40 trees per hectare, a spacing that allows intercropping with other crops[19] and easy maintenance. Intercropping is possible with younger trees if space is left and soil fertility is good[20] (Martin *et al*. 1997). It was noted during fieldwork that farmers rarely intercrop but prefer to use a separate tract of land for other crops due to the dense canopy created by cashew trees. In addition, trees in Tanzania are, on average, 30 years old and of a variety that tends to be big and thus takes up more space. Surprisingly, even newer farmers that are using a different tree variety still follow the same planting pattern of about 40 trees per hectare.

In Vietnam, on the other hand, tree density is much higher. This may reflect smaller and younger tree varieties (on average 16 years old) and a flexibility that is made possible by the availability of not only land-saving technologies like smaller varieties but also labour-saving technologies such as engine-powered tools.

There is a discrepancy in tree density between the two countries but also within Vietnam. This is reflected to some extent by the availability of credit and cash to purchase tools. Medium-sized farmers there followed by small-scale farmers have most trees per hectare. Having around 200 trees per hectare is a sign of the age of the trees and the quality of the variety. Small and medium-sized farmers tend to be younger and started cultivating cashew later than the larger-scale farmers who have a lower tree density per hectare.

The pattern of output per tree does not vary substantially between the two countries although in Tanzania trees tend to be older and bigger, while there are newer varieties and smaller trees in Vietnam.

There is both a discrepancy and an overlap in output per tree between Tanzania and Vietnam (Table 4.4 and Figure 4A7 in the Appendix). While there was little to no variation in the number of trees per hectare in Tanzania, there is a greater variation in output per tree in both countries. The lowest recorded average

[19] Interview with P. Massawe, NARI, 28 January 2011.
[20] Interview with Dr Shamte Shomari, NARI, Mtwara, 17 November 2008.

output per tree is 4 kg, while 8 kg is the highest average output per tree in both countries. This is important because although Vietnam has a higher tree density, the output from trees there is in some cases similar to that in Tanzania. There are differences between and within the countries when looking at output per tree.

There is variation in output per tree between different farmers in Tanzania, with small-scale farmers having the lowest average output per tree.[21] Large and medium-sized farmers in Tanzania have an average output per tree of about 6 kg. Large- and small-scale farmers in Vietnam have a higher output per tree than their Tanzanian counterparts.

Investment indicators are higher in Vietnam than Tanzania in terms of tree density, while there is overlap in output per tree between the different categories. This indicates higher sunk costs in Vietnam than in Tanzania where they are historical and were incurred more than 30 years ago. These early production conditions have shown that farmers in Tanzania face initial investment constraints and will thus be producing at a different production frontier to that in Vietnam.

After considering investment indicators in the following section, the theoretical underpinnings of decomposition analysis of yield and labour productivity are presented.

## Decomposition analysis

Output depends on inputs and technology as specified in a production function. For this case, labour, land together with technology is the most important inputs as they allow us to analyse both yield and labour productivity. This section begins by decomposition of yield.

*1. Decomposition of yield*: Output depends on the number of trees and the amount of land farmers have. To start with, yield (P/H) can be decomposed and rewritten as:

$$P = \left(\frac{P}{H}\right) \cdot H \qquad (1)$$

where $\frac{P}{H} = \text{yield}$

and $$\frac{P}{H} = \left(\frac{P}{T}\right) \cdot \left(\frac{T}{H}\right) \qquad (2)$$

where $\frac{P}{T} = \text{output per tree}$ and $\frac{T}{H} = \text{tree density}$

[21] Figure 4A3 in the Appendix shows the distribution of output per tree.

Output increases with yield and yield may increase depending on an increase in land size or the adoption of technology with the same land size equation (Equation 1).

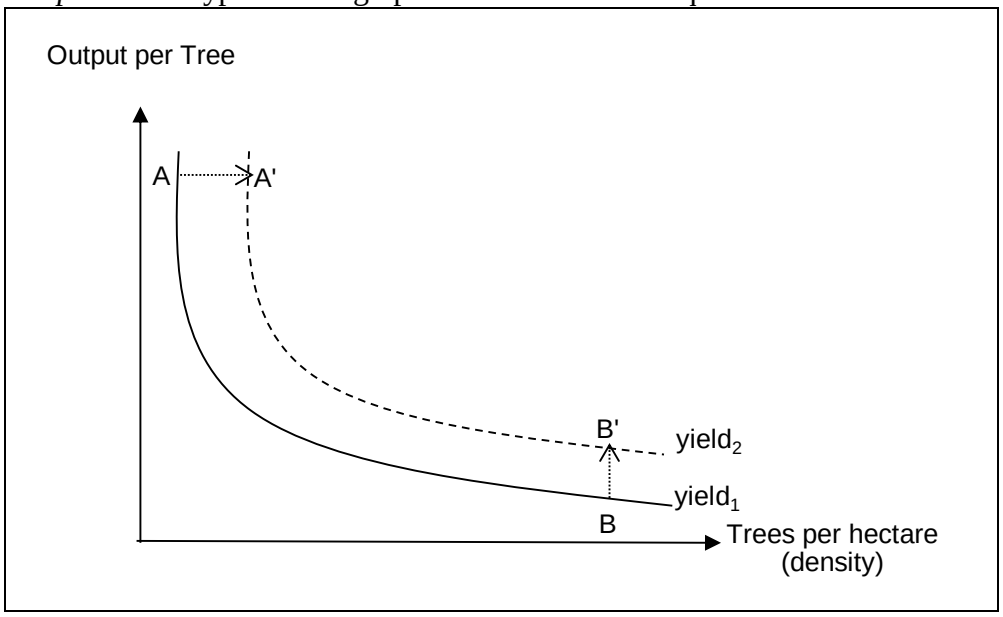
In Equation 2, yield (P/H) equals the product of the output per tree (P/T) and tree density (T/H). The first term on the right-hand side of this decomposition indicates that when output per tree increases, there will be a rise in total output. This will increase with age, and output will increase with a fixed number of trees. The second term in the decomposition relates to tree density and shows the number of trees per hectare.

The use of geometric means provides averages near the median that follow a normal distribution, whereby their product will always equal the constant yield. Equations 1 and 2 can be depicted graphically as rectangular hyperbolas with equal yield curves (for positive y and x values only).

The *x*-axis represents trees per fixed unit of land (tree density) and the *y*-axis is output per tree. The relationship between tree density and output per tree forms a rectangular hyperbola as their product is equal to the constant yield in Equation 1.

Graph 4.1 shows how a producer can produce along $Yield_1$, for instance at either Point A or Point B depending on the output and land used for planting trees. All the hyperbolas have equal yield. Curves away from the origin represent higher yield levels and those close to the origin represent lower yield levels. From Graph 4.1, $Yield_2$ is higher than $Yield_{1.}$ Points A and B have the same yield and a potentially inverse relationship.

*Graph 4.1* Hypothetical graphical illustration of Equation 1



With $Yield_1$ at Point A, there are fewer trees per hectare (T/H) and higher output per tree (P/T). On the other hand, there are many more trees per hectare (T/H) at Point B and lower output per tree (P/T). Though Point A has relatively well-spaced trees and Point B has more crowded trees, both can be seen from Equation 1 to have the same yield, i.e. $Yield_1$. Point A represents an area of abundant land with more productive trees represented by a higher ratio of output per tree, while Point B may reflect land shortages and less productive trees, which is shown by a lower ratio of output per tree. Although Points A and B are extremes, they provide the same yield, as do all the other points along the $Yield_1$ curve.

An increase from $Yield_1$ to $Yield_2$ is due to an increase in the number of trees per hectare, while maintaining the same output per tree. A movement from A to A' represents an increase in yield and an increase in yield is also observed with the increase in output per tree among densely planted trees from B to B'.

The graph illustrates that a shift in the frontier from AB to A'B' represents an increase in yield (i.e. a movement to higher yield). And movement in the opposite direction indicates a decrease in yield.

2. *Decomposition of labour productivity*: Looking at it from the perspective of labour use, an alternative decomposition is given by:

$$P = \left(\frac{P}{L}\right) \cdot L \qquad (3)$$

where $\frac{P}{L}$ = labour productivity

A difference in output can also be in terms of a difference in the number of workers and labour productivity (i.e. output per head). Equation 3 shows that output increases with labour productivity, as fewer workers necessitate high labour productivity. Labour productivity can rise due to an increase in the number of workers or to the adoption of new technology, but still using the same amount of labour. These variables, derived through decomposition, are helpful in contrasting Tanzania's and Vietnam's output performances.

## Stylized facts and findings

This section discusses the differences in cashew output in both countries (by type of producer) and between countries in terms of corresponding differences in output, farm size and yield/labour productivity. With respect to the latter, differences in output per tree and tree density or, alternatively, in terms of differences in the number of workers and labour productivity (i.e. output per head) are also presented.

*Output per household*

There is a huge discrepancy in output per household between Tanzania and Vietnam (see Table 4.5 and Figure 4A4 in the Appendix). Vietnamese farmers have a much higher output than their Tanzanian counterparts. This increases by farm type, with large-scale farmers having the highest output, followed by medium-sized farmers. Given their independent contexts, large-scale farmers in Tanzania produce about 3 tonnes which is less than smaller farmers in Vietnam, who produce almost 4 tonnes and yet again large farmers in Vietnam produce four times more than Tanzania's large-scale farmers.

*Farm size*

There is a huge divergence in land size per household between Tanzania and Vietnam (see Table 4.5 and Figure 4A1 in the Appendix). While Vietnamese farmers have a higher output than their counterparts, Tanzanian farmers have more land. Land size doubles from one farmer type to the next, from small, me dium and large in both countries. Large-scale farmers in Tanzania have almost twice as much land as their counterparts in Vietnam.

*Table 4.5* Geometric means of output (kg) and land size (ha) by type of farmer and country

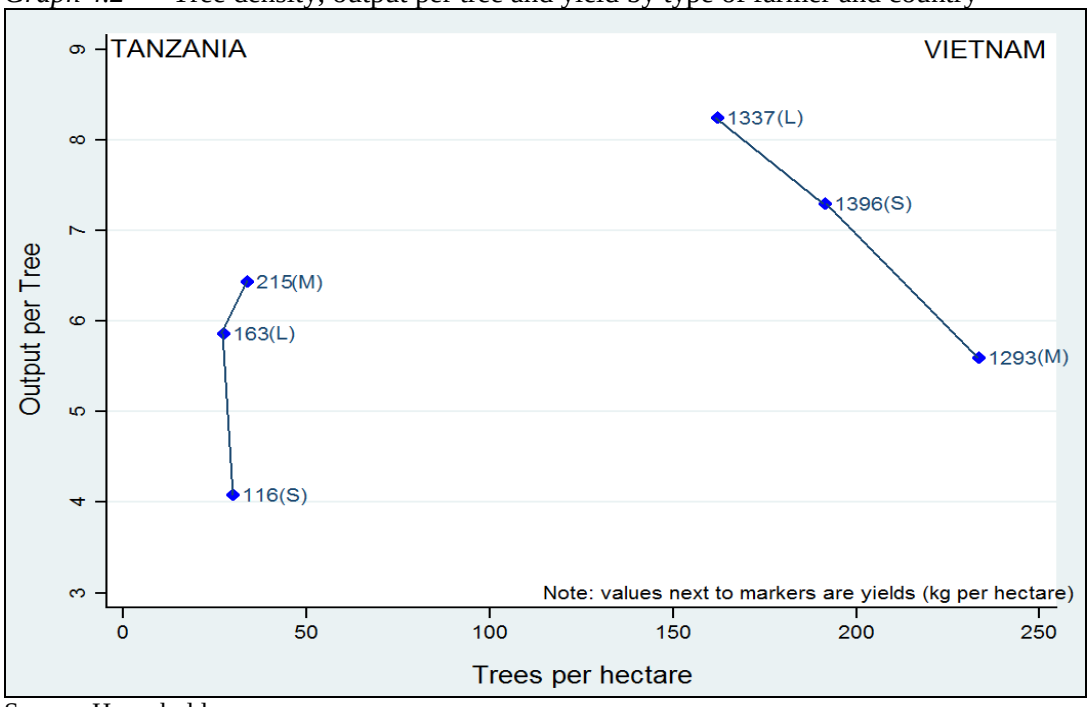
| Country | Farmer | Output | Land size | Yield |
|---|---|---|---|---|
| Tanzania | Small | 531.4 | 4.4 | 116.2 |
| Tanzania | Medium | 1678.7 | 7.7 | 214.9 |
| Tanzania | Large | 2938.4 | 18.0 | 162.7 |
| Vietnam | Small | 3789.8 | 2.7 | 1396.5 |
| Vietnam | Medium | 7506.7 | 5.7 | 1292.5 |
| Vietnam | Large | 13257.2 | 9.9 | 1337.1 |

Source: Household survey

*Yield*

Graph 4.2 shows the geometric means of yield (see Table 4.5), plotted against tree density and output per tree. Output per tree is presented on the *y*-axis and trees per hectare on the *x*-axis. Six main points have been plotted: 3 points for small-, medium- and large-scale farmers in Tanzania, and the same for Vietnam. Points from the same country are joined up and marked with corresponding yield values for each point.

*Graph 4.2* Tree density, output per tree and yield by type of farmer and country




Source: Household survey

Yield is consistently higher in Vietnam than in Tanzania and there is a huge discrepancy between Tanzania and Vietnam in yield (Graph 4.2 and Figure 4A5 in the Appendix). Yield rates are in hundreds of kg per ha in Tanzania, while in Vietnam they are above a thousand kg per ha. On average, yield rates in Vietnam are seven times higher than in Tanzania.

Small-scale farmers, followed by large-scale farmers, have the highest yields in Vietnam.[22] This ties in with the fact that overall cashew yields in Vietnam are high and about 1.3 tonnes per ha are produced there compared to 180 kg per ha in Tanzania.

*Labour use*

Labour is a very important input in raw cashew production for weeding, picking, pruning, sanitation work and packaging. The various farm activities demand different numbers of workers. In Tanzania, there is a high demand for labour and the differential prices paid by large-scale farmers imply a shortage of labour, which is solved by using family labour, like children or *mkumi* (see Box 4.3). Preferably however, there would be labour-saving technologies to adopt, but this is not the case in Tanzania. Studies on labour-saving devices and technology, for instance by Hicks & Johnson (1974), found that a higher rural labour supply led

[22] See Figure 4A1 in the Appendix showing the distribution.

*Box 4.3* Engagement with labour in Tanzania

*Small-scale farmer:* Family cashew picking is very expensive as you incur more costs than when paying casual labour by the number of plastic buckets they harvest. All this is to impress your relatives who can then feed themselves as everyday as you provide them with one ten-litre plastic bucket. If s/he only picks ten litres then you give them the same ten litres of cashew. You know family picking runs at a loss, while paying for each bucket picked by hired labour does not incur losses. Family cashew picking means ties for us who also have casual labour. The family still works and receives their due payment. Sometimes family members only pick the big cashew then roast them and eat them with their families and friends. I provide the bucket for them to get money.

Now, the family assists even with farming, for instance weeding. They come and help during cleaning and pruning when I cannot afford to hire casual labour and then we assist each other.

During weeding, we work in mkumi (by clan) and you cook food. This is also done during tilling and weeding (kutibulia na kulimia).You cook food, you brew then we pick cashew together and on this day you do not have to pay any money to all those who assist.

*Large-scale farmer:* We pay TSh 500 to casual labour to pick cashew. When there is a labour shortage, we pay TSh 700 to TSh 1000 because if you offer less, no one will come.

Source: Small-scale vs. large-scale farmers, Tandahimba. Interview by researcher.

to greater adoption of labour-intensive rice varieties in Taiwan, while shortages led to non-adoption in India. This may also reflect the constraints faced by Tanzanian farmers who cannot use the new varieties of cashew even if they want to as they face the challenge of seasonal labour shortages.

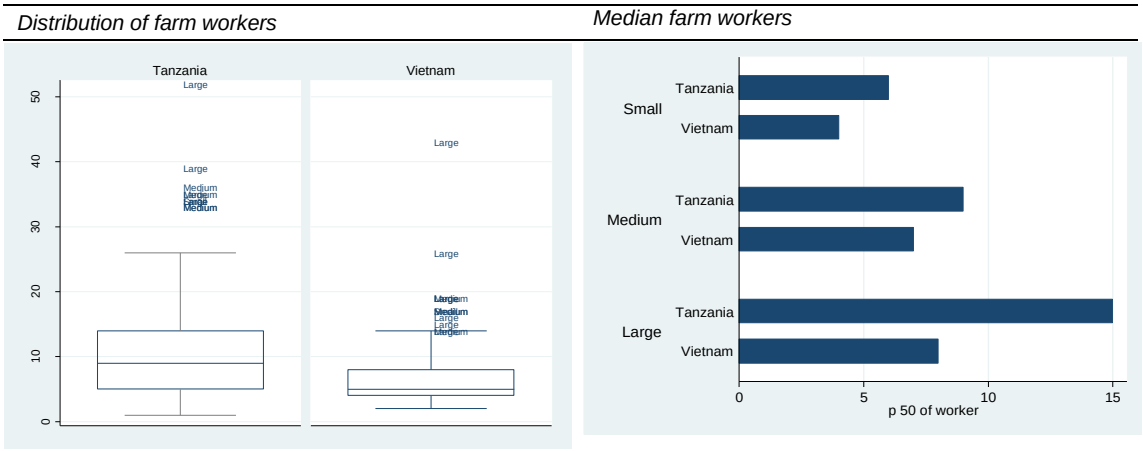
Payments for labour differ according to labour and type of farmer. Farmers prefer to use hired casual labourers than relatives. Figure 4.1 shows how labour is used differently in the two countries. The left-hand side compares the distribution of labourers used per household in Tanzania and Vietnam,[23] while the right-hand side compares the median number of farm workers employed in Tanzania and Vietnam among the different farm groups.

Tanzania uses more labour than Vietnam. Survey results indicate that both countries employ farm workers, with Tanzania using slightly more per farm than Vietnam (see Figure 4.1, Table 4.6 and Figure 4A8 in the Appendix). The median proportion of households using farm workers is higher in Tanzania and lower in Vietnam. On average, about eleven farm workers are used on cashew farms in Tanzania compared to six in Vietnam, which may reflect the availability and accessibility of tools and the scarcity of labour for Vietnamese farmers. Tanzania is more varied regarding the use of farm workers. The LHS in Figure 4.2 shows a clear difference in medians and the presence of outliers for both Tanzania and Vietnam. These are individually marked and show the very high usage of

[23] The box and the whiskers represent 95% of the data used and the remaining 1.5 (Inter Quartile Range IQR) are marked as outliers. The line in the middle of the box represents the median and the edge of the box encloses 50% of the distribution. Figure 4A2 in Appendix III shows the distribution of labour.

farm workers on large farms in Vietnam and by medium-sized farmers in Tanzania (see Figure 4A8 in the Appendix). As was seen earlier, farmers with large and medium-sized plots had an average output per tree of 6 kg, which suggests that they are able to better maintain their farms.

*Figure 4.1* Farm workers used in Tanzania and Vietnam, by type of farmer




Source: Household survey

Figure 4.1 shows that the median number of farm workers used increases by type of farmer in both Tanzania and Vietnam. The increase in the use of farm workers in Tanzania is more pronounced than in Vietnam. The credit worthiness of larger farmers means that they can afford to hire workers to assist them in maintaining their trees. After selling their crop, these farmers are able to pay their labourers on time and casual labourers therefore prefer to work for them rather than for smaller farmers who often delay paying their wages. Availability of finance is the primary demand of Tanzanian farmers.

Large-scale farmers in Tanzania have more land, while the amount of labour used per household is lower at around 1.5. Households in Tanzania are bigger than in Vietnam but both have the same number of active members. This contradicts the notion that households in rural Africa are bigger to ensure the provision of adequate labour. What is seen from this study is that big households do not necessarily imply a more active population available for farm work, as the case of Tanzania shows. Work by Mbilinyi (1972) showed that polygamy meant more children, and additional wives meant additional workers on the farm which increased the acreage under a man's domain. This highlights one of the reasons for the lower output per tree among large farmers in Tanzania: their wives have to

tend their own farms too. Table 4.6 shows the use of labour (average),[24] labour used per hectare[25] and labour used per tree by type of farmer.

*Table 4.6* Geometric means of labour, labour per hectare and labour per tree by type of farmer and country

| Country | Farmer | Labour | Labour/ha | Labour/tree |
|---|---|---|---|---|
| Tanzania | Small | 6.5 | 1.4 | 0.052 |
| Tanzania | Medium | 9.5 | 1.2 | 0.036 |
| Tanzania | Large | 15.0 | 0.8 | 0.029 |
| Vietnam | Small | 4.1 | 1.5 | 0.008 |
| Vietnam | Medium | 6.6 | 1.2 | 0.005 |
| Vietnam | Large | 9.0 | 0.9 | 0.006 |

Source: Household survey

Labour use increases by type of farmer, with large-scale farmers in Vietnam using about the same labour as medium-sized farmers in Tanzania. The modes of engagement of farm workers differ in the two countries. Farm workers in Tanzania are mainly used for weeding but in Vietnam they pick cashew (Table 4.A3 in the Appendix).

As far as division of labour is concerned, additional labour from outside the family is required in Tanzania to assist with spraying, sanitation, pruning, weeding and harvesting. Men often prune and women weed and harvest, while children assist with harvesting. In Vietnam, unlike Tanzania, additional labour is mainly needed for harvesting.

As Table 4.2 above shows, the higher tree density in Vietnam and the use of less labour per hectare are possible because of the equipment available. The less densely planted plots in Tanzania that require more labour reflect the lack of machines (i.e. adopted technologies) there.

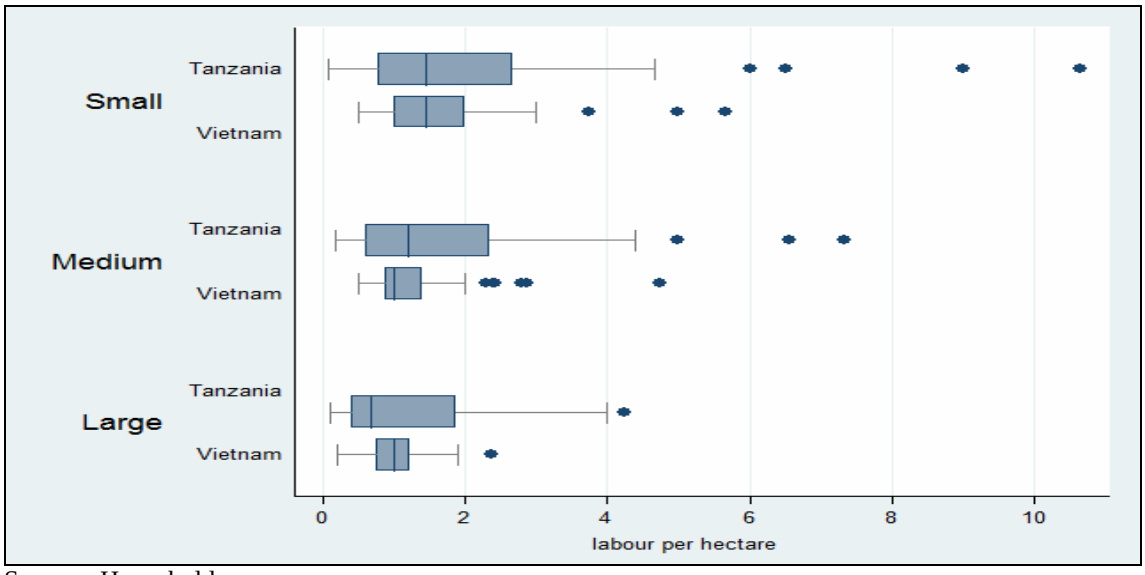
Small-scale farmers in both Tanzania and Vietnam use more labour per hectare than larger farmers (see Table 4.6). Smaller farmers in Tanzania use almost twice the labour per ha compared to their larger counterparts. Inasmuch as labour is used, the proportion of large-scale farmers to small-scale farmers on land size is higher than it is for labour. This implies that small-scale farmers depend on labour for maintenance as they cannot afford other sources, which tend to be more expensive. These farmers find it hard to survive and continuous poor harvests result in a vicious circle of poor maintenance. ‘I’ve never had a great year because I fail to tend (my farm)’, says Asha, a small-scale farmer from Tanzania. This

[24] See Figure 4A8 in the Appendix.
[25] See Figure 4A9 in the Appendix.

supports what is shown in Table 4.6, namely that smaller farmers use more labour per ha and more labour per tree.

Small-scale farmers in Tanzania face cash constraints and so tend their own farms using their own labour. As several small farmers from Tanzania said in interviews, 'I tend (the farm) myself and if I fail, I set it on fire'. While Musa, also a small-scale farmer, noted that the introduction of inputs is a new phenomenon: 'In the past, weeding was the only cost incurred but nowadays inputs hurt us a lot given that the price of cashew is low'.

*Figure 4.2* Distribution of labour use per hectare




Source: Household survey.

Tanzanian farmers use more labour per tree than their Vietnamese counterparts (see Table 4.6). Work in Tanzania is provided through *kipande* (piece-rate) arrangements as it is not only cheaper in terms of monitoring but is also a win-win situation for both the farmer and the casual labourer.

Discussions on labour highlight the bigger picture surrounding those on the size of Africa's population and different schools of thought (see Boserup 1965; Simon 1996). The population in Africa is growing but the cashew sector shows that it is not rising fast enough to allow new technologies to be adopted, as is evidenced by shortages of labour at peak periods. This is, naturally, only a partial observation as other factors, such as age and the distribution of resources, may also play a role.

*Photo 4.6* Engine-powered tools being used in Vietnam


*Other inputs*

This section covers the utilization of other inputs and is based on information gathered from interviews with key informants and focus-groups discussions. Access to credit, pesticides, a source of income for maintenance as well as household maintenance behaviour are all presented.

- Access to credit and tools

All Vietnamese farmers have access to credit, while similar access is much less prevalent in Tanzania and, when it does occur, it benefits larger farmers. Vietnamese farmers make use of mechanized equipment, which is not the case in Tanzania. Since credit is crucial, cash-constrained households are discussed here.

To maintain high output levels, capital in terms of investment is required to care for cashew trees. This capital is used for farm inputs such as pesticides, fungicides as well as nutrients and tools like leaf-blowers, slashers, sawing machines and hoes. If a household has few members to assist in maintaining their farm then it will hire in more labour using its own cash and other resources. Maintenance of cashew is a life-long exercise and needs to be taken seriously to ensure better production levels as any change in maintenance (pruning, weeding and spraying) affects production. The maintenance needed in the initial stages is different from that needed in the later stages of a tree's growth. Farmers need labour and inputs to curb disease, ease their work and plant new trees. Additional activities that are unrelated to maintenance but that also take place include the picking of cashew, drying, grading, packaging and trading. In a year when maintenance is carried out efficiently, the expected output is higher than when no maintenance is performed. Protecting against insects is the most expensive activity, followed by the costs of hiring labour.

Farmers in Vietnam have access to loans through government poverty-alleviation programmes and through private banks. With credit widely available, households buy most of the machines they need, depending on their ability to pay. Different kinds of tools/machines to maintain farms are readily available including engine-powered sowing machines, trimming machines, sprayers, lawn mowers, sickles, axes and rakes.

Richer farmers in Vietnam can afford more durable and better-quality machines, while poorer farmers buy machines but according to their financial means. A sawing machine costs between VND 1.5 million and VND 12 million.[26] The 8-litre sprayers and 25-litre sprayers cost about VND 450,000 and VND 12 million respectively, a powered saw costs VND 1.5 million and a trimmer costs about VND 500,000. Most households have their own machines but some still rent them. Lawn mowers can be rented for VND 10,000 a day while a 25-litre sprayer is available for VND 20,000 a day.

Power tools and equipment are not widely available in Tanzania, with the exception of sprayers, which are owned by a few trained operators and large-scale farmers. Households rarely own sprayers and usually rent them for TSh 70 per tree per season. The total costs for spraying for an average farmer with four hectares amounts to TSh 183,000 (US$ 140). Other tools that farmers use include bush knives, axes, hoes, slashers, *tupa* and sickles.

If farmers run out of cash before the trading season begins, they are forced to sell their initial produce to small-scale traders or big farmers via *kangomba*. Farmers sell their products to bigger farmers or anyone who has weighing scales in front of their house, which indicates that they are prepared to buy cashew.

[26] US$ 1 = VND 18,500 = TSh 1300 at the time of fieldwork.

Though the amount paid will be less than that offered by the primary society, the pressing need for cash leaves these farmers with no other alternative. Such households are referred to here as cash-constrained households.[27] Cash-constrained households in Tanzania behave differently from non-cash-constrained households as cash-constrained households generally have little produce to trade. *Kangomba*, although illegal, is the only possibility for cash-constrained farmers because by selling their produce this way they can access the cash they need for current expenditures and the upkeep of their trees. Such households will forgo the inputs that they would have accrued for the following season had they decided to sell through the regular channels, namely the primary society, which all farmers officially belong to.

Since 60% to 80% of farmers' costs are accrued by preventing and fighting the insects and disease that plague cashew trees, cash-constrained households find it difficult to either prevent or fight these diseases. All farmers are expected to spray their farms six times a season but the cash-constrained farmers can barely afford to spray three times. These farmers opt for spraying fungicide, which only fights disease, and they use other manual means to prevent crop infection. This latter option requires timely and effective sanitation and the thinning and pruning of trees, which will only delay the onset of infection, although the farmer will save some of the money that would have been spent on spraying.[28] Even when small farmers use delaying options and forgo inputs, they rarely manage to hire additional labour to assist them in farm work.

For small farmers, household labour alone is not sufficient to undertake the maintenance work required every season. Spraying is done by operators who are the only additional labour hired by all cashew farmers. Cash-constrained households keep their use of operators to the bare minimum and rarely hire in additional labour, instead using household labour to assist in sanitation, thinning and pruning, all of which are considered taxing forms of farm work. But even for less strenuous but essential farm tasks, like weeding or harvesting, these farmers do not hire additional labour. This results in cash-constrained households spending longer periods of time tending their farms.

Years of bad harvests mean more households become cash constrained. In addition to resorting to the above-stated operations, farmers passively adjust by abandoning parts of their farms in the hope that, in the next good year, they will be able to tend their cashew farms once again.

The varying output per tree level in Vietnam reflects credit availability and the kind of tools used by different types of farmers. The low output per tree among

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[27] These farmers are a sub-group of the small-scale farmers described earlier.

[28] Sanitation refers to the removal of young tissue in the canopy that needs to be trimmed back to the main stem, Thinning is the trimming of the interlocking canopy and congested trees, and pruning refers to the removal of densely planted trees to allow for aeration and ventilation.

medium-sized farmers could be indicative of labour constraints related to tending crowded trees. Given that loans from the anti-poverty programme have thresholds for every member, medium-sized farmers may be confronted with insufficient funds when it comes to maintaining their trees. With too many trees, quality (i.e. output per tree) is compromised for medium-sized farmers.

The discrepancy in output between Tanzania and Vietnam reflects low or poor management by Tanzanian farmers, which is accelerated by insufficient access to new technologies because of a lack of credit.

• Access to fertilizer and pesticides

It is very important to tend cashew trees by applying either nutrients or pesticides to allow reasonable output levels. The use of pesticides is crucial for disease-prone varieties, while the use of nutrients for all other varieties helps increase productivity.

Box 4.4 describes the history of pesticide use in Tanzania by a large and a medium-sized farmer. Both indicate that after some years of neglect, their cashew trees were attacked by Powdery Mildew Disease PMD (Swahili: *ubwiri unga*) and that spraying only started in the mid-1980s, although farmers have been spraying ever since.

Sulphur spraying to prevent PMD is more commonly used in Tanzania than in Vietnam as there are more cashew trees affected with PMD and/or there is a greater need to protect old trees there than in Vietnam. For farmers to obtain any output in Tanzania, they have to spray sulphur before the cashew tree flowers otherwise they would lose up to 90% of their expected crop. It was reported that '60% to 80% of farmers' costs go on fighting insects and diseases, and, if not curbed, up to 90% or even 100% loss (in cashew production) is guaranteed'.[29]

*Box 4.4* History of pesticide use

During my youth there were no pesticides. Cashew trees used to grow on their own, God provided his blessing and produce was obtained without spraying. We started spraying in 1984 but very few (farmers) began then because the pesticides were brought by white people who were doing research on it. 1984 is when the first system of spraying commenced and very few people were involved.
(Old (1953), medium-sized farmer, Tandahimba. Interview by researcher.)

We started spraying in 1979 (1979-1983). Initially sulphur was supplied and we took out a loan and once we sold cashew, we would return the money. In 1985-2003, we had agents and private traders and there were problems with accessibility and the price of inputs. Since 2004, we have obtained inputs via the district council under the District Input Fund.
(Old, large-scale farmer, Tandahimba. Interview by researcher.)

[29] Interview with Dr Shamte Shomari, the Zonal Director of NARI, Mtwara, 17 November 2008.

Coupled with being prone to disease, the Tandahimba DALDO noted that 'those with more cashew earn more, but given the rise in price of inputs even with a 50% subsidy on price this is still expensive, so farmers are spraying inputs less'.[30] This is supported by the focus-group discussion in Mambamba where members indicated that in the late 1990s, a kg of rice cost about TSh 500 and cashew sold at between TSh 700 and TSh 800. But in 2009, a kg of rice cost TSh 1500 and this could also be said about other goods but not cashew, where the price is still about the same and farmers get TSh 780. In other words, as members from Mtegu put it, a kg of cashew in the 1998/99 season would allow them to buy 2 kg of rice but by 2008/09 they were experiencing the opposite as they needed 2 kg of cashew to buy the same 1 kg of rice.

Pesticides in Tanzania are currently being provided through the centrally controlled District Input Fund (*mfuko wa wilaya wa pembejeo*).[31] It is, therefore, not surprising that most farmers in the study area in Tanzania complained about input delays more than their Vietnamese counterparts did. This could also be an indication of the weak functioning of the market with regard to input supplies.

> You know during this period when the primary societies failed to provide inputs on time, we often prepared ourselves in advance. For instance, I prepared myself early by buying the inputs once I received my (cashew) income. I set aside some money and bought (inputs) early and what also assisted me during these times in terms of inputs was my garden. I got some money and bought inputs.[32]

Money for maintenance comes mainly from selling cashew and less from other sources (Table 4.7). Money from farmers' own savings was also used to buy farm inputs.

Farmers in Vietnam also use credit from banks. Out of the households interviewed, six small-scale farmers and one large-scale farmer made use of this service. During focus-group discussions in Tanzania, farmers indicated that money for maintenance mainly came from their sales of cashew, with other sources including sales of domestic animals (goats, chickens) and garden produce (cassava, peanuts, pulses), the renting out land (*poni*) for up to three years, selling off part of their farm, a bicycle or a radio, and casual labour.[33] SACCOS also provides loans.[34]

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30 Interview with Isabella Dismas, District Agriculture and Livestock Development Officer (DALDO), Tandahimba, 19 November 2008.

31 Through this system, a fixed amount is deducted from each kg a farmer sells through the WRS. This guarantees receiving subsidized pesticides the following season.

32 Focus-group discussion, Mtegu village, 19 January 2009.

33 Focus-group discussions with men from Mambamba village, 20 January 2009 and Mnyoma village, 21 January 2009.

34 Focus-group discussions with men from Mnyoma village, 21 January 2009.

*Table 4.7* Main sources of money for maintenance (by number of farmers interviewed)

| Money for farm inputs obtained | Tanzania | Vietnam | Total |
|---|---|---|---|
| From sale of cashew | 157 | 169 | 326 |
| Agreement with subcontractor | 7 | 2 | 9 |
| Own saving | 9 | 17 | 26 |
| Other | 2 | 0 | 2 |
| Credit from bank | 0 | 7 | 7 |
| Complimentary income | 0 | 4 | 4 |
| Total | 175 | 199 | 374 |

Source: Household survey

When assessing the different maintenance activities undertaken over the years by households, pruning appears to have been performed once a season in both Tanzania and Vietnam. Weeding is done twice a season in both countries and fertilizer is rarely used in Tanzania but is applied in Vietnam. This could be due to the fact that fertilizer is mainly used in the first two years of a seedling's growth, and thus one would hardly expect to see it in use in Tanzania where most of the trees are old and production layering (top work) is done. This is an upgrading procedure where an old tree is fused and becomes a more productive variety. Farmers in Vietnam switch between cashew and other crops in good or bad years and this could explain the frequency of use of fertilizer for new plantations.

There is discrepancy in output, yield and the use of labour between the two countries, and also discrepancies within each country. Farmers in Tanzania depend on cashew for revenue so a lack of cash will hinder their ability to tend their farms (labour and inputs). This is a serious problem for all farmers regardless of the size of their farms. Difficulties in obtaining the necessary inputs and the limited accessibility and availability of water, machines for spraying and tools to ease farm work are major problems in Tanzania.

## Discussion

This chapter discussed the sharp divergence in cashew production at the household level in terms of sunk costs, output performance and input use. The two countries in the research project have shown how a low-productivity regime (Tanzania) fares compared with a high-productivity regime (Vietnam). The question is what explanation there could be for the differences in the same sector in the two countries.

There is a wide variation in production between Tanzania and Vietnam. Initial observations of the differences are the sunk costs incurred as initial seedlings

*Table 4.8* Summary of stylized facts in production of cashew

| | Tanzania | Vietnam |
|---|---|---|
| Sunk costs | Free seedlings, labour time. | Free seedlings, labour time. |
| | In bad years: abandon farm or only partly tend it. | In bad years: switch to producing rubber. |
| Output performance | Farm size consistently higher in Tanzania than in Vietnam, not only by type of farm unit but across the board. | |
| | Output per household is consistently higher in Vietnam than in Tanzania. | |
| | The pattern of output per tree varies least between the two countries (but in Tanzania trees are older and bigger, and in Vietnam they are newer and smaller varieties). | |
| | Tree density is much higher in Vietnam than in Tanzania. | |
| | Yield divergence is very pronounced between the two countries, with Vietnam having a much higher yield. | |
| Input usage | Subsidized inputs (through primary society via the District Input Fund). | Subsidized inputs (through traders). |
| | Access to credit is much less prevalent in Tanzania and if it occurs, it is mainly among larger farmers. | All Vietnamese farmers have access to credit. |
| | Tanzania uses more labour but has lower productivity. | Vietnam uses less labour but has higher productively. |
| | Farmers struggle to access mechanized equipment. | Farmers make use of mechanized equipment. |

were obtained for free in both countries, and labour and time are thus the main costs. Once a first harvest has been realized and after a bad year in terms of price, farmers in Vietnam will switch to rubber while those in Tanzania opt to abandon (part of) their farm or only partly tend it.

Differences in yield are also huge. Vietnam, a relatively new producer of cashew, has high-yielding varieties while Tanzania has lower yields, which is a reflection of its aging trees, poor maintenance and a semi-functioning market. The initial decisions on maintenance made by farmers affect the marketing of their produce. Farmers who run out of money before the start of the trading season in Tanzania resort to sub-optimal trading options, like *kangomba* and foregoing inputs. Farmers with good harvests, however, sell their produce through formalized legal channels. By selling through these channels in the Warehouse Receipt System, farmers are assured of receiving better rewards in terms of both revenue and inputs. The discrepancy in yield is a reflection of the partial adoption of the new tree variety that has been implemented in the old system. It also reflects the failure and/or resistance to change among innovators and adopters.

Farmers in both countries adhere to the recommendations of the agricultural innovation institutions. The rigidity of the lead innovation institutions is partly

reflected in the variation of tree density. Farmers in Tanzania rarely practise intercropping and still have only 40 trees to the hectare, unlike their Vietnamese counterparts. This could also be a reflection of the low capacity of research institutions to roll out packages to farmers. There is room for expansion in cashew production in Tanzania but this depends on the availability of credit and flexibility in the research institutions and the other coordinating bodies in the sector.

Despite sunk costs, investment in cashew is a continuous process and credit is crucial. Survey data show that credit in Vietnam is provided through government-initiated poverty-alleviation programmes and private banks. Tanzania lacks a clear provider of credit and farmers mainly depend on their earnings from cashew as their (sole) source of credit. Credit availability in Tanzania thus needs to be improved as this would offer better service to farmers than the current residual payment system that is provided by the WRS.

Vietnam's striking output performance cannot be replicated in Tanzania just by improving yield and output given the level of technology there and the lack of availability of credit. Tanzania should consider resolving the different bottlenecks in its production by providing incentives to all the actors involved and improve the delivery of inputs to allow for continuous maintenance.

# 5

# Contrasting tales of value chains

## Introduction

A precarious vicious circle of low yields in Tanzania and a stable virtuous circle of high yields in Vietnam, due to factors observed at household level and as discussed in Chapter 4, serve as a bridge to this chapter. So far the differences between Tanzania and Vietnam have been shown at sector and household levels. Using contrasting economic history, Chapter 2 set the stage by looking at the common roots of the two economic systems that were adopted under socialism. In their respective histories, what is common to both Tanzania and Vietnam is the high percentage of their population that lives in the rural areas, their planned economies and later the adoption of a free market. The transition from socialism to liberalization (free market) saw an increase in the production of different produce in terms of crops and other goods in Vietnam, while erratic trends have been observed in Tanzania, as was seen in Chapter 3. Focusing specifically on cashew, Chapter 4 showed sharp contrasts between households in Vietnam, a newcomer in raw cashew production, and in Tanzania, an old timer. As with other African countries, production is on the rise in Tanzania but improvements in productivity remain a challenge.[1] There is stronger differentiation among cashew farmers within Tanzania and between Vietnam and Tanzania, for instance, the amount of land owned is higher in Tanzania than in Vietnam. The case of cashew points to discrepancies in cashew output, yield, productivity, tree density, the age of trees, proneness to disease and the availability of tools and inputs between Tanzania and Vietnam. What emerges from the divergence observed is how the actors in the sector interact. This is the focus of this chapter which looks at the premise that the value chains operate differently

[1] See Dietz (2011: Section 3) for an overview of the expansion in cropping areas, yield and productivity.

The erratic trends in production in Tanzania, I would argue, are due to the numerous reversals in policies, with the peasant always being treated as a residual on the margin and without flexibility. This happened mainly with processing being an afterthought as a way of utilizing excess produce, i.e. the adoption of forward linkage leading to an unbalanced value chain. On the other hand, the skyrocketing of cashew production in Vietnam, I argue, is due to the adoption of strategic policies, with the peasant provided with flexibility. This, I further argue, was made possible with processing being considered as central to the cashew sector, i.e. the adoption of a backward linkage leading to a balanced value chain. Looking at the value chain like this implies that price allocates resources by itself but, as will be shown, there is a need for formal coordination to overcome inefficiencies.

The chapter focuses on the meso and sector levels of marketing dynamics and presents the coordination systems of the cashew market by adopting a Global Value Chain (GVC) framework. The functioning of each strand in the chain depends on the interaction of the actors within it. The implementation of an industrial policy in Vietnam versus the opportunistic policy in Tanzania has ensured increased production and erratic production in the two countries respectively.

Firms as secured entities have room for innovation (Penrose 1959). In economics, a market clearing price is obtained and resources are allocated efficiently under perfect competition but, in the real world, the pursuit of self-interest by the market may not yield the best solutions. In areas where there are not many buyers and sellers and with information asymmetry and barriers to entry or exit, the allocation of resources becomes imperfect and leads to market failure, i.e. the market cannot allocate resources efficiently (Wood 2001). These market failures need to be corrected by state involvement. This can be seen as government intervention bringing governance to the chain and potentially more power to producers. The cases of cashew in Tanzania and Vietnam show how market failures can be tackled by different processes of coordination. In Vietnam, downstream and upstream stakeholders are linked with coordination providing inclusive incentives to all actors. Coordination in Tanzania provides exclusive incentives to mainly downstream actors, i.e. to a single stakeholder, namely the farmer.

## Creating space for actors to perform in the value chain

Actors in the market are organized differently depending on time and space. Global Value Chain (GVC) analysis explores and predicts how nodes of value adding activities are linked in the spatial economy (Sturgeon 2009). GVC assists in understanding the governance structure of tradable goods and ‘describes the full range of activities that firms and workers do to bring a product from its con-

ception to its end use and beyond'.[2] GVC has been evolving since Gereffi (1994) announced that the two static forms of governance were either buyer driven or producer driven. Initial research on value addition was mainly focused on manufacturing in the automobile and electronics sectors[3] and case studies provided useful information but lacked rootedness. Work on value chains that focuses on crops produced in poor countries and consumed in rich countries[4] has gained prominence since the mid-1990s, especially following the so-called GVC initiative in 2000.[5] This research assumed that the governance of the chain is consistent at all the different nodes in it. Commodity chains are rooted as they originate from a particular place, especially when referring to extractive commodities. For consistency, these commodity chains are simply referred to as a 'value chain' in this chapter.

Following Talbot (2009), it is acknowledged that the governance of the value chain differs within a commodity chain (see Chapter 3). In addition, different actors play key roles in different parts of the chain. Coordination is required to ensure that inputs are provided on time, output is traded promptly and processing is not disrupted. If such a situation exists, transaction costs are minimized and production is maximized with a high equilibrium. Coordination needs to occur among downstream actors, upstream actors and at the sectoral level. However, coordination problems may lead to multiple equilibriums and delays at any level are costly and result in a lower equilibrium with less return for producers.

The coordination of actors comes about through forward linkage or backward linkage. Inasmuch as actors higher up in the chain create more value, the relationship among actors in a value chain affects the quality of the entire chain. Compatible partnerships ensure efficiency while incompatible partnerships lead to inefficiencies. In a balanced value chain, upstream actors have strong linkages with downstream actors who are more flexible, while in an unbalanced value chain, there is a weak linkage with downstream actors that is often captured[6] by upstream actors that thus remain rigid and are treated unfairly, mainly as residual.

The operating environment of a sector is crucial; adopting strategic policies or opportunistic policies makes a difference. Strategic policies provide room to learn through trial and error, while opportunistic policy leaves little room for knowledge creation and utilization.

Market failure highlights the issue of contracting. Contracts are needed because one party may have more or better information, which is termed 'asymmet-

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2 See http://www.globalvaluechains.org/concepts.html

3 For more information, see Barnes & Kaplinsky (2000) in Kaplinsky & Morris (2001).

4 Gereffi (1994, 1999), Cramer (1999), Dollan & Humprey (2000), Gibbon (1997), Gibbon & Ponte (2005) and Gibbon *et al*. (2010).

5 A network of researchers that consolidates information on GVC.

6 Global Value Chain Initiative: http://www.globalvaluechains.org

ric information', and the presence of transactional costs can lead to uncertainty. Contracts can be a basic understanding or agreement provided by word of mouth or can be written down on paper. Though not the preferred outcome, this may happen as a result of changes in the market environment that make it impossible for one party to keep their side of the deal. Given the gestation period of a crop, the nature of contracting among cashew-sector actors is crucial.[7] [8] For trading to occur, coordination is thus key and linkage is created between downstream and upstream actors. The presence of a strong domestic raw material supply to upstream actors is attributed to low transportation costs, little bureaucracy and reliable quality control. Since upstream actors have invested in machinery, they are vulnerable and may face hold-up problems.[9] This can lead to under-investment and inefficiency (Klein *et al*. 1978). Given economic freedom, downstream producers produce a product with better returns and upstream producers are obliged to pay a reasonably good price to encourage downstream producers to provide the raw materials they require. The economic freedom to choose other products by downstream actors is a credible threat as actors incur sunk costs that make them vulnerable (see Chapter 4).

Due to information asymmetry on the quality of the produce offered, buyers would play safe when offering their price. If the offered price is high, farmers will continue to produce. If the offered price is low, this would discourage production of good-quality produce and the market will be left with low-quality goods, signifying a typical 'lemon' problem (Akerlof 1979). Without cooperation among buyers and sellers to enhance the quality of production, the buyer and seller will offer a low price and low quality in anticipation of others doing the same, a typical 'Prisoners' Dilemma' problem. In reality, this would lead to low yield/output and a low price, i.e. a low-yielding equilibrium. And as was seen in the previous chapter, a low price affects production in future seasons. For markets to work, a sound institutional set-up that thrives on enhancing the operation of the market in a self-monitoring way is needed. A thin market tends to create a monopoly or monopsony situation, neither of which is efficient in allocating resources but which is, instead, a way of letting a few actors accumulate wealth by creating artificial barriers at the expense of others.

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7 The uncertainty in production streams and prices leads to implicit contracting. The marketing of goods occurs in accordance with the level of uncertainty involved. Goods such as sugar, farm inputs and household utensils are sold through spot marketing. Spot contracts operate with buyers and sellers trading their output once a price has been given.

8 The discussion on contracts goes hand in hand with that on trust. Trust is created over time and farmers learn from past events. A trader who is engaging with farmers for the first time will only get produce and this will not guarantee that if the trader returns, he will be successful again.

9 For more information, see Williamson (1975, 1977), Hart *et al*. (1988), Rogerson (1992), Hart (1995) and Mackintosh (2001).

A change in price (both relative and absolute) leads to a reaction from all types of cashew farmers. The type of payment paid to the farmers also affects production. Downstream actors receive a core payment or a residual payment. A core payment involves receiving revenue without transaction costs associated with marketing. Receiving residual payment means that farmers pay for inefficiencies at other levels in the value chain. In other words, residual payment means receiving revenue after deducting any marketing-related costs. This situation is worse in bad years as marketing costs are not adjusted according to output. This can be attributed to the lack of industrial policy that strategically integrates all actors in the sector. In the end, low prices discourage personal effort and downstream actors have little incentive to improve the quality of their produce.

Economies of scale are made by continued commitment to growth brought about by the long-term effects of increased production with falling average production costs (Penrose 1959). Economies of scale are strongest when there is relational contracting and the actors at all the different levels benefit from best performances as profit is maximized. Diseconomies of scale occur when there is little to no coordination among actors and goods are continually produced at an increasing cost per unit. Such diseconomies of scale are expected to be short term and every time a product is traded, a new contract appears with little coordination of the consequences related to the previous actions of any actor.

Downstream actors make reasonable investments and thus also incur sunk costs and hold-up problems. The bargaining position of downstream actors changes after production (Gow *et al.* 1998). They prefer to receive the highest price for their produce and in a timely fashion. The price received in any one season affects the efforts put into production in the next season. A high price means that downstream actors will firstly continue producing and tending their farms and also that they are more likely to expand or upgrade them. On the other hand, a low price means that downstream actors will be more inclined to discontinue production, not tend their farms properly or even sell or abandon them.

Linking downstream and upstream is important for integrating all the actors involved and creates a self-governing mechanism in the form of implicit contracting.[10] If local upstream actors are unable to offer a reasonable price, upstream actors from other countries will seize any opportunities presented. If not rectified, this type of contract arrangement aggravates the problem of low-quality produce or lemons, especially with the restrictions on non-local actors' participation due to their low resource base.

[10] Uncertainties in the production stream and over prices lead to implicit contracting.

## Methodology

This chapter contrasts cashew value chains in Tanzania and Vietnam by looking at the important roles played by the various actors within the chain at the different stages. As seen in the previous chapter, cashew farmers are also involved in other activities but in Tanzania, most of funding for other activities depends on their income from cashew production. The cashew processors in Tanzania and Vietnam mainly produce kernels but are also involved in the production of cashew nut shell liquid (CNSL) and other milling products. The cashew value chain is not a rigid phenomenon and has changed in nature over time. Looking at the current organization of cashew marketing can help explain some of the differences using the history of evolving marketing systems. Cashew has moved from being a wild crop used to give shade to a commercial crop in both Tanzania and Vietnam. This has involved changes in the appearance of the tree, which is now a resource that needs to be cared for and whose product is traded worldwide. Visits to key stakeholders in the cashew sector in Tanzania and Vietnam were conducted for comparative purposes, with key informant interviews being held with processors, government departmental heads in the cashew-related ministries, research institutions and coordinators of (input and output) marketing.

A desk review of relevant data supplied or recommended by key informants was also carried out. This information was supplemented by the researcher's own observations. With the premise that value chain operate differently in Tanzania and Vietnam, the chapter is organized as follows. Before analysing the position of the actors in the chain itself, it begins with a section covering Tanzania and later Vietnam. It considers the organization of the current marketing of raw cashew, processed cashew (kernels) and inputs and the support system for cashew producers. The last section before the conclusion tries to synthesize the observed differences.

## Tanzania

Tanzania has shown a low-level equilibrium with regards to production of cashew with high volatility. As seen in Chapter 3, the cashew sector in Tanzania has experienced four kinds of marketing. Initially there were cooperatives, then marketing boards and later private traders (with the liberalization of the economy) and finally the Warehouse Receipt System. A constant feature to all these different kinds of marketing is the farmers' income. It is a residual, therefore bearing most of the cost burden with little room to manoeuvre. This section will ascertain these findings.

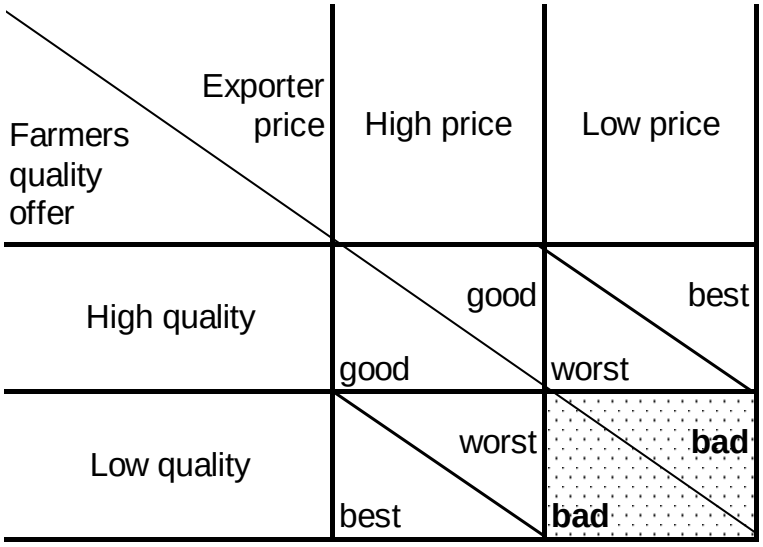
*Radical reversals in marketing raw cashew in Tanzania*

Tanzania has two types of traders: private and multi-tiered government-led traders. The cashew sector in Tanzania has experienced repeated and radical institutional changes that have affected both the quality and the quantity of the cashew produced. These many reversals of policy and implementation have affected the institutional set-up. Opportunist policy limits the room for stability in Tanzania. Such a set-up leaves little room for learning from below. Tanzania had marketing boards, crop authorities and a free market was seen in Chapter 2. Interlocking markets in a market-tiered system supplied inputs on loan and enforced a residual payment system to farmers. As noted in Chapter 3, production increased in places where there was no disease in the past but forced villagization and unfair compensation to farmers regardless of the increased world price led to a fall in production. Kriesel (1970) concluded that prices paid to farmers were artificially held down by the National Agricultural Products Board in order to offer higher prices for maize and cassava. This acted as a disincentive as the marketing boards determined the price offered to farmers and, with falling prices, farmers neglected their trees and farms. The entire cost was borne by the farmers who received residual payments, where the marketing cost was off-loaded from inefficiencies higher up in the market. Until 1992 the marketing boards were parasitic and shifted the entire burden onto the farmers.

When Tanzania adopted its SAP in the mid-1980s, the support system was dismantled, the state halted its coordination of the sector, infrastructure was left undeveloped and grading was not taken seriously. In Tanzania, liberalization resulted in splitting the market for input and output, with buyers more interested in output. Liberalization introduced private traders and the state withdrew from involvement in the production of all sectors. During liberalization, prices fluctuated between and within seasons. The withdrawal of government support resulted in a collapse in coordination and severe credit shortages for inputs. This led to the production of low-quality produce, i.e. lemons. The argument goes as follows; there are a number of farmers (downstream actors) in a sector who produce raw cashew of quality $\{Q_{1,} Q_{2,} Q_3 ... Q_{P1} ... Q_{P2} ... Q_N\}$ where (1, 2, 3 ..., P1 ... P2 and N) denotes the grade of cashew, with a lower number indicating superior quality. $Q_1$ output is of a higher quality than $Q_{10}$ output. Buying agents (i.e. upstream actors) offer downstream actors two choices: price $P_1$ and price $P_{2.}$ The first price, $P_{1,}$ is paid for raw material in the quality range ($Q_1$ to $Q_{P1}$) and the second price, $P_{2,}$ is paid for the raw material in quality range ($Q_{p1+1}$ to $Q_{P2}$). Ideally, each grade of cashew should have a matching price. This means that producers of higher quality should be compensated more for their efforts than downstream actors who produce lower-quality cashew, but this is not the case. A rational producer therefore knows that it does not pay to produce higher-quality cashew as one

ends up being paid the same as those who produce a product of lower quality. This would lead to a reduction in the quality of produce where only those of lower quality ($Q_{P1}$ and $Q_{P2}$) with matching (lower) prices are produced, i.e. 'lemons'. As far as downstream actors are concerned, there is not much difference between producing a quality product or a lower quality product as they both sell for the same price. Since buyers anticipate low quality, they will tend to offer the lowest possible price. This is a classic Prisoners' Dilemma solution in game theory, where parties choose bad solutions in anticipation of others doing the same (see Figure 5.1).

*Figure 5.1* Marketing of cashew as a prisoners' dilemma, Tanzania




Buyers of raw cashew in Tanzania include local processors and exporters. Demand for raw cashew mainly comes from outside Tanzania, with exporters having a significant role to play here. There are few local processors comprising upstream actors so most of the raw cashew produced are bought by foreign exporters to be processed elsewhere. Figure 5.1 illustrates the decisions on quality and price that are likely to be offered by farmers and exporters. The top right-hand entry in Figure 5.4 represents payoffs for exporters and the bottom left-hand entry represents the payoff by farmers.

A farmer has a choice of producing high-quality or low-quality cashew and an exporter can offer a high or low price. So for both the farmer and the exporter, there is a good option of farmers producing high-quality cashew and receiving a high price from the exporter and also a bad option where farmers produce low-quality cashew and receive a low price. But since neither the farmers nor the ex-

porters can tell anything about the price or quality, this would lead to a Prisoners' Dilemma solution in game theory. If both farmer and exporter arrive independently at the worst decision, which is to offer a low price and receive low-quality cashew, this is worse for both rather than aiming for high quality and a high price, which is good for both. This is an equilibrium where the farmer produces low-quality cashew and receives a low price from the exporter. A low price means less money is available for maintenance for the farmer and the cycle continues, leading to further low yield.

Liberalization only counted on market prices to allocate resources and this worked until the end of the 1990s but the collapse in prices in 2000 led to farms being neglected. At the beginning of the season, private traders bought raw cashew at a high price and later in the season for a much lower price. This had repercussions for the quality of the raw cashew produced. Traders used to bargain amongst themselves and the highest bidder received the consignment regardless of its quality (see Box 5.1).

*Box 5.1* Trading cashew on the free market in Tanzania

To trade in cashew one had to obtain approval from the Cashewnut Board of Tanzania, and the regional and district business officer for crop shipment. The latter was very bureaucratic and a good relationship was needed to have approval on time.

Additionally, all accredited companies were required to deposit cash for procurement at the primary society and no limit or floor was sanctioned. A detailed roaster with specific buying days was prepared, which remained intact whenever prices were equal. If the price changed, the one with the higher price would be given priority.

Buying was held at the primary societies. Most had strong and trustworthy people so there was little chance of losing money. In cases of theft, the same amount was deducted from the levy to be paid to the village. Before taking the consignment, a cutting test was used to grade the cashew, but again the location and time of buying was important. Trading during the rainy season impacted on the quality of the cashew.

Source: Traders, interview by researcher.

Farmers living in remote areas received lower prices than those close to main centres and middlemen were involved at both the village and regional levels. A farmer selling to a 'higher' middleman was assured a better price than others. Yet again, the situation was bad regarding the provision of farm inputs for all farmers. Traders were only interested in obtaining raw cashew and not in supplying farm inputs. The total withdrawal of the government during liberalization created a vacuum in coordination. This lack of coordination, which farmers felt as a lack of inputs and fluctuating prices, led to state officials announcing that traders were bad for farmers. The former experienced insufficient supply due to a lack of trad-

ers. Worse still, the few big traders started a cartel, thus making it difficult for farmers to benefit. The trading system in Tanzania moved from a cartel to a monopoly in the buying of cashew. In a way, private traders were no different from state boards as they were also parasitic in nature and left the farmer marginalized with residual payments.

To bring back a coordinating role, another radical change was made, with everything related to cashew trading being centralized (monopolized) from the purchasing of produce, to the supplying of jute bags, transport and even the provision of inputs In 2007, coordination picked up with the introduction of the Warehouse Receipt System (WRS) but even with this, Tanzania is locked in a low production equilibrium. The next few pages illustrate how the system was operating in Tanzania during my fieldwork period.

*Current marketing of raw cashew in Tanzania*

There is a channelled system in Tanzania for buying raw cashew through the Warehouse Receipt System (WRS; see Figure 5.2).[11] In order to sell in the WRS, a farmer must belong to a primary society. Farmers have the option of selling their cashew through the primary society (part of the WRS) or *kangomba* (see Chapter 3). Cashew is categorized visually into A or B grades and different prices are allocated accordingly. In the WRS, farmers use their output as collateral to obtain loans from banks and repay these once their produce has been sold at auction.[12] Producers can thus wait and sell their produce when the market is more favourable.[13] Produce sent to the warehouse is recorded according to quantity and quality and the producer is given a receipt with all the corresponding details. The receipt is transferable and the producer can receive an advance from the bank representing a percentage of the current market value of the produce. The storage facilities at the warehouse are secure and the producer agrees to pay a fee to cover storage costs. Produce at the storage facility still belongs to the producers as they have taken out a loan and their payment will only be channelled through the bank where the initial loan was obtained after the cashew have been sold at auction. The buyer goes to the bank and pays the full amount for the consignment and the bank will then deduct the loan and any associated fees (such as

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[11] The Warehouse Receipts Act No. 10 of 2005, Tanzania Cashewnut Marketing Board Act No. 21 of 1984, Cashewnut Industry Act No. 18 of 2009 and the Cooperative Societies Act No. 20 of 2003.This section on WRS benefited from interviews with the late Benno Mhagama and Mohamed Hanga of CBT; Shamte Shomari of NARI; John B. Henjewele & J.R. Mmuko of Mtwara; Munjai, Michael Kamazima & Gervas J. Mahanga of Tandahimba; and Hassan Dadi Chipyango of TANECU.

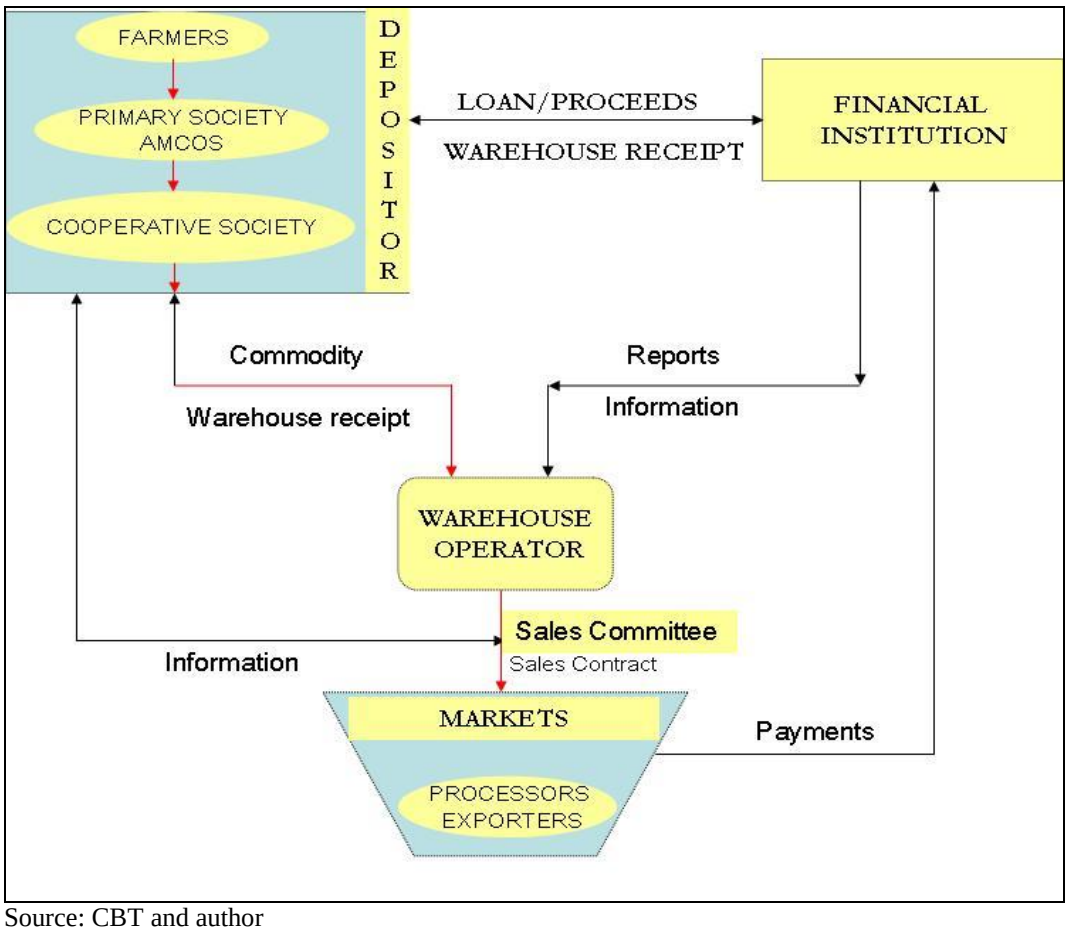
[12] An agreement between depositors and financial institutions has been set with guarantees from the government allowing the depositor to receive a percentage of an indicative price via an overdraft. Once the produce has been sold, the buyer clears this with the bank and the depositor receives the remaining percentage of the price of the cashew sold.

[13] Lacroix *et al*. (1996).

interest) and the producer will be credited with the remaining balance. There is another process in which producers do not take out a loan and receive full payment. This is a new practise in Tanzania. UWAKOTA is one such group.[14] Producers may take out a loan (or not) and pay for storage-related costs and the transportation of goods from their farm to the warehouse.

WRS ensures that farmers receive a constant price throughout the trading season and if the price is high enough, they then receive a bonus as a third payment. Farmers who adopt this system are also assured of receiving subsidized farm inputs (particularly pesticides and fungicides) that are provided through the pri-

*Figure 5.2* The Warehouse Receipt System (WRS)




Source: CBT and author

[14] Phone interview with Majogo crop officer, Tandahimba, 2 May 2011; Nipashe online 4 December, 2010. To join such a group, a farmer must be producing at least 3 tonnes of raw cashew per season. The group does not require an overdraft from the bank and pays its members right after the auction after paying the transport costs and taxes. These groups became popular with the falling trust in the primary societies. In 2011/12 season these farmers' groups were banned from trading as they were alleged to auction cashew produce from non-members (Mwananchi, 20 November 2011).

mary society under the District Input Fund. The Cashewnut Board of Tanzania oversees the quality of cashew from the farmers and the warehouse to the buyers.

*How the market works*

The typical WRS in Tandahimba has been modified, as can be seen in Figure 5.2, allowing the movement of cashew (produce), services (inputs) and money. The arrows in the top left-hand box show how cashew move from the farmer to the primary society and then to the cooperative society before being auctioned off to exporters and processors.[15] At the same time, services are provided by the cooperative society to AMCOS and eventually also to the farmer. These include the provision of inputs, storage bags, maintaining warehouses, money transfers and transporting the cashews. In the right-hand corner of the figure, the movement of money to and from the bank is shown. Initially, the primary societies apply for loans from banks to pay their farmers for their cashew before auction and, once the loans have been approved, the cooperative societies are responsible for assisting the primary societies by supplying them with money whenever necessary.[16] Farmers are paid a proportion of the price indicated. Before the auction, various processes take place in the warehouse area (Photo 5.1). First, the cars from the primary societies (AMCOs) are weighed and a sample is taken for scientific grading to determine the quality of the batch.[17] The cashew are arranged in the order in which they arrived at the warehouse and a CBT quality certification is issued noting the batch's weight and grade. The warehouse officer then produces a receipt for the bank and a copy for the primary society.

At the warehouse where the auction takes place, the cashew sacks are organized by the primary society. A raw cashew sales catalogue with the grades of batches for the different primary societies is provided for the bidders who jot down the prices for a batch and put them in an auction box. The auction is then conducted[18] and the winning (highest) bidder takes the warehouse receipt to the bank to arrange payment. After having paid, the bidder is provided with a permit and a levy for transporting the product, and then returns the original warehouse receipt that he used to pay for the batch at the bank. Given proof of payment

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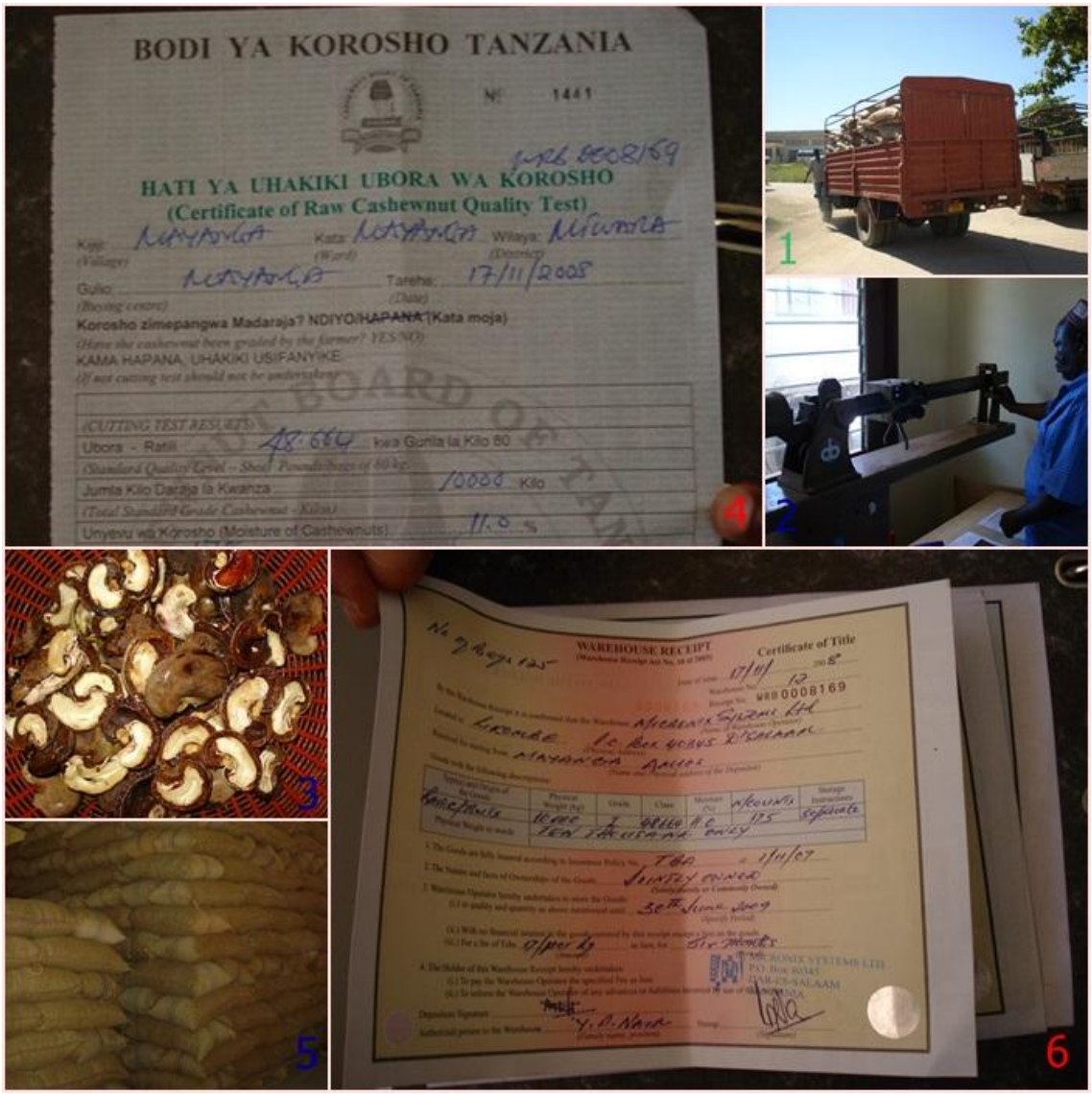
15 Cashews received from farmers are sorted either by grade or by standard grade. Initial grading is done by looking at the size and colour of the cashew.

16 The banks do not supply the whole loan at once but whenever it is asked for. The maximum loan is applied for prior to the start of the season and is benchmarked by output from the previous year and the price indicated by the government.

17 Cutting tests and moisture checks are done, and the CBT provides a quality certificate.

18 Representatives from the primary society and the cooperative society are present at all times during testing at the warehouse and at auctions. Representatives from the Ministry of Industry, Trade and Marketing and the warehouse manager are also present during the auction. Bidders must have certificates from the Cashewnut Board of Tanzania.

*Photo 5.1* Procedures undertaken at the warehouse before auction




1. Vehicle with raw cashew arrives at the warehouse. 2. Weighing of cars (inside or outside the warehouse). 3. Samples are taken for a quality test. 4. A certificate for a quality test is provided. 5. Cashew is organized in accordance with the origin of their primary society. 6. A warehouse receipt is issued.

from the bank, the warehouse manager provides the winning bidder with a release warrant. Bids must be high enough to cover any unforeseen additional costs associated with production. If they are too low, the auction is suspended and there is no winner. The minimum bid allowed is for 50 tonnes. After the auction, farmers receive a second payment that covers the full price indicated and if it is high enough, a third payment in terms of a bonus is also provided.

For the system to work, two conditions must be satisfied.[19] First, there have to be multiple bidders and, second, it is important that any other marketing costs are treated with total confidentiality. If the first and the second conditions are not met, bidders would bid the lowest amount just to cover the costs. The first condition ensures competition among bidders (traders) while the second one guarantees that (most) farmers receive a good price. Failure to meet these two conditions would mean that farmers would only receive the price indicated without any bonus.

The call for all farmers to belong to farmers' groups, in particular primary societies, is aimed at coordinating activities related to production. The case made for primary societies is set sequentially, following the order in which production occurs.

Firstly, the primary society tackles the problem of supplying inputs, which are important for pest and disease control. Cashew in Tanzania is a disease-prone crop and farmers need assurance regarding the delivery of inputs. As a result of the non-supply response that occurred after the liberalization of the cashew trade in the 1990s, the government came up with a solution for providing farmers with inputs as private traders were not interested in supplying them. A centralized system, the District Input Fund, was thus set up in 1993 to resolve the problem of farmers in the primary society not being provided with inputs.

Secondly, primary societies assist in distributing knowledge from research institutes. Selected representatives attend courses organized by the Department of Agriculture, the Cashew Development Centres (CDC) or the Naliendelee Agriculture Research Institute (NARI) where they learn innovative ways of increasing productivity.[20] These include grafting, top work, gap filling and disease-fighting techniques like sanitation, thinning and pruning. Trained representatives are joined by community-based extension officers (CBET) who use the T & V (Training and Visit) system to provide services to cashew farmers. In addition, to curb the problem of travelling long distances with seedlings, community nursery groups, like the Jikwamue Group in Malopokelo village, have emerged. Members are also trained in how to maintain their warehouses and grade cashew from farmers.

Thirdly, primary societies assist in finding cashew markets for their members. The elected leaders of the society represent members in different farming activities at the local, ward, district and regional levels. The leaders, and at times society members too, are trained by cooperative officers on how to run their society.

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[19] The price announced to the farmers is given in relation to the expected C&F price in India per tonne and costs incurred in Tanzania. The estimated cost of transporting cashew to India, including shipping and handling, is computed. This includes administrative and marketing costs, the costs of funding and those of purchasing the cashew.

[20] Interview with Yahya Salum Mahinyo, CDC Nanhyanga, 19 December 2008.

These activities include giving information on bank accounts (how to open an account, write cheques and signatories), book keeping and the keeping of records of members and the sales and payments of their goods (cashews) and ensuring that members receive inputs according to the output harvested in the previous season. Gaining access to markets requires access to credit and farmers are paid part of their earnings before an auction.

Although the primary societies were established for the reasons stated above, there are registered shortcomings in the operation of a system that integrates the primary society with the wider trading of cashew output and inputs. Cooperative unions oversee these primary societies. With the WRS, the Cooperatives Union monitors the distribution of jute sacks and money to and from farmers. The case to be made for cooperative unions is set out sequentially below according to the order in which production occurs.

Firstly, the cooperative society assists in the coordination of cashew trading. To retain freshness, cashew is transported in jute bags and the cooperative selects the supplier and distributes jute bags to the primary society.

Secondly, the cooperative society offers a secure means of transporting money for the primary society. Farmers take their produce to primary societies and get paid part of the price indicated because the harvesting season is long and the primary societies cannot be expected to have all the money required for an entire season. The cooperative union steps in and assists in distributing the money from banks too when this is required. In a single season, some primary societies might need five tranches of money.

Thirdly, the cooperative society acts as quality check when transporting cashew from primary societies to regional warehouses where the auctions take place. The cooperative union helps the primary society in selecting the trucks to transport the cashew.

Both the primary society and the cooperative union represent the interests of the farmers. Since the cashew stock still belongs to the farmers until the auction,[21] the primary society and the cooperative society both work for the farmers. Inasmuch as it is good that marketing is being centralized to protect farmers, they still need more say in the matter, especially on issues such as jute bags, shrinkage and transportation. There needs to be more competitive suppliers of jute bags and transport. Primary societies should be better educated about managing their finances. During fieldwork, it was hard to sense when all the parties were participating fully. There appeared to be a misconnection between the farmers and the programmes being implemented. Cooperatives unions had the upper hand but provided little room for flexibility regarding the participation of farmers in the

[21] The stock that is in their warehouses is used as collateral for their loans.

whole process. Technicians and other stakeholders need to work together at all stages with the farmers.

The FOB prices of raw cashew ranged from US$ 745 to US$ 900 per metric tonne in April 2010.[22] The indicative price per kg was TSh 800 for the 2010/11 season, with the price received by farmers at the farm gate being a record at between TSh 1501 and TSh 2182 (equivalent to US$ 1.15 and US$ 1.67) (CBT 2010).[23] At the time of fieldwork during the 2008/09 season, the expected price was TSh 675 and the farm-gate price ranged from TSh 700 to TSh 990 (*Ibid*.). This was at the time of the financial crisis and during a period of insufficient rain (*likaba*) which resulted in trees having problems producing fruit. The WRS protected farmers during the financial crisis even though prices were low (Kilama 2010).

Apart from the primary society and the cooperative society, the Cashew Nut Board and the Naliendelee Agriculture Research Institute are crucial stakeholders that assist in the production and marketing of raw cashew in Tanzania. The CBT deals with coordination while the NARI handles innovation and new technology.

Both the CBT and the NARI are facing a number of challenges (see Box 5.2).In interviews, stakeholders commented on the fact that their challenges in improving the cashew industry seem to limit their suggestions and solutions to the particular department they are involved in. The cashew sector would benefit from better coordination if sectoral approaches were adopted and the existence of departmental challenges was acknowledged. The CBT would also benefit from a holistic approach that not only incorporated farmers and research institutions but also processors, who are important stakeholders in the cashew industry. For example, when cashew trees were suddenly attacked by powdery mildew disease (PMD), the research institutions discovered the clones that were resistant to PMD and drought. And when farmers complained about markets for their goods, the WRS was introduced to assist them in production. In addition, taxes were banned to provide incentives for farmers to increase production. As for the processors, the export levy on kernels was abolished in 2005 although the export levy on raw cashew still exists to promote competition locally. One can see that farmers and research institutes have received incentives to encourage production by lowering production costs while the costs for processors remain the same.

For the cashew industry, price and non-price incentives are important determinants of supply. In Tanzania in particular, attention is given to price incentives and little is given to non-price incentives, as price-incentive reforms are easier to implement than non-price incentives. These non-price incentives tend to be struc-

[22] www.CashewInfo.com April 2010.
[23] See Table 5A1 in the Appendix for the prices received in other seasons.

*Box 5.2* Challenges faced by the cashew support system in Tanzania

The Naliendele Agriculture and Research Institute (NARI) faces a number of challenges.

- The government adoption of SAP led to a hiring freeze from the 1990s onwards, which has created an institutional gap that is proving hard to fill. The NARI is faced with an aging workforce and a number of workers with more than 20 years of experience are on the point of retiring. This will result in a loss of institutional memory and no experienced personnel to take over.
- There have been cuts in current budget support to NARI. This has led to the dismissal of more than 60 workers, making it hard to conduct research, and a reduction in working inputs, bearing in mind that all the different stages of growth of cashew need different management and researching each stage of a tree crop takes longer.

The Cashewnut Board of Tanzania (CBT) emphasizes improved efficiency and effectiveness in the cashew sub-sector for different stakeholders. The CBT's main challenge is understaffing coupled with little budget, and it thus often operates only partially due to a lack of tools and machines. This has led to the organization concentrating on day-to-day activities like solving marketing problems. The CBT has had to police cross-border trading since the introduction of the WRS and this has taken resources away from their main task of coming up with strategic decisions to allow for the efficient and effective operation of the cashew sector. The CBT also faces difficulties in tracing goods.

Source: Visits to NARI and CBT in Mtwara, interviews with Dr Shomari, Dr Sijaona, Dr Kasuga and Dr Massawe. Also with the late Mr Mhagama, Mr Simuli and Mr Hanga. Interviews and observations by the researcher as well.

tural constraints like bad roads and lack of access to credit. For the cashew sector to flourish, both price and non-price incentives are required. From 1991 to 2007 this was not the case although some adjustments had been made by 2007 to cater for non-price incentives like the monopsony of traders although some non-price incentives still remain. For instance, since 2007 the introduction and utilization of the WRS has aimed to provide farmers with predictable markets with better and stable prices for their produce.

With limited processing capacity, traders (local processors and exporters) are left to fend for themselves and, ideally, the cashew support system will focus on the farmer. This is barely being achieved in a coordinated manner and in a way that could improve the whole sector, including researchers, processors and desk officers. With such a set-up, low productivity is being reinforced due to farmers' passivity and lack of alternatives for income generation. On the whole, low production by farmers results in less cash/revenue being available for inputs, maintenance and other long-term investments. On the other hand, this generates unpredictable and more expensive raw materials that are required by processing plants.

The WRS was started to protect farmers but has unintentionally ended up hurting them because of not fully rewarding the personal effort involved as too much is being left to chance. For instance, there is a disputed double grading system in

Tanzania; with visual grading at the primary society and scientific grading taking place at the warehouse. Since all the batches from the same primary society are put together, a farmer's final price is influenced by what others bring in. This approach is not fair on farmers or on buyers (processors/exporters) as the batch may be under-graded or over-graded. The combining of cashew from the same primary society at the warehouse introduces the generalized free-rider problem. In such a way, members belonging to the same primary society want to produce just the acceptable quality so that members of the primary society will offer the highest price. And once the cashew is taken to the warehouse for auction, the sample drawn would influence the pay-out of all members of a particular primary society. The unreliability of the quality for bidders and of prices for farmers increases the room for divergence and mistrust among farmers. This kind of a gamble encourages unsupervised negotiations because of a gap in information, i.e. asymmetric information. There is no guarantee for farmers that the cashew of highest quality will receive the highest price.

Even with the WRS, the cashew sector in Tanzania is reminiscent of the Prisoners' Dilemma, where quality remains under-graded and the sector operates in a low equilibrium. This implies that the current set-up of the WRS[24] in Tanzania would improve significantly by allowing the creation of pressure groups to ensure on time delivery of inputs and services and if there was more cooperation between farmers and WRS officials.

The WRS approach favours farmers as the government offers assistance by providing inputs and marketing. Such procedural coordination goes up as far as the auctioning process where the excluded traders and processors are left to fend for themselves. The presence of a majority of traders in comparison with a handful of local processors at an auction implies that the assistance provided to farmers favours other processing industries elsewhere and suggests a significant presence of negative externalities. Having considered the marketing of raw cashew, the next section covers the marketing of kernels and inputs.

*Marketing kernels in Tanzania*

In addition to trading raw cashews, kernels are also traded although at a lower level. According to the Cashewnut Board of Tanzania (2010),[25] 15,000 metric tonnes of kernels were exported in the 2008/09 season, which is less than 25% of the country's raw cashew production. There are two types of processors of

[24] The marketing of raw cashew in Tanzania exhibits characteristics of spot contracting. The WRS and farmers through their respective primary societies do not sign contracts although there is an implicit contract whereby selling through the WRS means that farmers are paid an indicative (± bonus) and provided with subsidized inputs. They have therefore already made investments and so are vulnerable and have to face the catch-up game of waiting. This is the hold-up problem.

[25] See also Table 3A1 in the Appendix.

cashew in Tanzania: small-scale and large-scale processors. Some of the smaller ones are organized in a group like the KIMWODEA Association in Newala or processing simply takes place at the producer's home. For small-scale processors, additional investment is unpredictable as it depends on the good will of people and government. By utilizing their own networks and the personal efforts of group members, KIMWODEA has managed to establish a processing facility.

*Photo 5.2* KIMWODEA's new processing facility in Kitangari, Newala, Mtwara

Small processors are self-initiated groups with affiliations as a result of being related to or living in the same neighbourhood. Small processors depend on urban centres around the country for their main markets. As can be seen in Photo 5.3, the processors simply perform their tasks in the shade of a tree, where the boiled raw cashew are cracked open using ash, a heavy cloth, a pipe as a hammer and a flat nail to protect their fingers. A small curved knife is used for peeling off the testa from the kernel. The quality standards required for exports are too high so small-scale processors resort to selling at local markets. The need to earn extra income initiated the formation of these groups. In 2008 prices received for a kg of kernel range from TSh 8,000 to TSh 17,500 (IS$ 6 to IS$ 13).

*Photo 5.3* Small-scale (local) processing

1. Boiled and dried cashew. 2, 3 & 4 shelling nuts. 5 & 6 peeling off the testa.

Large-scale processing includes processors with a more predictable formal channel of funding who have a plant and hire workers to operate it. Box 5.3 highlights the differences between small-scale and large-scale processors. Bigger processors operate differently (see Box 5.4**)** and use manual and mechanical processing. The majority of the labour force in these firms are women.

Kernels produced by large processors are exported mainly to the US, Europe, Japan, Korea, South Africa and the Middle East although some are consumed locally. Large processors in Tanzania adhere to world standards regarding quality because any registered drop in quality is punishable by a negotiated reduction in price. The price falls steeply with every drop in standard. For example, Whole Whites fetch the highest price, W320 was selling for US$ 6283 and W240 for US$ 6724 in April 2010, while SW 320 had experienced a 14% reduction in price compared to the W320 (see Chapter 2). Interviews with processors confirm that none of their consignment had ever been rejected but when there is a perceived lower grade, the price initially agreed on is negotiated downwards.

*Box 5.3* KIMWODEA, a small processor operating in Tanzania

KIMWODEA (Kitangari Mivinje Women's Development Association) started operations in 1996 with 15 founding members. Today the group has 40 members, half of whom are aged between 30 and 40. The association started with a restaurant and weaving business and then 8 of the members were sponsored by the district office to attend a cashew-processing course in Mbinga about 500 km from Newala. When they returned, some members gave up and others started cashew processing seriously, with Mtwara town as their main market. One kg of processed cashew fetched TSh 10,000. As demand increased, the group needed to produce more.

It operates in groups of five, with each doing similar work but before the cashew are divided among the members, the raw cashew are boiled and then dried in the sun. Each member is given a 20-litre bucket of raw cashew to shell and peel and then prepare for roasting in large covered pots for varying lengths of time. After the cashew has cooled, grading follows and the whites and slightly brown ones are separated. The cashews come in different sizes: large, medium and small. The group prefers processing large cashews as they fetch a higher price. Kernels are packaged in 1.5 kg plastic bags that are then ready to be sold. The group regularly participates in agricultural exhibitions in Mtwara and Dodoma.

The biggest challenge facing the group is access to credit that would allow them to buy machines and tools. The CBT assisted the group in making bags with logos on them but it is crucial that small processors are linked with reliable tools and machines, such as machines that add gas while packaging. The president of the association laments the fact that if the group uses any other bags, the kernels start sticking to each other within a month. Using the correct packaging prevents this and the kernels can then remain fresh for up to six months.

Source: KIMWODEA Chairlady-Newala small-scale processing, interview by researcher.

*Box 5.4* Formal processors' operations in Tanzania

Processing enterprises started from trading or were previously government owned. Manual processing is common but mechanical processing is also used. Labour (or fuel in the case of mechanical processing) and power are the main costs involved in the production of raw cashews. Local women make up most of the work force and are in charge of shelling, peeling and grading. Machines used for cutting usually come from India, Vietnam or Italy although a few locally made spare parts and packaging materials are now available.

The processors face several expensive challenges. First, they have to compete with exporters to buy cashew at auction. Second, they have to store the raw cashew for a whole year. Coupled with this is the inconsistency in the quality of the raw cashew. And last but not least, poor infrastructure, in terms of roads, disruptions to power and water supplies, are major problems. Of all these issues though, the lack of affordable credit is the biggest challenge.

Source: Visits to PCI, BUCO and OLAM processing plants in Dar es Salaam and Mtwara. Interview and observations by the researcher.

The processing industry in the cashew sector in Tanzania was set up to utilize excess raw cashew, a forward linkage. In early 1970s where production of raw cashew was increasing, the World Bank assisted Tanzania in installing processing capacity as seen in Chapter 3. Creating capacity in Tanzania has remained a challenge due to stiff competition from more developed processors in India that

are able to offer a better price than local processors.[26] This implies that, to have a flourishing cashew industry in Tanzania, a strategy for competing with the Indians is needed (Chapter 3). The availability of credit is a constant demand from processors who find raw cashew more expensive given the competition from foreign traders and the additional transactional costs incurred by the WRS. Since local processors are competing with foreign traders to obtain raw cashew, it has become costly to store a year's stock.

There is a weak link between farmers, traders and processors which leads to an unbalanced value chain. Upstream actors are very strong both in terms of power and money and thus operate in a captive manner. The sector operates inefficiently as each actor has their own role to play without necessarily complementing the performance of the whole sector. As indicated earlier, this type of set-up means that domestic processors lose out to foreign processors, and so ultimately does the whole sector.

*Marketing of inputs in Tanzania*

As far as the marketing of inputs is concerned, the inputs required for cashew production include seedlings, fertilizer, pesticides and tools. In a disease-ridden area, pesticides and fungicide are crucial. As seen earlier, the need for pesticides and PMD-resistant seedlings occurred after the long-term neglect of farms. Furthermore, during liberalization, there was not enough supply response created in Tanzania and traders became more interested in buying raw cashew and less interested in supplying pesticides and fungicides. Due to the limited supplies of inputs over the years, the government intervened and started the District Input Fund in 1993. The current monopoly of input supply through the fund emerged as a solution to the lack of sufficient traders. There are several traders who sell inputs through registered shops in the district or at small kiosks in village centres. The latter, though considered illegal and labelled *walanguzi*, assist small farmers who cannot sell their limited harvests through the WRS. *Walanguzi* also sell inputs from Tanzania and Mozambique.

Regarding the utilization of new methods, an agronomist from NARI observed that only '50% of the innovations developed reach cashew farmers in Tanzania'.[27] The Cashew Development Centres (CDCs) were developed through the integrated cashew management programme to improve communication with farmers who still go to the CDC when they encounter problems. There have been observed improvements but challenges still remain in reaching farmers with new varieties.

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[26] This is made possible by strategies set up by their government that banned exports of raw cashew and rewards the importation of raw cashew.

[27] Interview with Dr Louis Kasuga, 17 November 2008.

*Concluding remarks*

This section on marketing in Tanzania has shown that raw cashew and inputs are centrally traded, while kernels are traded under free market conditions both locally and on foreign markets. There is free trading in cashew and inputs through *kangomba* and *walanguzi* but these practices are considered illegal although they are still widely used.

This chapter also discussed the current operation of the WRS and the different challenges facing the system. It is important to note there have been many radical policy reversals in Tanzania. Whether centralization, private traders or re-centralization, these reversals have led to destabilization and the peasant has always been side-lined. The set-up has allowed for temporary bursts, erratic trends in production and low yields as seen in earlier chapters. These radical changes in policies have affected the institutional set-up of the sector. A common feature that is observed regardless of the policies is that the peasant is treated as being on the margins. Farmers have little room to manoeuvre because of the predetermined use of land and the residual payments received that aggravate their situation. In Tanzania, land belongs to the state, as does the decision to grow crops. This allocation of crops started when Tanzania (then Tanganyika) was under German rule and plantations were established in order to have strategic raw materials to satisfy demand and prevent being dependent on the US.[28] Though the Germans started with cotton, sisal, rubber and gold as strategic exports, other goods were also produced.[29] Peasants continue to use the land in accordance with directions provided by the state, a practice that started during colonialism and was never abandoned by the government after independence. The fact that the state regulates the use of land[30] provides limited freedom for peasants. This and earlier work[31] in Tanzania show that when fixed costs per unit go up, the farmer bears most of the burden. In addition, controlling rising mark-up costs[32] by prohibiting peasants from doing what they please is a challenge. Farmers are left with little flexibility and abandon or only hastily tend their farms when prices collapse. Quality then suffers as farmers receive lower-than-anticipated prices as payment only occurs after all the associated marketing costs have been deducted by the trading coordinators. With residual payments, an increase in price does not translate directly into an increase in the quality of the output produced but instead enhances the production of lemons. The power to defend their interests is taken

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28 Rweyemamu (1973: 15).

29 Rweyemamu (1973: 15, Table 1.3). This went hand in hand with the appropriation of prime land for Europeans settlers and non-strategic cash crops, such as sisal, cotton and rubber, were allowed to be traded by Africans. In the south, there were retaliations like the Maji Maji War of 1905-1907 that led to less intervention by European rulers.

30 Shivji (1998).

31 Ellis (1979) and Westergaard (1968c).

32 The evidence is presented in Table 3A3 in Appendix III.

away from the farmers, leaving them passive and with little motivation to increase productivity through new innovations as everything presented is pre-packaged. As farmers in Tanzania earn most of their income from cashew, there is little flexibility with regards to choice in years of a bad harvest or low prices. There are campaigns urging farmers to tend their trees as required and not to cut trees down. Big farmers have resorted in finding their own marketing solutions within the existing system. A genuine concern is the current trend of having big farmers forming their own associations like UWAKOTA, UWAKONE and WAKOMA with the implication that transaction costs by the likes of the WRS for those not in such groups will increase tremendously and defeat the reason for setting up the system originally. Having the big farmers using WRS for auctions alone threatens the existence of the system as a whole because running the WRS with small farmers alone will definitely fail. Large-scale farmers can afford to wait for the trading season to buy any required inputs and to operate their businesses. For instance, big farmers like UWAKOTA[33] have opted out of taking loans from a bank, which demonstrates the huge differentiation among farmers in Tanzania as small-scale farmers do not have power to defend their own interests. By implication, the observed rises and falls in production are mainly due to the changes encountered by the big farmers and not the smaller-scale farmers.

With already limited flexibility, this situation has worsened given the fact that the anti-poverty programmes are geared more towards social sectors and not the productive sectors. For instance, the first Poverty Reduction Strategy Paper (PRSP) completed ignored agriculture and concentrated on social sectors like education and health, rural roads and macro-economic stabilization.[34] Micro-level interventions were not considered. Unfortunately, increasing output and productivity are becoming a challenge as peasants are limited regarding credit for inputs.

This section has shown that policy adaption in Tanzania is aimed at improving the peasantry in isolation and not the sector as a whole Using contrasting economic history, this chapter has shown that a pure market with no state involvement implies no research or extension will be provided. The state is a contradictory phenomenon. Cooksey (2003) argued that partial liberalization was a hindrance to expanding production and a nuisance to farmers in Tanzania. Prices would allocate resources provided that there is formal coordination to overcome inefficiency. The case of Tanzania shows a vicious cycle where quality is vital but little or no effort is made to maintain it. During the multi-tiered system, quality was checked but then raw cashew were mixed with all the stock from mem-

[33] There is a stronger differentiation among farmers in Tanzania. UWAKOTA and similar organizations find solutions with regards to marketing for farmers.

[34] URT (2000).

bers of the same primary society regardless of the efforts put in by an individual peasant. Accumulation that would lead to poverty reduction or eradication thus becomes the main challenge. And again, there is a challenge in the processing sector which has seemed to be considered an outsider with little support.

## Vietnam

After seeing how cashew marketing operates in Tanzania, the next section discusses the proposition that an industrial strategy has reinforced performance in Vietnam. Market coordination is not necessarily the dominance of the state or the market but rather the complementarities that need to be undertaken to ensure the improved performance of a sector as a whole. Government intervention may lead to expansion associated with or the contraction of the sector. As seen in Chapter 3, the cashew sector in Vietnam has experienced two kinds of marketing. Before *Doi Moi* in 1986, there were cooperatives and now there are private traders who are the main buyers of raw cashew from farmers. The two kinds of marketing have treated the farmer differently, with the former a farmer was paid by residual payment with limited flexibility and the latter is as a core with more flexibility.

### *Adaptive efficiency in marketing cashew in Vietnam*

Coordinating the cashew sector in Vietnam has been solved by adaptive efficiency[35] strategies that seem to be able to adjust to the changing environment and incentives. Strategic policy allows room for innovation, adaptation and efficiency in Vietnam. By encouraging the involvement of (many) other stakeholders, this leads to efficiency. With numerous players at all levels, the system keeps itself in check and everyone benefits. There are many traders for inputs and output. Production in Vietnam is on a large scale so the flourishing processing industry, with a turnover of over US$ 1 billion annually keeps both the government and the processors on their toes.

One of the main strategies undertaken was to have the country's industrial policy backed by a poverty programme. Anti-poverty programmes in Vietnam are linked to the productive sectors and for the cashew sector there is processor-led development. The policy considered setting up processing capacity first, then creating production by using imports and finally accessing raw materials domestically through backward linkage. Adaptive flexibility within the strategic boundaries became more effective in organizing the market. Research on processing has been undertaken since the early 1980s, with the hand-and-leg shelling machine being most popular in processing plants in Vietnam. This has created

[35] North (1998: 88). Adaptive efficiency is key to long-term growth. The more an organization allows for trial and error coordinating and leveraging resources, the greater the potential productivity will be of any given set of resources and the attendant prospects of successful action (Penrose 1959).

employment for young men and women in factories. To increase production of raw cashew, as seen in Chapters 3 and 4, mainly poor farmers from the North were provided with land and credit to cultivate raw cashew in the South. This generated further employment. With limited land in the north, landless farmers were encouraged to migrate to the South. A processor in Dak O detailed how the people from the North have been accommodated:

> Before having cashew, *stieng* (minority people) were very poor. Some workers in my company are *stieng* people. They are now cashew workers instead of picking Nhip leaves and digging bulbs of bamboo trees. Actually, they have to take care of their gardens (during) the harvest season (this affects the supply of labour at my company). Once cashew is sold, we shell them thus *stieng* need not go to forest to pick Nhip leaves and dig bulbs any more (...) Every hamlet has a small factory for *stieng*. When they are better, I will have a skillful team. There are many *stieng* people in my locale; (unfortunately) no one has trained them. [36]

This lead to a more equal land allocation utilizing land-saving techniques, while the engine-powered machines shown in Chapter 4 have led to increased productivity and yield in the sector. Actors, i.e. farmers, traders and processors, have a strong linkage and operate in a balanced value chain. Traders have mainly been employed by processors and play a mediating role between the farmer and the processor. This requires good coordination.

All actors in the sector face hold-up problems. With Vietnam putting processing capacity at the centre of its cashew sector, this implies that processors are more vulnerable. Initial processing was made possible by importing raw cashew and having a domestic supply. There are many local traders and processors (upstream actors) in Vietnam, and enough to provide competition in the domestic and foreign raw cashew market. Easy means of communication have made competition stiffer among traders than in previous years. 'Yes, in the past, it was convenient for trading because traders had not appeared much. five years ago, prices were almost stable; I made sure I did not incur losses. Then, traders didn't have cell phones so they couldn't contact each other quickly like now. Traders decide by themselves about the price of cashew nuts to offer.'[37] This is how it happens. A farmer who produces cashew can receive either a high or low price and if he receives a high price, he can decide whether to take action or not. The same applies if a farmer receives a lower price. Farmers' actions range from continuing to produce cashew to switching to an alternative crop or neglecting or abandoning their farms, which are forms of inaction. In Vietnam, both farmers and processors invest in cashew, just like their Tanzanian counterparts, and so encounter a hold-up problem. Figure 5.3 illustrates how the Vietnamese cashew market operates. For simplicity's sake, it is assumed that there are only two types of players: a farmer (F) and a processor (P).

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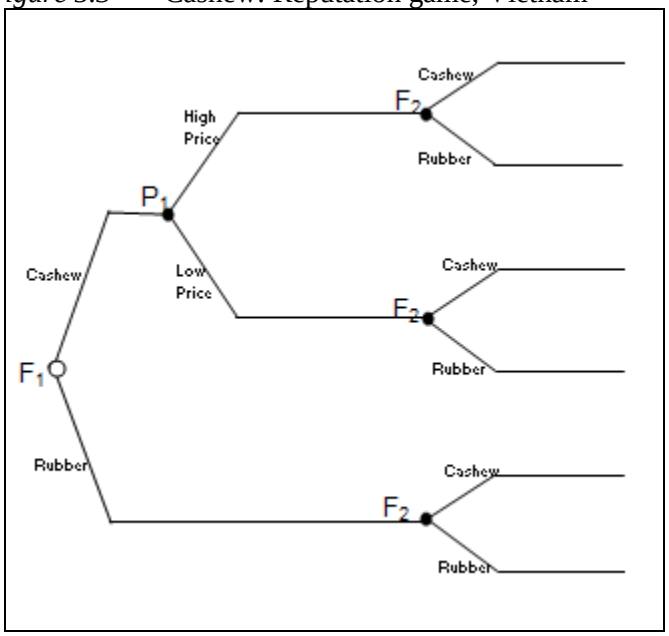
[36] Interview with a trader from Thuong Hoai, 29 January 2010.
[37] Interview with a trader from Thuong Hoai, 29 January 2010.

*Figure 5.3* Cashew: Reputation game, Vietnam




A farmer has a choice of producing either cashew or rubber and a processor can pay a high price or a low price for any cashew produced. In this sequential game, the subscript (n) shows the season. Thus $F_n$ means a move by farmer in season (n) while $F_{n+1}$ means, a move by farmer in season (n+1).

The first move is made by the farmer ($F_1$) who decides to produce cashew or rubber. The second move is made by the processor ($P_1$) who can offer a high price or a low price for the cashew produced by the farmer ($F_1$). However, no offer is made by processor ($P_1$) if the farmer produces rubber. The third move in the second season is made by the farmer ($F_2$) who has the option of producing cashew or rubber, informed by the prior action in the first season (known knowledge) of the processor ($P_1$). If the processor provided a high price in the first season, the farmer ($F_2$) in the second season has the option of producing cashew or rubber. And if a processor provided a low price in the first season, the farmer ($F_2$) in the second season still has the option of producing cashew or rubber. And thirdly, even if the farmer ($F_1$) in the first season opted for rubber, the farmer ($F_2$) in the second season still has the option of producing either cashew or rubber.

As this is an infinite game, farmers in seasons {1, 2, 3 ... n} will produce cashew if, and only if, cashew offer a relatively higher profitability than rubber. In this reputation game, the processor wants the farmer to produce cashew and for this to happen, the processor has to pay a high price to entice the farmer to continue producing. Otherwise the farmer will take an alternative action and switch to rubber production if processors do not pay enough for raw cashew. This solution offers a high equilibrium because both the processor and the farmer

know that this interaction is endless and so the processors would have to continue to offer a high price.

Increases in processing capacity and domestic production in Vietnam have meant that the sector has flourished, with processors preferring local raw cashew. A processor in Dak O reported her buying preference as follows: 'In my locale, cashew not only has a good quality but also fetches a high price. They're always more expensive than cashew nuts from Phuoc Long by about VND 1000 per kg (difference). Because of their good quality, I don't want to buy from any other place. Cashew trees in my locale have the highest quality within the Binh Phuoc Province.'[38] Producers, i.e. upstream actors, offer a good price to encourage domestic raw cashew production. Farmers in Vietnam often choose to uproot their cashew trees following a period of low prices. For instance, the global fall in the price of raw cashew in 2000 affected farmers in both Tanzania and Vietnam but they reacted differently. Farmers in Tanzania continued to produce cashew following a season of high prices and started to neglect their farms after being paid a low price. Farmers in Vietnam continued to produce cashew following a season of high prices and switched to other crops after a season of low prices. Box 5.5 shows the important flexibility provided by rubber and pepper in Vietnam.

*Box 5.5* Rubber and pepper

Switching is made possible by accumulated savings from cashew and pepper. When farmers switch crops, they lose their cashew trees but can use some of the same tools if they change to rubber. The first harvest from rubber comes only in the fifth year. Farmers' preference for rubber is due to the fact that it can be harvested every other day for nine months, unlike cashew that is harvested only once a year. Maintaining rubber and pepper is more costly. A rubber tree gives about 0.5 litre of rubber and a hectare will have about 500 trees. A hectare of pepper has between 1100 and 1200 plants and about 6000 kg can be harvested in total from each ha. One kg of rubber sells for VND 16,000 while one kg of pepper goes for VND 195,000.

Mr Duy has five people in his household and they have 10 ha of land: 3 ha are under rubber, 3 are under cashew, 3 more are under pepper and the other has fruit trees on it. The household earns VND 400 million annually from their 3 ha of rubber and make a monthly profit from pepper of about VND 70 m. Income from cashew reduces poverty but rubber can make the same farmers rich.

Source: Mr Duy of Duc Lap. Interview by Hai, Hoa, and the researcher.

The switch between cashew and rubber is not a simple one. Even with the limitations of sunk costs, the cost of foregone income is spread over a period when uprooting is undertaken in stages and producers can fall back on pepper

[38] Interview with a processor, Nguyen Thi Tho of Minh Tho Private Company, 29 January 2010.

*Photo 5.4* Rubber and pepper

and their savings. This switch suggests a lower elasticity. Graphs 5A3, 5A4 and 5A5 show that the production of rubber is not only a recent phenomenon but picked up around the year 2000 and has been steadily increasing ever since. This flexibility is shown in Box 5.5 and allows for a more balanced value chain. When prices collapse, farmers have a flexibility to switch step by step to rubber backed by pepper. The choice provided by alternative crops means that farmers do not need to be as badly affected by the hold-up problem. In a sense, peasants are counter-balancing poverty programmes and ownership value.

In Vietnam, the processor-led development of cashew was made possible by the presence of an effective industrial strategy. The cashew sector integrates all actors and, being inclusive, it operates as an out-grower system with coordination overseen by VINACAS. The next section illustrates how farmers and processors interact.

The smaller traders offer lower prices and collect the produce from the farms, while the bigger traders offer better prices but the farmers have to take their produce to them. 'I buy cashew from farmers in our hamlet, in Dak O (ward). If cashew nuts are still raw, farmers will bring them to me, otherwise, I will go to their house. If it's over 5 (or) 10 tonnes, I will hire a tractor to do that.'[39]

When looking at the cashew value chain in Vietnam, four main actors can be identified: farmers, traders, processors and exporters. Farmers sell their cashew to traders who then sell them on to processors. Some of these processors main-

[39] Interview with a trader from Thuong Hoai, 29 January 2010.

*Photo 5.5* A farmer taking raw cashew to a trading centre in Binh Phuoc


tain a special relationship with the traders by either hiring them or offering them credit. Differentiation in the prices offered to farmers depends on whether they sell dried cashew or normal raw cashew. Dried cashew fetches a higher price. No further grading is done and all the cashew bought are paid for in full. 'I don't grade. Minh Tho company (a processor) grade by machine, rank A, B, C'.[40] This is different from in Tanzania where there is a price differentiation by grade.

*How the market works*

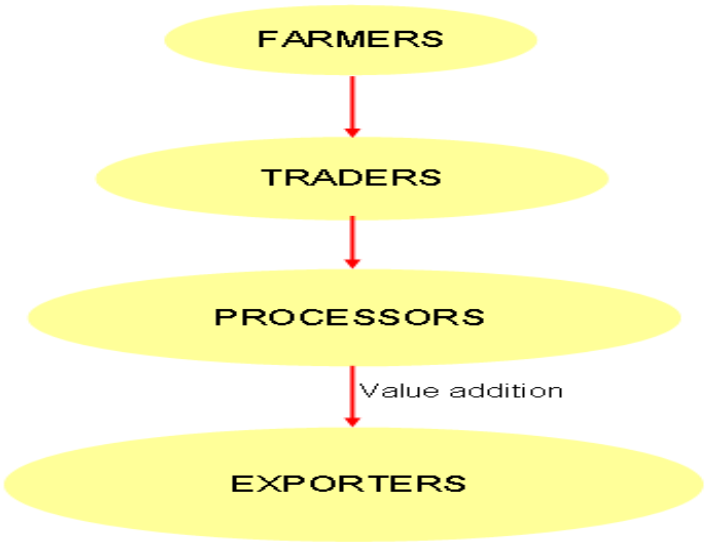
Trading on Bugimap follows the value chain indicated in Figure 5.4, where there are many players at all stages. Small-scale traders either visit farmers at home or on their farms to buy cashew. Alternatively, farmers will take their (sometimes dried) produce to traders at the village centre where the cashew is weighed and the farmers are paid in cash. Raw cashew is sold for VND 17,000 and dry cashew for VND 19,000.[41]

Farmers work in groups. For instance, Tien Hung, a farmers' association follows the Syngenta[42] model that allows them to earn more from the increased pro-

[40] Interview with a trader from Thuong Hoai, 29 January 2010.
[41] Interview with a trader from Thuong Hoai, 29 January 2010.
[42] The Syngenta Model encourages increased productivity and income for small-scale farmers by assisting in innovation to increase yields and support value added technologies.

ductivity of raw cashew and processing. Elsewhere in Binh Duong, farmers have formed farmers' associations to access credit to purchase inputs.[43]

*Figure 5.4* Cashew marketing in Vietnam




Source: Author

At a second level, smaller traders sell cashew to bigger traders within or outside the commune. Some of the traders are even hired by the processing plants within the community.[44] There are different relationships between traders and processors as can be seen from the following. 'I (Luong Thi Hoai) and Minh Tho are relatives, so I only sell cashew to Minh Tho. Only when they are full, I sell to others.'[45] The traders' capacity differs according to the amount of credit they have for each consignment. Traders that are linked to processing plants also sometimes work as staff at those processing plants. 'From the beginning to the end of the season I can handle 8 tonnes per day on average, (but) in the middle (of the season) demand is higher. For instance, in the middle of season, there are a lot of cashew nuts so Minh Tho Company (the processor) is often late in paying, about a day or two days.'[46]

[43] Visit to Binh Duong, November 2010.
[44] Doan Nghiep Tu Nhan Minh Tho in Dak O is the only processing plant in Bugimap. There are more than 300 processing plants in Vietnam.
[45] Interview with a trader from Thuong Hoai, 29 January 2010.
[46] Interview with a trader from Thuong Hoai, 29 January 2010.

*Photo 5.6* A typical trading centre in Binh Phuoc


*Box 5.6* Processors' operations in Vietnam

*Medium-sized processors (AMYCO), Long An and Thuong Hai, Bugimap*

AMYCO is a family business that started 12 years ago as a trading company. It has always had a Quality Control Team (QCT). It has slowly moved into processing and currently has three branches. With about 100 workers, the company only processes about two or three tonnes of raw cashew a day. In March 2010, the company was operating at full capacity and processing 20 tonnes a day. This is equivalent to about 500 tonnes a month and 6000 tonnes a year. When the company receives more orders, two shifts are implemented. Workers involved in shelling and peeling are paid piece rate, while those in QCT are paid a monthly wage. Cashew is used as collateral at banks.

During processing, the raw cashew accounts for more than 50% of the total costs, followed by labour. 30% of the cashew is bought initially and more is purchased later due to a lack of storage facilities.

*Large-scale processors (HA MYI Co Ltd:HAMYCO) and (MY LE), Binh Phuoc*

Processing started five years ago in a number of factories. One processor has four factories with a fifth due to open soon (thanks to Japanese support). The company mainly processes raw cashew and tapioca. The owner was a cashew farmer, then a trader and finally moved into processing. The other company has its own cashew farm.

Though new to processing, the company has more than 1000 workers, producing 30 tonnes per day. 40% of their exports are sent to China and the rest goes to Hong Kong, the Philippines, South Korea, the US, Australia, Europe and Japan.

The processing capacity of the other company, with about 1000 workers, was around 50,000 tonnes in 2009.

Source: Visits to Thuong Hoai, AMYCO and HAMYCO processing plants in Long An Province and Binh Phuoc Province. Iinterview and observations by the researcher.

Thirdly, processors may buy their raw cashew from traders. It is common for processors to work with several traders with whom they have established a good working relationship. These traders then buy raw cashew as part of their job and supply processors. Such traders are subcontracted and receive funding from the processing plant. These differ in size. Large processors have a capacity of more than 10,000 tonnes per year; while medium-sized firms have a processing capacity of between 5,000 and 10,000 tonnes annually with a daily average of about 20 tonnes. Box 5.6 shows how processors operate in Vietnam.

*The support system in Vietnam*

Various economic reforms (*Doi Moi*) were undertaken in Vietnam in the mid-1980s in an attempt to move to a more incentive-led approach among producers and stakeholders. *Doi Moi* prioritized the implementation of three economic reforms concerning food staples, consumer goods and exports (Tri 1990). A ccomprehensive reassessment of policies related to agriculture and peasants was one of the measures planned to improve the relationship between the state and producers (*Ibid*.). In addition, the law relating to land gave ownership to the people (Wurfel 1994).[47] The *Doi Moi* reforms increased incentives for production, allocated land to farming families and limited the role of cooperatives.

Most of the initiatives in Vietnam came from producers, with some flexibility being provided in the on-going reforms. The call by *Doi Moi* to improve productivity was made possible by the efficient supply of farm inputs and the improved relationship between the state, farmers and other technicians.

Since *Doi Moi* and market reforms, farmers have had economic freedom regarding what and how much they produce. This offers producers more power as to what they produce but does not imply that the state takes a leading role. It is the farmers, followed by the producers, who have the power. For instance, the collapse of prices in 2000 saw farmers switch to rubber in Vietnam (see Graphs 5A3 to 5A5 in the Appendix). This was possible due to their accumulated savings and the fact that pepper provided flexibility for farmers to switch between perennial crops (cashew to rubber) regardless of any previously incurred sunk costs.[48] Despite the continued importance of cashew in Vietnam, alternative

[47] The Politburo's resolution on renovation aimed at creating a new driving force to develop agriculture by creating favourable conditions for individuals and private sectors to develop production, processing, services and other trade in agriculture. In this resolution, only cooperatives that were operating profitably were retained and the rest of the land was given to work-exchange teams or private holdings. Peasants started acquiring land as the resolution encouraged them to have as much as they wanted. Protests followed and this led to the Politburo's Directive No. 47 that was set up to assist in settling all land-related disputes in the South.

[48] Fieldwork was done from December 2009 to January 2010. Phone interview with Mr Duy, 23 November 2011. Cashew was commercially introduced in the late 1980s, while rubber became widely popular after 2000. See Graphs 5A3 to 5A5 in the Appendix that show the trend in the production of

crops and flexibility ensure that farmers receive a high price. As Graph 5A5 (see Appendix) shows, there is an increasing trend in the harvesting of rubber, while that of cashew is rising at a slower rate.

As a result of improved relations with farmers, the state has a set-up that provides inputs (seedlings and pesticides). This relationship with the state is linked to that with processors and involves assured markets for farmers. The smooth coexistence between the state, farmers and processors has meant that for the state to continue receiving foreign exchange, it has to support both the farmers and the processors.

Processors however need to make a profit to continue production and have to keep down their costs if they are to enjoy better profit margins. The costs associated with processing are mainly raw materials (in this case, raw cashew) and labour. Processors require a supply of raw cashew throughout the year and it is cheaper to obtain raw cashew from domestic sources than to import it. Given the benefits accrued from the local supply of raw material in Vietnam, upstream actors attract downstream actors by offering a good price for their raw material. For this reason, processors are obliged to pay farmers a good price to ensure that there is a constant cheap supply of raw cashew from a local source. They know that farmers have the freedom to switch to other crops that are seen to pay better.

Maintaining a high level of productivity requires incentives for farmers to continue producing raw cashew. It is cheaper to use local raw cashew than to import from elsewhere. Thus if the processing industry is to continue to flourish, they not only need to lobby and convince the government to provide better varieties, affordable inputs and tools for farmers but also to provide good price incentives for farmers. Better varieties produce more output and are more resistant to disease. The government plays a significant role coordinating research institutes and farmers to ensure that the processing industry is well served.

Farmers that dry their cashew earn higher prices. They do not become entangled in any of the issues related to grading as whatever is sold is paid for in full and it is up to the processors to grade the harvested cashew. In addition to supporting research to provide improved varieties, the government indirectly ensures high-quality cashew is produced. For example, a trader describes how local government is involved: ‘I’ll report to the police and Minh Tho Company any person who sells cashew nuts of bad quality. And then we force them to pay a fine. It happened in the past. Now, they don't do that anymore.’

Given the scale of the operations and the economic freedom in Vietnam, farmers, and then processors, have the most power. The state plays a coordinating role and is left to provide incentives, while the operation of the whole sector is mainly

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rubber, areas harvested and leading producers of rubber. Vietnam is still not a prominent player in this area.

in private hands and these players determine the rewards farmers receive and. in the end, earn foreign exchange for Vietnam. The presence of price and non-price incentives shows the influence of positive externalities, as was observed by the Vice Chairman of VINACAS (see Box 5.7).

This section on marketing has shown that both countries have non-complex networks for cashew where there are only a few steps from production to the final product. Most of what is produced is for export. Output from Tanzania and to a lesser extent from Vietnam still needs value addition, i.e. processing, roasting and flavouring before reaching its end consumers.

*Box 5.7* Keeping the support system in check

Our success came because we care about our farmers, traders and processors, as there has to be collaboration and coordination with all the actors involved. The government must have the proper mechanisms in place to provide guidance. It should not be directly involved but communicate with and provide knowledge to farmers. The more knowledge there is given to farmers, the more power they have. There is a real need to increase productivity as we lack additional land so more technology and know-how have to be provided to farmers. In a way, the government invests in farmers and the farmer decides the price. The government invests in research institutes that then provide new (free) varieties that are more productive and disease-resistant. The government also subsidizes inputs and supports the agricultural bank that provides low interest rates for credit. And last but not least, the government invests in infrastructure, electricity and transportation.

Even with all this investment, farmers' returns need to be good to encourage them to continue producing. Farmers receive nearly 75% of the price as there is no middleman. Though the cost of maintaining cashew trees is lower than other trees, farmers' total profits are about US$ 1000 and if they earn less than US$ 3000 per ha they will likely switch to other crops.

Source: Vice Chairman of VINACAS / Director of Tan An Company Mr Nguyen Duc Thanh. Interview by the researcher.

The support systems in Tanzania and Vietnam differ, as do the value chain segments. Farmers in Tanzania are provided with inputs through the District Input Fund and outputs have been sold through the centrally controlled WRS since 2007. There are few players in input provision in Tanzania and a single legally recognized buyer of cashew. In Vietnam, inputs are sold at village markets and output is bought by traders who then sell it to local processors. There are multiple players in the provision of inputs and output trading in Vietnam.

*Understanding Tanzania's performance*

From the above discussion, three points can be highlighted to explain production performance in Tanzania.

- Weak coordination among the different actors has led to exclusive interventionist approaches and radical reversals in policy. These top-down solutions with negative externalities relying on standardized messages that allow the state to be both a regulator and performer are overwhelmingly evident.
- Price fluctuations coupled with a lack of economic freedom have led to neglect or the abandonment of farms in periods of low prices, with quality suffering the most. Farmers have been left in the margins and continue to receive residual payments.
- Coordination by the state contradicts and restricts the efficient involvement of other actors. Coupled with this, a poorly funded support system means it is difficult to pass on innovations to farmers.

*Understanding Vietnam's performance*

Three different points explain Vietnam's production performance.

- Economic freedom: the power is with the farmers who can choose what to produce (cashew, rubber or pepper) and how much they produce.
- Economies of scale allow for market clearance prices that satisfy farmers and processors with support from the government and research institutions. The continued high prices imply that raw cashew production is both of high quality and quantity. The reputation involved provides conjuncture between raw cashew and processors.
- Coordination by the government goes beyond what meets the eye. Adaptive efficiency: Vietnam has only liberated its economy and not its politics, and decisions are still taken centrally by the Communist Party.

The nature of implicit contracting determines the overall performance of the sector. Radical reversals of policies in Tanzania have resulted in low quality and quantity, while adaptive efficiency in Vietnam has resulted in high quality and high quantities of raw cashew.

## Conclusion

Vietnam looks at policy holistically and differently from the intrusive Tanzanian state and is seeing improvements in production, productivity and the well-being of its citizens. Tanzania's position has not improved and there are still noticeable erratic changes in production, no or even declining changes in productivity and stagnating well-being.

Marketing in Tanzania has resulted in low-quality produce and low prices. This means that hold-up works adversely in Tanzania with farmers being locked in a Prisoners' Dilemma that leads to a low-productivity, low-quality equilibrium. In Vietnam, however, adaptive efficiency has resulted in farmers producing high-quality produce and high prices being offered by processors. This means that in Vietnam, hold-up is not only confined to cashew producers but also applies to cashew processors (with their own sunk costs) who have to confront the

fact that farmers may opt out of cashew in favour of a competing crop (rubber). This is a credible threat and thus promotes a balanced value chain focused on higher productivity, yield and quality.

It used to be believed that for Africa to develop, it had to mimic institutions like those in place in the West.[49] This literature, as Tendler (1997) pointed out, tended to draw conclusions in support of the superiority of market forces for solving government and economic problems and even poverty. Seeing the free market working in Vietnam, this case study of cashew has shown that a lot happens behind the scene that can act as a catalyst to enhance the entire sector through adaptive efficiency. Freedom of choice for farmers provides alternatives and is a credible threat to processors. While involvement of the state with the inclusion of a single stakeholder and the exclusion of the others restricts expansion of the entire sector, as is the case in Tanzania. Vietnam shows that markets that are strategically supported by the state perform better.

Cashew is more a cash crop by name or default in Tanzania as farmers who produce it seem not to be in control of their own efforts. Residual payments to farmers in Tanzania discourage an effective or efficient reduction in the transaction costs associated with marketing. Credit is important for maintaining trees and money is needed not only to buy inputs but also to hire labour and tools. The compatibility of machines between cashew and rubber allows farmers in Vietnam to escape the fallacy of sunk costs. Cashew farmers in Vietnam are gradually switching to rubber with the help of earnings from pepper and their own savings.

When looking at the Tanzanian case, it is easy to single out the involvement of the state as an impediment to the expansion of the cashew sector. The Vietnamese government is also heavily involved in the cashew sector and provides new varieties, improved roads, electricity, and research and development, and also regulates standards for processors. A strong state with a strategic industrial policy provides a favourable environment for the private sector to operate in and allows adaptation to new environments in a sustainable manner. In Tanzania, the state allocates resources to minimize the costs of production for only one group, i.e. the farmers in the short term, with limiting multiplier effects. The marketing of cashew and inputs in Tanzania is centralized, with the state playing a leading role. The market for kernels has, however, remained on the free market, while raw cashew, kernels and inputs are all on the free market in Vietnam.

The issue here is not the involvement of the state *per se* but rather the role it plays. When the state operates as a catalyst and involves other stakeholders, backward linkage through vertical integration and economies of scale are encouraged. But when state investment seems to provide incentives that support only some stakeholders, i.e. forward linkage, this limits the benefits to those stake-

[49] Ellis (2011), Booth (2010) and Tendler (1997).

holders and results in diseconomies of scale for the entire sector. The latter acts, in fact, as a subsidy to foreign actors in the cashew value chain that are happy to obtain raw cashew and process them elsewhere. This loss of added value via other stakeholders can be tapped if the state reorganizes its processes and offers incentives to all stakeholders involved in cashew production. The case of cashew shows that 'the specification of the market mechanism is essentially an incomplete specification of a social arrangement' (Sen 1985).

The support system for cashew in Tanzania faces challenges, especially regarding resources and insufficient and aging staff. The inability to create a strong private sector forces the support system to act defensively and provides little to no room for manoeuvre with regard to the provision of inputs. There has never been a supply response regarding inputs but the support system should seek ways of increasing competition among the providers of inputs, like jute bags and transport, and transfer some power to the farmers. There is the threat of farmers wanting to form or join groups like UWAKOTA[50] that would make running the WRS and the distribution of funds more difficult.

In Tanzania, spot contracting works through centralized marketing and results in low-quality produce and low prices. This means that hold-up in Tanzania works adversely, with farmers being locked in a Prisoners' Dilemma, which leads to a low-productivity, low-quality equilibrium. In Vietnam, on the other hand, relational contracting has resulted in high-quality produce by farmers and high prices being offered by processors. This means that hold-up there is not only confined to the cashew producer but also applies to the processors who have to confront the threat that farmers may opt out of growing cashew in favour of a competing crop, such as rubber. Promoting relational contracting is thus focused on higher productivity, yield and quality.

The problem of spot contracting is solved by creating trust, which is cemented through reputation. The issue of trust in Vietnam is at a different level. With economies of scale, farmers who already have economic freedom need to be paid fairly to avoid the collapse of the whole system. At the same time, big processors need to adhere to standards and act as an example for other processors. The government would ultimately find it easier to control a few big processors but they might have to subcontract part of their work to smaller processors. Trust and reputation matter a great deal in relational contracting.

Vietnamese relational contracting is an example of vertical integration/-backward linkage. Showing that scale matters and that the 'presence of aggres-

[50] Others include (i) Masasi farmers and Marketing association (Mafama), (ii) Namajani/Mlingula wakulima wa korosho (Namwako Masasi), (iii) Umoja wa wakulima wa korosho Newala (Uwakone), (iv) Unasemaje Farmers Association (Mtwara) and (v) Wakulima wa Korosho Masasi (Wakoma Co Ltd). http://www.mwananchi.co.tz/news/5-habari-za-siasa/17164-wakulima-kuishitaki-serikali-mahakamani.html (3 November, 2011).

sive private sector suppliers of improved inputs or shifts in relative prices, or changes in access of farmers to local market and inputs – all of which would affect the expected returns from new technology'[51] may explain the differences in productivity.

The hold-up problem is solved in Vietnam by farmers having an alternative crop, namely rubber, which is a credible threat for processors who badly need domestically grown raw cashew. Here again, farmers do not sign any contract with processors but there is the ever-present threat of them switching crops. The case of cashew in Vietnam represents a reputation game in game theory.

[51] Bindlish & Evenson (1993) cited in Tendler (1997: 99).

# 6 Conclusions

As part of the Tracking Development project and aiming to explain the divergence in development between African and South East Asian countries with similar points of departure, this study examined divergence in the cashew sector between Tanzania and Vietnam. It did so analytically, methodologically and empirically in an attempt to demonstrate why the cashew sector in Vietnam has higher yields than that in Tanzania. The contextual chapters (Chapters 2 and 3) showed the trends that led to divergence, while Chapter 4 provided evidence of divergence at the household level among cashew farmers.

Analytically, using the GVC framework and concentrating on the lower segments of the cashew value chain, and like Talbot (2009), this study found that the governance of the value chain differs within the chain and different actors play key roles at different points in the chain. Weak partnerships between actors lead to an unbalanced value chain (as in Tanzania), while strong partnerships lead to a balanced value chain (as in Vietnam). While opportunistic policies with frequent radical reversals were adopted in Tanzania, strategic policies were adopted in Vietnam that permitted a gradual progression in an environment that allows for trial and error and the presence of adaptive efficiency. The accounting system used in this study for the decomposition of yield and labour productivity allows for differentiation between the two countries using the categories of small-, medium- and large-scale farmers. The study provides an analytical framework that is informed by Hayami & Ruttan's (1985) induced technical and institutional innovation model that allows a comparison between and within the two countries using the farmers' characteristics, particularly the use of inputs (land, labour and technology) in determining production. Methodologically, rural-based fieldwork in the highest cashew-producing districts in two different regions meant that an explanation of the macro observations regarding the differences in economic and

development performance could be drawn. Lessons could be learnt from the best-performing cashew-producing areas.

The findings and lessons that explain the divergence in yield point to market coordination. In as much as the thesis has put forward field-based evidence from the household, most of the constraints facing farmers indicate that a macro approach is required, in particular in marketing and coordination. The role of the state, the set-up of the support system, access to credit and infrastructure are all factors that influence the variations observed as will be explained in the next section.

## The role played by the state

Tanzania and Vietnam were two agrarian economies that adopted socialism but then experienced low economic performance. They both struggled to produce under socialism with all the major means of production being controlled by the state. Poverty remained high and, in some cases, even deepened. Chapter 2 showed that the incentive system under socialism failed to reward efforts made by producers. With increased production of traditional export crops, Tanzania concentrated on investing in manufacturing as a priority, at the expense of agriculture. Unfortunately, the country's focus on manufacturing was coupled with challenges regarding not only manpower but also the unpredictable supply of intermediate inputs and spare parts. In the case of cashew, in spite of assistance from the World Bank for processing, Tanzania never managed to operate at full capacity as the equipment installed was incompatible, expensive to run[1] and led to high cashew breakage rates. Tanzania therefore lost most of the advantages it had enjoyed in the production of traditional exports up to the mid-1970s due to losses made when processing was set up. In Vietnam, once the socialist North was reunited with the capitalist South in 1975, the northerners, who had assisted in liberating the South, adopted socialism as the way of running the economy. Industrialization was given priority and received support from Russia and China. In Vietnam, cashew was not one of the priority sectors.

Adopting market-oriented policies resulted in different performances regarding the productivity of labour and capital between Tanzania and Vietnam. Tanzania adopted donor-inspired liberal policies, saw a growth in imports, minimal growth in the production of agricultural commodities and very little improvement in rural poverty rates. Unfortunately, little was learnt from the experience in Tanzania. It was either a programme that worked or a short-term alternative was undertaken. This resulted in missed opportunities as most of the coordination problems observed were not new and had been recurring for the last three decades.

[1] High operational costs were due to unpredictable power supplies and inputs and bad management in general.

This method of operating suggests that inertia in Tanzania reflected the unwillingness of state actors to ensure that the right incentives for the provision of inputs and the market were put in place. Chapter 3 showed that medium-sized farmers in Tanzania have higher yields than large-scale farmers. In Vietnam however, small-scale farmers have higher yields, which implies that ensuring that appropriate technologies reach farmers improves productivity immensely as all farmers react to price incentives. Tanzanian political leaders have displayed little interest in seeing their citizens develop, an observation that is supported by the current stagnation of the country's economy. Its economy is systemically run with broad views but with little strategic implementation or thought for supporting or refuting views. This kind of environment allows for little if any learning by trial and error and could be the main explanation for the radical reversal of policies seen in Tanzania which has led to little improvement in the well-being of the people.[2] It is not surprising that, for instance, with the transition to a market-oriented economy, all cashew-processing factories that were set up in the mid-1970s using the wrong sort of technology were quickly privatized without providing incentives and support to investors to ensure that processing plants continued to flourish. It would seem that the government privatized plants to win the approval of the World Bank and other donors but did not systematically think about how the sector as the whole could grow, bearing in mind the history and experience of the Indians who had been involved in the sector since the early days of cashew trading in Tanzania in the 1940s. Although it cannot be denied that some progress was made during liberalization, it was only the large farmers who tended to benefit. The idea of leaving a lot to chance seems to occupy most leaders' minds and this needs to be rectified. Large-scale farmers[3] are threatening the very existence of the Warehouse Receipt System (WRS) as they have organized themselves so that they can avoid paying the ever-increasing transaction costs associated with marketing. These farmers are crucial as they assist in reducing the average transactional costs incurred through the WRS. Their withdrawal from the WRS will not only warrant WRS failure to provide assured markets to small-scale farmers but would eventually lead to the collapse of the whole system. The anticipated collapse would mainly be due to the rising per unit costs of reaching scattered farmers in remote areas in addition to management costs. It is high time for the WRS to operate competitively and to allow all farmers to benefit from the system.

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[2] For instance, the percentage share of agriculture in GDP has been falling without any improvement in well-being having been seen. This implies that growth is only benefiting a few people and not the farmers who are the backbone of the economy. Minerals and metals are becoming increasingly important to the country's GDP.

[3] Those who harvest at least three tonnes per season.

In contrast, the home-grown market-oriented strategies adopted by Vietnam have seen growth in both the agricultural and industrial sectors. This has resulted in a tremendous drop in poverty rates, food sufficiency has been achieved and Vietnam has become a global exporter of crops such as rice, pepper, cashew and rubber. These developments show that 'it is adaptive efficiency which is key to long run growth' North (1998: 88). Adaptive efficiency allows room for trial and error. Vietnam has gradually abandoned socialism, taking small steps that have allowed the country first to privatize state-owned enterprises and make them into joint ventures, and to encourage local traders to utilize markets in China, Russia and later the US. This is supported by the rise observed in industry's contribution to GDP, which is a reflection of the on-going mechanization and upgrading that has been undertaken by the Vietnamese government since the mid-1980s.

Looking at the Tanzanian case, it is easy to point to the involvement of the state as an impediment to the expansion of the cashew sector, although the government in Vietnam is heavily involved in the sector too. For example, resettlement in Vietnam led to a boom in production while it disrupted production in Tanzania and interventions there led to low production levels. Radical reversals of policies left the producers in the margins. Interventions by the state in Vietnam provided incentives and ensured higher yields and output. Vietnam's industrial policy provided a favourable environment in which the private sector could operate by adapting to a new and sustainable environment.

## Support system

Good farm maintenance is important in the production of cashew. In Tanzania, cashew required little investment in terms of labour and input before the 1980s. Neglect of cashew trees in the mid-1970s led to outbreaks of PMD and since then trees have been prone to the disease and this has led to the need for more inputs and labour to maintain farms. The dismantling of the support system during liberalization resulted in the government pulling out of trade and coordination, as was discussed in Chapters 3 and 5. And when the government later began to support the cashew sector again, its support was concentrated on a single player, namely the farmer, and little assistance was given to other players. This led to underperformance by the research institutions and processors. The government aims to process excess production, i.e. forward linkage.[4] Viewing the economy as separate parts and hoping they would be compatible and make a whole has failed in Tanzania. Unsustainable spurts in production have been noted but without much general improvement in levels of productivity. Inappropriate technologies with an unreliable supply of raw materials and power have led to less efficiency

[4] The growth of domestic raw cashew production leads to growth of the processing industry.

among the mechanized technologies used for shelling. The system remains unsustainable and has not allowed producers to experience major improvements in their well-being.

The entry point in the cashew sector for Vietnam was to enhance its domestic processing capacity, i.e. backward linkage,[5] creating derived demand for farmers. Cashew was selected as a sector with good prospects and was seen as a possible way out of poverty. By coordinating agricultural research institutions, processors and poor, landless farmers from the North, the sector has flourished. Treating the economy as a strategic combination of parts that could form a whole has proved successful in Vietnam. The hands-and-legs shelling technology invented in Vietnam is very efficient too.

The interlocking markets between providers of farm inputs (the state) and cashew farmers in Tanzania artificially created dependency. Cashew farmers in Tanzania lack economic freedom, unlike their Vietnamese counterparts who uproot their trees following a bad season regardless of any sunk costs incurred. The cashew sector in Vietnam is a good example of adaptive efficiency through relational contracting between processors and farmers. The ability of farmers to switch to an alternative crop is a credible threat to processors as they need a reliable domestic supply of raw cashew to keep their production costs low, especially given the fact that they have incurred investment costs and thus face a potential hold-up problem. Farmers in Vietnam seem not to fall into the sunk cost fallacy. This healthy threat ensures that farmers are well paid and remain on board. A rational choice for Tanzania farmers is to abandon part of their farm or only tend them hastily in a period of bad prices, as was seen in the observed cobweb behaviour in Chapter 3.

## Access to credit

Credit is important in maintaining cashew trees, as money is needed not only to buy inputs but also to hire labour and tools. Large-scale farmers in both countries perform better if they have sufficient funds to tend their farms. Instead of utilizing the WRS when farmers are pressed for cash in Tanzania, they resort to *kangomba* and forgo inputs while waiting for the start of the official buying season (see Chapter 4). Tanzania lacks a clear provider of credit and farmers depend on earnings from cashew as their sole supply of credit through the current residual payment system of the WRS. Investment in Tanzania depends on what is available from a farmer's cashew earnings at the end of the season after deducting farm and household costs. In Vietnam, producers have access to credit in different forms. With economic freedom, Vietnamese farmers can rely on earnings

[5] The growth of the processing industry had led to growth in domestic raw cashew production.

from pepper and rubber. The government-initiated anti-poverty programmes and private banks also provide credit to farmers. The strategic anti-poverty programmes provide a fixed amount of credit for productive sectors, especially for the poorest farmers.

## Infrastructure

The cases of Vietnam and Tanzania indicate that integrated market reforms and policies need to be inclusive in all sectors. The government has a role to play in the provision of non-price incentives, which can be seen as mainly structural support. The higher yield and increases in production are made possible by improved infrastructure that reduces the costs of linking downstream with upstream between sectors. Vietnam doubled its road network between 1998 and 2004, while Tanzania's increased by less than 10% in the same period. Access to electricity and water are also important. The Tanzanian government struggles to provide farmers with water, a complaint regularly raised by cashew farmers there. Given that farmers need to spray their trees to ensure output, the problem of seasonal availability of water needs prompt attention. Vietnamese farmers, on the other hand, have access to both electricity and water supplies.

It should be pointed out here that comparing Tanzania and Vietnam was a daunting task. Given that I am from Tanzania, the general views I voice about Tanzania were my own but those on Vietnam and its society were mainly gleaned from the six months I spent there and from reading about the country. The conclusions drawn should be taken with the disclaimer that this researcher was visiting Asia for the first time. Below are the lessons that have emerged from this study.

## Lessons

This thesis has shown a contrast in how targeted industrial policy relates to reforms. Attempts at industrialization failed in Tanzania, which led to deindustrialization. Reforms did not allow Tanzania to add value but rather turned the country into a raw cashew exporter without improving the competitiveness of the sector. With reforms that resulted in deindustrialization of the sector, Tanzania lost control of its leading position.

As was shown in Chapter 3, the capacity installed was not only expensive and inappropriate but was also coupled with reforms that re-allocated people into *Ujamaa* villages and led to disruption and a reduction in the quantity of raw cashew produced. Reforms saw radical institutional changes and the compartmentalization of the sector with farmers being left in the margins. Tanzania's system of distribution continues to be inefficient. Farmers make rational choices

as to what to produce, how and when to produce and by how much. Insufficient demand aggravates the decisions made by farmers. In tough times, farmers abandon parts of their farms. Without an assured market, they hesitate to increase their output and utilize better improved inputs (both seeds and pesticides). There is not enough incentive to produce more or tend their farms better if there is any uncertainty in earnings. Farmers are completely left in the margins by the marketing systems. This is the single paramount problem that needs immediate attention. This requires assured markets and the increased use of inputs (improved seeds, fertilizers, pesticides and upgrading). Only half of the improved seeds developed ever reach the farmers, which makes adoption slower. Reforms have not led to increased derived demand for output as processing remains in its infancy and never took off competitively. This state was maintained for a while and the installed inappropriate capacity was hardly used. Foreign exchange earned from kernels has yet to hit the US$30 m mark. The lack of processing capacity has seen Tanzania continue to be a net exporter of raw cashew, which significantly reduces the sector's competitiveness.

Vietnam, on the other hand, has strategically made both the peasantry and processors productive and competitive through the introduction of industrial new policies. The sector has thus flourished. To increase competitiveness, Vietnam developed value chain downwards with appropriate technologies. Starting with processing, the state-of-the-art hand and leg nut-splitter increased processing capacity. And the need to have a competitive local supplier of raw cashew meant that farmers were assured a good price for their cashew. This was possible due to existence of alternative crops, such as rubber and pepper, that farmers could turn to. According to the GSO and the FAO, the cashew sector has earned Vietnam at least US$ 1 bn annually since 2008. When developing the downward value chain, the sector had to make sure it remained competitive by utilizing local supplies. The availability of improved seedlings and markets add to the strength of the sector.

Given the evidence from Vietnam, Tanzania needs to provide economic freedom to farmers to solve the sunk cost fallacy.[6] Additionally, Tanzania will benefit from evaluating, experimenting and learning from different failures rather than adopting new initiatives all the time and repeatedly arranging marketing while farmers are left in the margins. The WRS would benefit from disentangling some parts of the system to allow more competition, for instance the buying of sacks and transportation. The introduction of the WRS as a solution to the marketing problem still leaves farmers marginalized. Efforts need to be directed towards the smooth co-existence of all actors with the producers (farmers and processors) at

[6] Where farmers continue to invest in cashew even with falling rewards, as this is their primary source of revenue.

the centre of decision making. The balance of the value chain needs to be enhanced.

When the state operates as a catalyst and involves other stakeholders, vertical integration and economies of scale are encouraged (balanced value chain). Otherwise, a loss of value addition through other stakeholders can be tapped by the reorganization of the state to inclusively involve all stakeholders. Raw cashew exported elsewhere means a loss of revenue to the nation and in effect subsidizes other nations, given that a lot of investment is used to support the production of raw cashew.

Using contrastive economic history, this paired case of Tanzania and Vietnam has shown that market mechanisms need to be well supported by the state in order to function. Mimicking western institutions calls for consideration of both structures and processes. Vietnam has shown that markets strategically supported by the state perform better by providing adaptive efficiency.

In this thesis it has been argued that enabling government interventions in the market economy is crucial to ensuring institutions operate better and actors are rewarded for their efforts. Furthermore, it is argued that selective government interventions are neither good for producers nor the sector. Solving coordination problems should be the main aim of the state. These findings emphasize that the provision of public goods is essential to complement efficient allocation of resources by the market.

In summary, the divergence in performance of cashew farmers in Tanzania and Vietnam is the result of several factors. The Tanzanian farmer is often an afterthought, using Lipton's terminology 'benign neglect', in all decision making and has very little representation at major meetings. The situation was the same before independence, during liberalization and even now with the multi-tiered trading system: the farmer has always been in the margins and receives residual payments. Farmers in Tanzania are frequently caught up in the system set up by the state, unlike their Vietnamese counterparts who have the economic freedom to choose what they produce.

# Appendix: Tables, graphs, figures, photos

*Tables*



*Graphs*



*Figures*



*Photos*

Table 2A1 Poverty levels, inequality and human development Index for Tanzania and Vietnam (various years)

| | Poverty headcount | | Poverty headcount rural | | Poverty headcount $1.25 | | GNI index | | HDI | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Tanzania | Vietnam | Tanzania | Vietnam | Tanzania | Vietnam | Tanzania | Vietnam | Tanzania | Vietnam |
| 1992 | 38.6 | | 40.8 | | 72.59 | | 33.83 | | | |
| 1993 | | 58.1 | | 66.4 | | 63.74 | | 35.68 | | |
| 1998 | | 37.4 | | 44.9 | | 49.65 | | 35.52 | | |
| 2000 | 35.6 | | 38.6 | | 88.52 | | 34.62 | | 33.22 | 50.53 |
| 2002 | | 28.9 | | 35.6 | | 40.05 | | 37.55 | 34.65 | 51.93 |
| 2004 | | 19,5 | 25 | | | 24.18 | | 39.16 | 36.11 | 53.29 |
| 2006 | | 16 | | 20.4 | | 21.31 | | 37.77 | 37.50 | 54.72 |
| 2007 | 33.4 | | 37.4 | | 67.87 | | 37.58 | | 37.93 | 55.40 |
| 2008 | | 14.5 | | 18.7 | | 13.07 | | 37.57 | 38.61 | 55.97 |

Source: World Bank WDI and UNDP (Human Development Data)

Table 2A2 Tanzania export volume by agricultural commodities (’000 tonnes, various years)

| Year | 1961 | 1965 | 1976 | 1973 | 1981 | 1986 | 1990 | 1995 | 2000 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coffee | 24.9 | 51.1 | 45.4 | 60.3 | 67.9 | 50.4 | 62.7 | 48.0 | 54.5 | 36.4 | 46.2 | 38.6 | 46.1 | 31.5 |
| Cotton | 30.1 | 56.2 | 60.8 | 60.0 | 44.5 | 31.6 | 46.3 | 70.9 | 36.8 | 33.3 | 40.3 | 47.3 | 112.9 | 5.5 |
| Sisal | 200.9 | 210.2 | 204.4 | 133.4 | 57.5 | 15.1 | 7.7 | 11.3 | 13.4 | 12.8 | 13.0 | 11.9 | 9.3 | 6.1 |
| Tea | 3.2 | 4.3 | 6.1 | 9.5 | 15.5 | 9.5 | 14.8 | 21.6 | 22.6 | 24.3 | 20.9 | 21.7 | 21.8 | 22.4 |
| Tobacco | 0.8 | 1.7 | 4.1 | 6.1 | 11.0 | 7.2 | 5.8 | 17.1 | 19.2 | 24.2 | 22.5 | 29.2 | 31.1 | 25.0 |
| Cashewnuts | 40.0 | 64.6 | 70.9 | 109.9 | 25.2 | 17.8 | 7.4 | 75.6 | 101.8 | 75.9 | 73.4 | 83.2 | 62.0 | 66.3 |

Source: Bank of Tanzania (BOT) and Economic Survey (various years)

*Table 2A3* Tanzania real annual growth rates (%, various years)

| | 2001 | 2005 | 2010 |
|---|---|---|---|
| Agriculture | 4.9 | 4.3 | 4.2 |
| Fishing | 4.8 | 6 | 1.5 |
| Mining and quarrying | 13.9 | 16.1 | 2.7 |
| Manufacturing | 5 | 9.6 | 7.9 |
| Electricity, gas | 5.9 | 9.4 | 10.2 |
| Communication | 8.7 | 18.8 | 22.1 |
| Financial intermediation | 6.9 | 10.8 | 10.1 |
| Education | 11.4 | 4 | 7.3 |
| Health | 5.6 | 8.1 | 6.9 |
| GDP(constant 2001 price) | 6 | 7.4 | 7 |

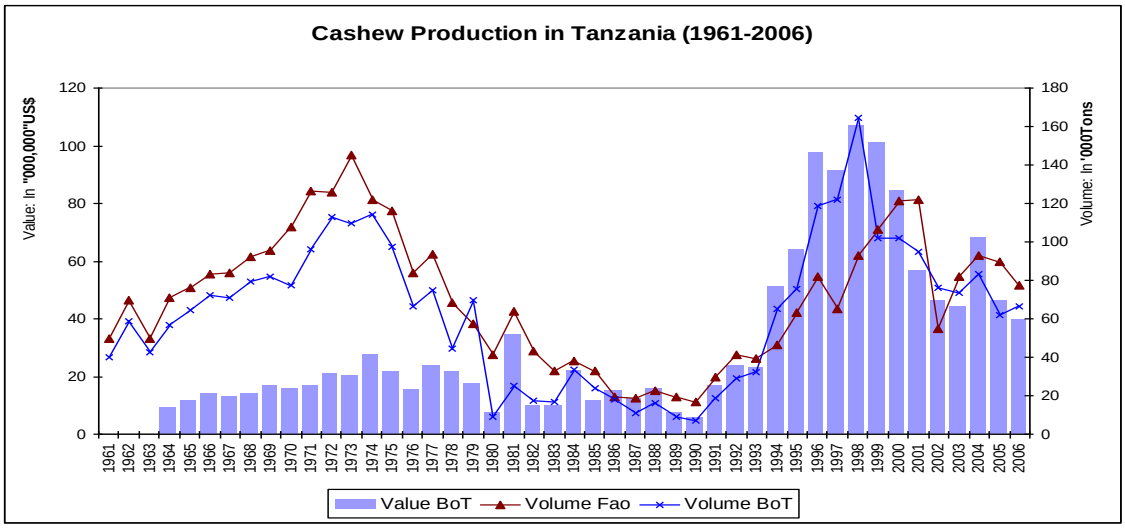
Source: URT (2011): National Accounts of Tanzania

*Table 3A1* Average FOB prices of cashew in US$/lb (Cochin/Tuticorin)

| Cashew | | 2008 | | | 2009 | |
|---|---|---|---|---|---|---|
| Grade | 8-Feb | 31-May | 29-Nov | 28-Feb | 31-May | 22-Aug |
| W-240 | 3.45-3.60 | 3.40-3.45 | 2.70-2.75 | 2.50-2.75 | 2.80-2.85 | 2.85-290 |
| W-320 | 3.30-3.40 | 3.2 | 2.15-2.25 | 2.00-2.20 | 2.40-2.45 | 2.55-2.60 |
| W-450 | 3.10-3.20 | 3 | 2 | 190-2.00 | 2.25 | 2.35-240 |
| LP | 1.95 | 2 | 1.4 | 1.3 | 1.40-1.45 | 1.45-1.50 |
| WB | 2.45 | 2.35-2.40 | 1.6 | 1.5 | 1.75-1.80 | 2.10-2.15 |
| SW320 | 3.10-3.15 | 3.05 | 2.05 | 1.90-2.00 | 2.30-2.35 | 2.35-2.40 |
| SW360 | 3.00-3.05 | 2.9 | 1.95 | 1.80-1.90 | 2.15-2.20 | 2.3 |
| SSW | 2.90-3.00 | 2.55 | 1.9 | 1.70-1.85 | 1.80-1.85 | 1.9 |
| WS | 2.45 | 2.45-2.50 | | 1.5 | 1.75-1.80 | 2.10-2.15 |

Note: W = Whole White, SW = Scorched Wholes, SSW = Scorched Wholes Seconds, SS = Scorched Splits, SB = Scorched Butts, SP = Scorched Pieces, LP = Large Pieces
Source: *Cashew Week*, various issues.

*Graph 3A1* Tanzania: Raw cashew production and value (1961-2006)




Source: Bank of Tanzania, Cashewnut Board of Tanzania and FAOSTAT | © FAO Statistics Division 2010

*Table 3A2* Export of cashew kernels ~Tanzania

| Season | Exports of kernels | |
|---|---|---|
| | Quantity (Tonnes) | Value (USD) |
| 2005/2006 | 2,821.057 | 11,926,051 |
| 2006/2007 | 4,984.746 | 19,328,606 |
| 2007/2008 | 4,925.068 | 16,952,283 |
| 2008/2009 | 4,179.675 | 19,409,725 |
| 2009/2010* | 3,690.955 | 19,938,821 |

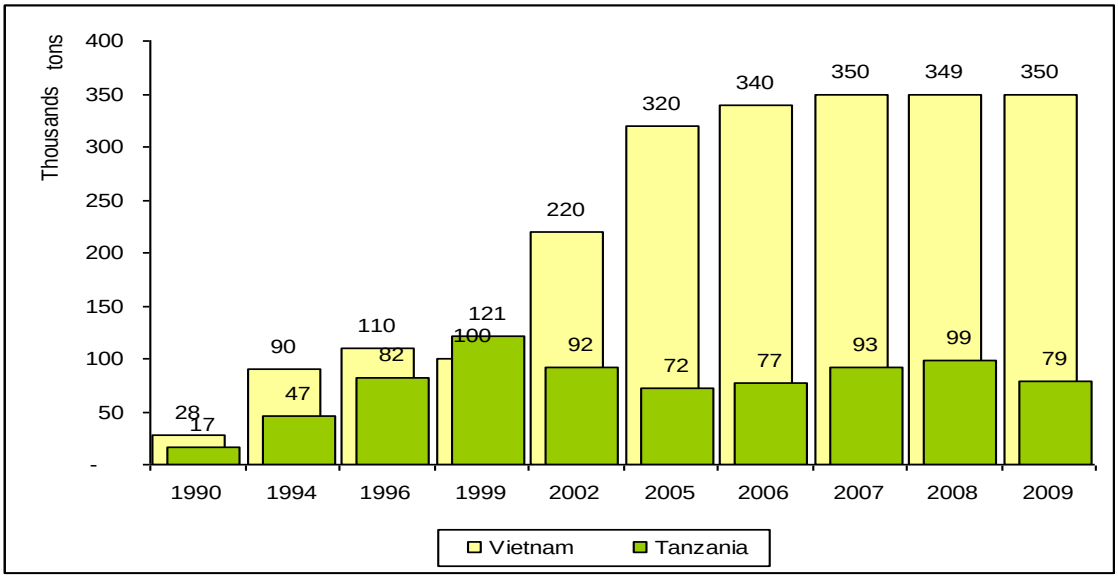
***** Exports up to 23 June 2010
Source: Cashewnut Board of Tanzania

*Table 3A3* Tanzania: Estimated indicative price for one kg of cashew (2008-2011)

| Expenditure/different costs | (2007-08) | (2008-09) | (2009-10) | (2010-11) |
|---|---|---|---|---|
| *Operating costs:-* | | | | |
| Primary Society Levy | 30.00 | 50.00 | 50.00 | 50.00 |
| Union Levy on provision for services | 14.00 | 21.00 | 21.00 | 21.00 |
| District Councils Levy (5%) | 30.50 | 33.75 | 35.00 | 40.00 |
| Sub Total | 74.50 | 104.75 | 106.00 | 111.00 |
| *Marketing costs:-* | | | | |
| Warehouse Operator costs | 8.00 | 17.00 | 17.00 | 15.00 |
| Transport of cashew to warehouse | 50.00 | 65.00 | 55.00 | 50.00 |
| Deductions in weight/Shrinkage 2% of Indicative price | 11.00 | 13.50 | 14.00 | 16.00 |
| Fumigating Warehouse Primary Society) | 2.00 | 2.00 | 2.00 | 2.00 |
| Sub Total | 71.00 | 97.50 | 88.00 | 83.00 |
| *Finance costs* | | | | |
| Interest on Loan | 15.00 | 8.00 | 15.00 | 15.00 |
| Cost of Loan | 3.00 | 0.00 | 3.00 | 3.00 |
| Sub Total | 18.00 | 8.00 | 18.00 | 18.00 |
| *Cost of purchasing cashew* | | | | |
| Cost of Bags | 27.50 | 31.25 | 29.00 | 31.25 |
| Crop Insurance | 2.00 | 1.00 | 1.00 | 0.00 |
| Cash Insurance | 2.50 | 1.00 | 1.00 | 0.00 |
| Distribution of bags | 1.00 | 1.00 | 1.00 | 1.00 |
| Transporting money | 6.00 | 5.00 | 5.00 | 0.00 |
| Sub Total | 39.00 | 39.25 | 37.00 | 32.25 |
| Total expenditure | 202.50 | 249.50 | 249.00 | 244.25 |
| Farmer's price per kilo (indicative price) | 610.00 | 675.00 | 700.00 | 800.00 |
| Cost of raw cashew in warehouse per kilo | 812.50 | 924.50 | 949.00 | 1044.25 |

Source: Cashewnut Board of Tanzania, 2010

*Graph 3A2* Tanzania and Vietnam: Raw cashew production (various years)




Source: Cashewnut Board of Tanzania, General Statistics office of Vietnam GSO; Vietnam Cashew Association

*Table 3A4* Tanzania: Cashew production by district/region 1998/1999-2010/2011 (in tonnes)

| District | 1998/99 | 1999/00 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mtwara (M) | 3.822 | 1.370 | 9.401 | 286 | - | - | 1.682 | 2.700 | 2.359 | 9.425 | 424 | 434 | 769 |
| Mtwara (V) | 7.260 | 6.118 | 7.151 | 5.126 | 7.118 | 5.025 | 4.739 | 4.690 | 5.096 | - | 5.190 | 5.336 | 11.203 |
| Tandahimba | 20.465 | 21.729 | 21.240 | 12.563 | 17.796 | 14.090 | 10.832 | 15.278 | 19.520 | 24.121 | 20.702 | 24.436 | 35.997 |
| Newala | 10.944 | 10.264 | 10.987 | 4.934 | 9.522 | 13.286 | 5.816 | 5.520 | 10.520 | 9.111 | 6.755 | 9.270 | 14.230 |
| Masasi | 14.563 | 18.955 | 14.674 | 8.394 | 21.457 | 9.756 | 15.398 | 14.434 | 16.510 | 14.371 | 11.261 | 7.624 | 17.218 |
| Nanyumbu | - | - | - | - | - | - | - | - | - | 5.178 | 6.064 | 2.731 | 4.453 |
| Ex-Godown Mtwara | 10.157 | 21.500 | - | - | - | - | - | - | - | - | | | |
| *Mtwara* | *67.211* | *79.935* | *63.453* | *31.303* | *55.893* | *42.158* | *38.466* | *42.622* | *54.006* | *62.206* | *50.396* | *49.831* | *83.871* |
| Lindi (M) | - | - | 116 | 130 | - | - | 100 | 500 | 200 | 281 | 378 | 41 | 1.452 |
| Lindi (V) | 2.626 | 4.150 | 3.982 | 3.960 | 3.500 | 3.196 | 2.336 | 1.012 | 727 | 3.971 | 3.985 | 2.449 | 2.944 |
| Nachingwea | 4.283 | 4.692 | 6.848 | 2.650 | 6.020 | 3.403 | 6.060 | 5.382 | 11.458 | 6.890 | 5.746 | 4.813 | 6.296 |
| Ruangwa | 4.475 | 3.781 | 4.458 | 2.347 | 5.560 | 3.907 | 4.292 | 3.947 | 5.056 | 8.440 | 5.683 | 1.438 | 3.030 |
| Liwale | 2.853 | 4.669 | 6.081 | 2.469 | 2.713 | 3.769 | 1.889 | 3.578 | 5.300 | 3.558 | 3.784 | 6.709 | 7.171 |
| Kilwa | 500 | 361 | 487 | 320 | 1.059 | 638 | 255 | 966 | 138 | 694 | 2.012 | 418 | 1.066 |
| *Lindi* | *14.737* | *17.652* | *21.973* | *11.876* | *18.852* | *14.912* | *14.931* | *15.385* | *22.879* | *23.834* | *21.588* | *15.867* | *21.959* |
| Mkuranga | 2.677 | 2.206 | 6.026 | 8.571 | 5.992 | 10.319 | 6.947 | 10.121 | 5.290 | 2.952 | 1.395 | 2.791 | 6.429 |
| Kibaha | 269 | 1.702 | 341 | 899 | 143 | 72 | 160 | 50 | 104 | 251 | 348 | 42 | 391 |
| Bagamoyo | 212 | 135 | 2.013 | 698 | 51 | 224 | - | 33 | 10 | 542 | 63 | | 81 |
| Rufiji | 749 | 980 | 2.013 | 1.307 | 2.774 | 1.283 | 2.513 | 3.292 | 1.157 | 934 | 1.184 | 1.190 | 2.103 |
| Kisarawe | 327 | 715 | 3.380 | 888 | 623 | 240 | 531 | 233 | 24 | 976 | 254 | | - |
| Mafia | 147 | 172 | 31 | - | 57 | 34 | 412 | 101 | 39 | 103 | 15 | | 4 |
| *Coast* | *4.380* | *5.910* | *13.804* | *12.363* | *9.640* | *12.172* | *10.563* | *13.829* | *6.623* | *5.758* | *3.259* | *4.022* | *9.008* |
| Muheza | 620 | 178 | 156 | 1.079 | 270 | 40 | 28 | - | 10 | - | 56 | | - |
| Pangani | 193 | 206 | 629 | 1.034 | 348 | 33 | 625 | 288 | 20 | 272 | 48 | 45 | - |
| Tanga | 122 | 187 | 325 | 468 | 224 | 582 | - | - | - | 100 | | 394 | - |
| Korogwe | 22 | - | 44 | 241 | - | 17 | - | - | - | 23 | 68 | 45 | - |
| Mkinga | | | | | | | | | | 887 | 404 | 1.491 | - |
| *Tanga* | *957* | *571* | *1.153* | *2.822* | *842* | *973* | *652* | *288* | *30* | *1.282* | *575* | *1.975* | *257* |

*Table 3A4 Continued*

| District | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kinondoni | - | - | - | - | 35 | - | - | - | - | - | - | | - |
| Temeke | 9.026 | 3.952 | 2.414 | 1.833 | 1.703 | 1.778 | 1.455 | 968 | 1.523 | 3.159 | 479 | 152 | - |
| Ilala | - | | | 24 | 25 | - | 30 | 119 | 554 | 180 | 64 | 22 | - |
| *Dar es Salaam* | *9.026* | *3.952* | *2.414* | *1.857* | *1.763* | *1.778* | *1.485* | *1.086* | *2.077* | *3.339* | *543* | *174* | - |
| Tunduru | 9.414 | 13.067 | 18.238 | 6.873 | 4.680 | 6.394 | 5.471 | 3.969 | 6.658 | 2.622 | 2.620 | 3.380 | 3.997 |
| Songea | - | 120 | 1.070 | - | - | - | - | - | - | - | - | | - |
| Mbinga | - | - | 18 | - | - | - | - | - | - | - | - | 23 | - |
| Namtumbo | - | - | | - | - | - | - | - | - | 66 | 87 | 76 | 89 |
| *Ruvuma* | *9.414* | *13.187* | *19.326* | *6.873* | *4.680* | *6.394* | *5.471* | *3.969* | *6.658* | *2.688* | *2.707* | *3.478* | *4.085* |
| Ludewa | | | 108 | 50 | | 180 | - | - | - | | - | 20 | |
| Kyela | | | 58 | 207 | 485 | | 300 | 250 | 300 | | - | | |
| Kilosa | | | | 17 | | | 50 | 17 | | | - | | |
| *Other* | *717* | | *166* | *274* | *485* | *180* | *350* | *267* | *300* | | - | *20* | |
| *Grand Total* | *106.442* | *121.207* | *122.290* | *67.369* | *92.153* | *78.567* | *71.918* | *77.446* | *92.573* | *99.107* | *79.069* | *75.367* | *119.180* |

Source: Cashewnut Board of Tanzania

*Table 3A5* Vietnam: Cashew production by districts in Binh Phuoc region 2004-2009 (tonnes)

| District name | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| Thị xã Đồng Xoài | 2,599 | 3,259 | 3,935 | 4,656 | 4,242 | 2,936 |
| Huyện Đồng Phú | 11,000 | 10,762 | 10,162 | 15,173 | 15,505 | 16,135 |
| Huyện Phước Long | 44,770 | 48,892 | 48,578 | 76,897 | 71,553 | 66,823 |
| Huyện Lộc Ninh | 2,080 | 3,570 | 3,231 | 3,907 | 4,398 | 4,261 |
| Huyện Bù Đốp | 728 | 952 | 1,500 | 3,795 | 3,494 | 2,871 |
| Huyện Bù Đăng | 30,180 | 38,269 | 34,363 | 40,696 | 42,510 | 30,245 |
| Huyện Bình Long | 4,982 | 7,489 | 6,207 | 8,574 | 10,455 | 9,576 |
| Huyện Chơn Thành | 1,791 | 1,792 | 2,075 | 2,679 | 1,920 | 1,698 |
| Total | 98,130 | 114,985 | 110,051 | 156,377 | 154,077 | 134,545 |

*Table 4A1* Sampled households from each district, ward, village and hamlet

| Tandahimba | | | | | | | | | | | | | | | | | | | Bu Gia Map | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 177 | | | | | | | | | | | | | | | | | | | 199 | | | | | | | | | | |
| Mdimba | | | | | | | Nanhyanga | | | | | | | | | | | | Dak O | | | | | | Phu Ngia | | | | |
| 89 | | | | | | | 88 | | | | | | | | | | | | 100 | | | | | | 99 | | | | |
| Mambamba | | | | Tukuru | | | | Nanhyanga A | | | | | | Nanhyanga C | | | | | | Thon 6 | | | Dak Lim | | | | Duc Lap | | | | Khac Khoang | | |
| 45 | | | | 44 | | | | 49 | | | | | | 39 | | | | | | 50 | | | 50 | | | | 49 | | | | 50 | | |
| Bondeni | Chihanga | Majengo | Mnekachi | Bondeni | Kagera | Karume | Kawawa | Mnaida | Tankini | Bandarini | Kiwanjani | Miemberi | Muungano | Shuleni | Sokoni | Dodoma | Kibaha | Madina | Mlingano | Mpakani | Pemba | Doi 1 | Doi 2 | Doi 3 | Doi 1 | Doi 2 | Doi 3 | Khu Cho | Doi 1 | Doi 2 | Doi 3 | Doi 4 | Doi 1 | Doi 2 | Doi 3 |
| 12 | 10 | 13 | 10 | 7 | 8 | 7 | 8 | 7 | 7 | 11 | 8 | 10 | 7 | 8 | 5 | 3 | 3 | 8 | 11 | 7 | 7 | 16 | 15 | 19 | 18 | 14 | 14 | 4 | 22 | 10 | 10 | 7 | 11 | 21 | 18 |

Source: Household survey.

*Table 4A2* Ratios of density, output per tree and yield by Tanzania and Vietnam

| Farmer Type | Density (t/H) | Output/tree (O/T) | Yield (P/H) |
|---|---|---|---|
| Small | 6,4 | 1,8 | 12,0 |
| Medium | 6,9 | 0,9 | 6,0 |
| Large | 6,0 | 1,4 | 8,2 |

Source: Household survey

*Table 4A3* Workers used for producing cashew in Tanzania and Vietnam

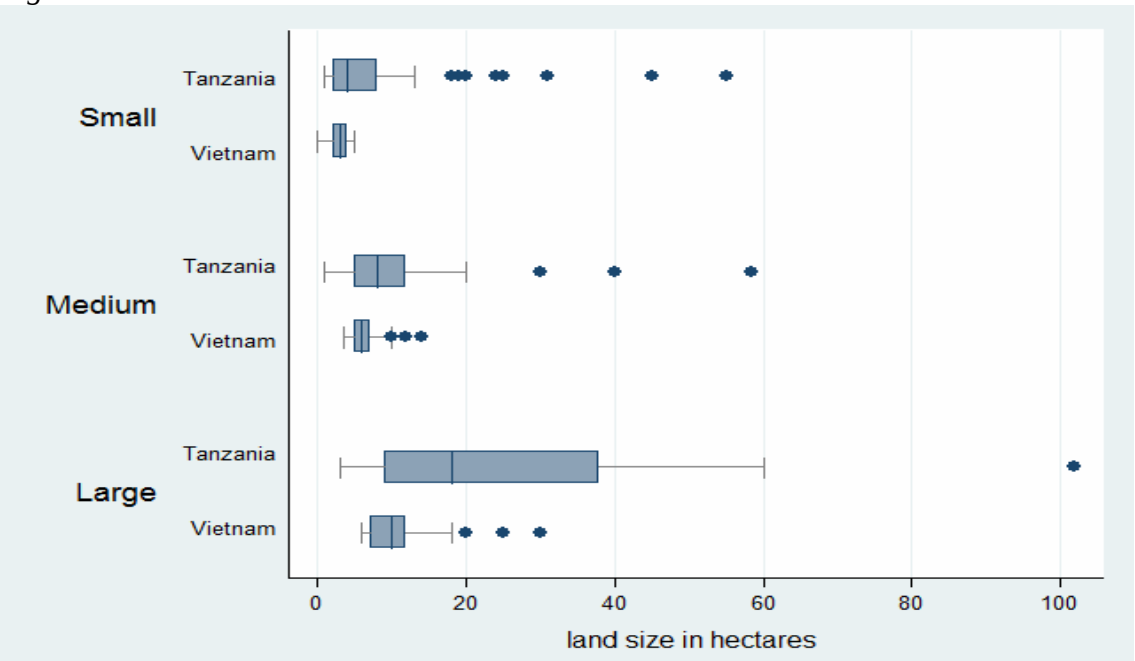
| | *Tanzania* | | *Vietnam* | |
|---|---|---|---|---|
| Variables | Small | Large | Small | Large |
| Farm workers | 8 | 17 | 5 | 10 |
| Farm workers from household | 3 | 3 | 2 | 3 |
| *Workers* | | | | |
| Spraying sulphur | 1 | 1 | 2 | 3 |
| Pruning | 2 | 5 | 2 | 3 |
| Sanitation | 2 | 5 | 2 | 3 |
| Cleaning | 5 | 11 | 2 | 4 |
| Weeding | 7 | 14 | 3 | 4 |
| Picking of cashew | 5 | 10 | 4 | 9 |
| Drying | 3 | 5 | 1 | 1 |
| Grading | 2 | 4 | 0 | 0 |
| *Maintenance per season (frequency)* | | | | |
| Pruning | 1 | 1 | 1 | 1 |
| Weding | 2 | 2 | 2 | 2 |
| Ferlizer application | 0 | 0 | 1 | 1 |
| Sulphur spraying | 4 | 5 | 1 | 2 |
| Extension service | 0 | 0 | 0 | 0 |

Source: Household survey.

*Table 4A4* From seed to cashew as a tree crop

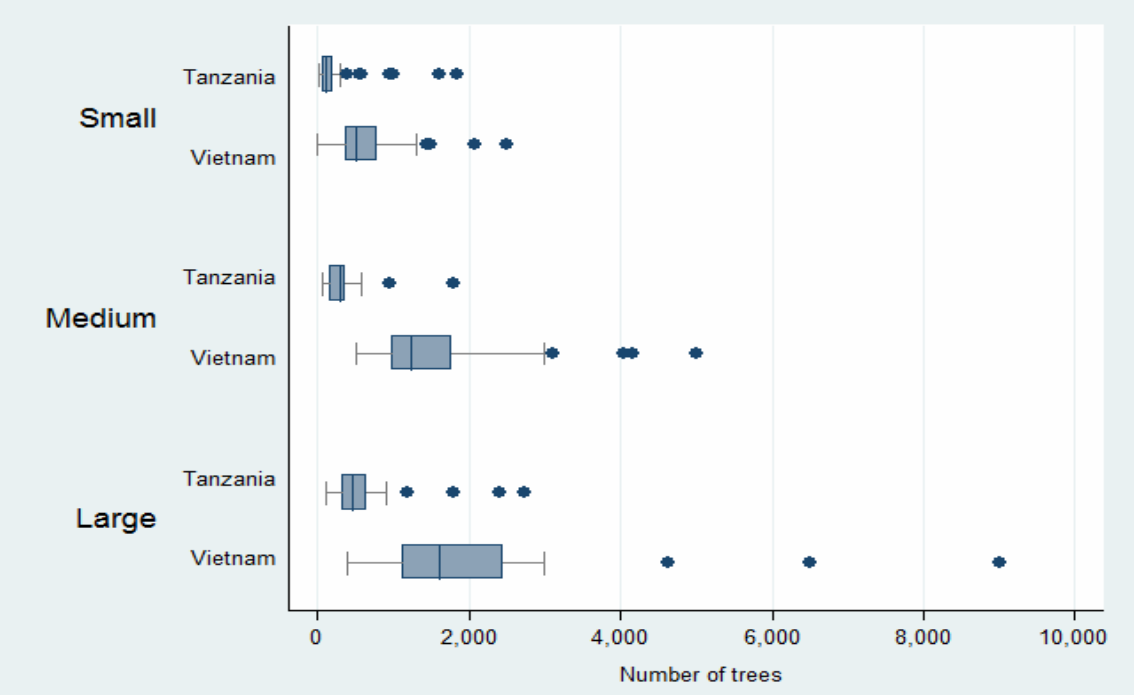
| | | | | | |
|---|---|---|---|---|---|
| 1 | Seed selection (from high yileding trees) | | | | Couple of days |
| | (sun dry then seeds 2 to 3 days then soak them for 48 hours) | | | | |
| 2 | Sowing | Season Planting | Raising seedlings in nursery | Layering (ground or air) | |
| | Germination | | | | 1 month |
| | Selection of stronger seeds to stay | | | | 1 month |
| | | | Propagation/Grafting , where seeds are taken into orchord to allow the main root NOT to bent | | 3rd to 4th months |
| 3 | Regular watering and weeding young seedlings also protection from sunlight and provision of stand of stability | | | | 1 to 3 years |
| 4 | From 2nd year manure is twice applied on increasing doses annually | | | | |
| 5 | Yields can come on the 3 to fifth year and stabilised after the 7th year | | | | |

*Figure 4A1* Land distribution in hectares



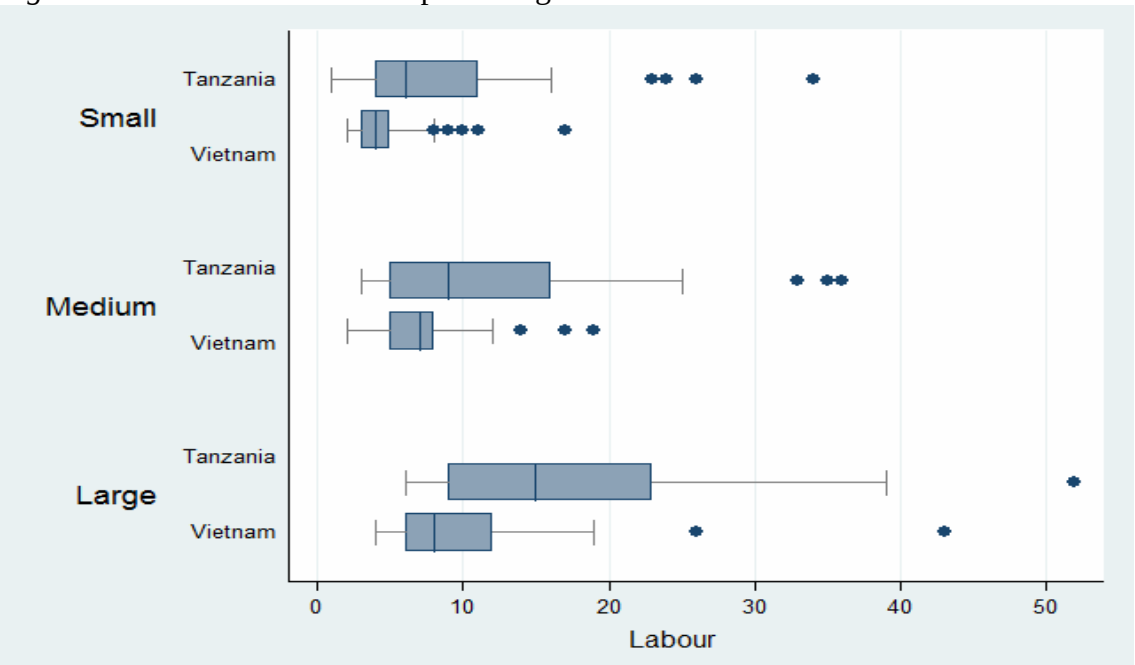

Source: Household survey.

*Figure 4A2* Distribution of trees per household



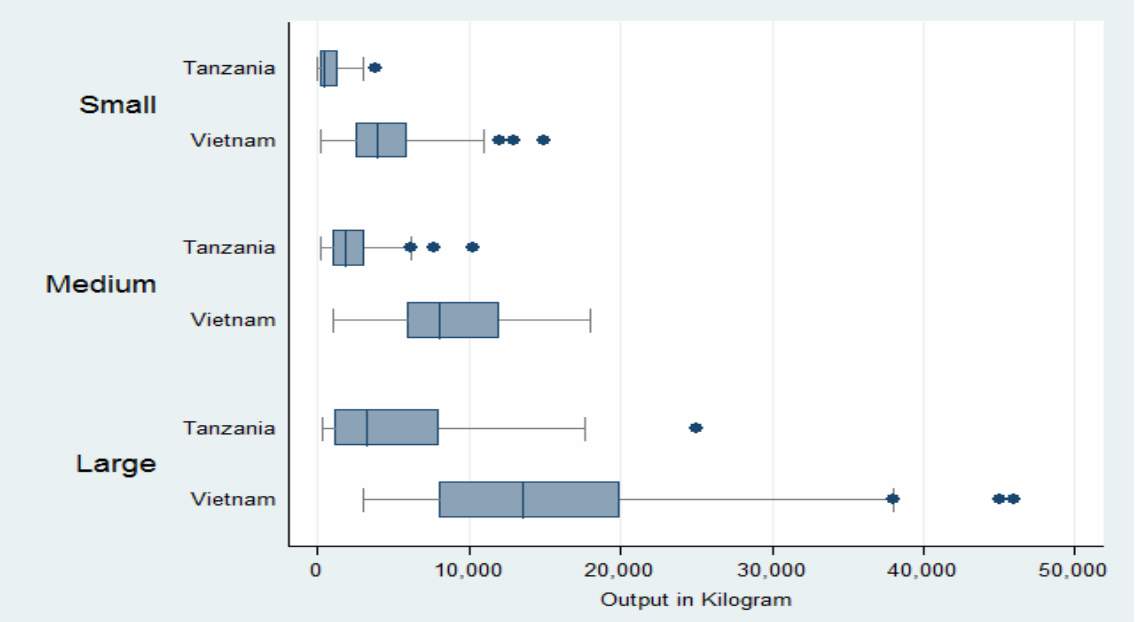

Source: Household survey.

*Figure 4A3* Workers used for producing cashew in Tanzania and Vietnam



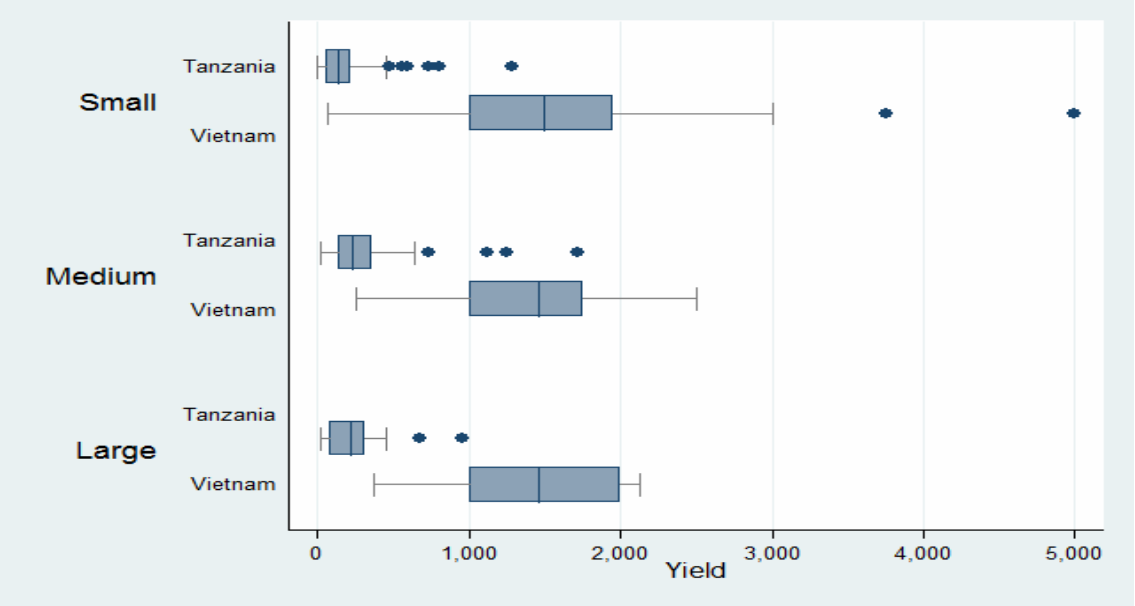

Source: Household survey.

*Figure 4A4* Output for the last season (kg/ha)



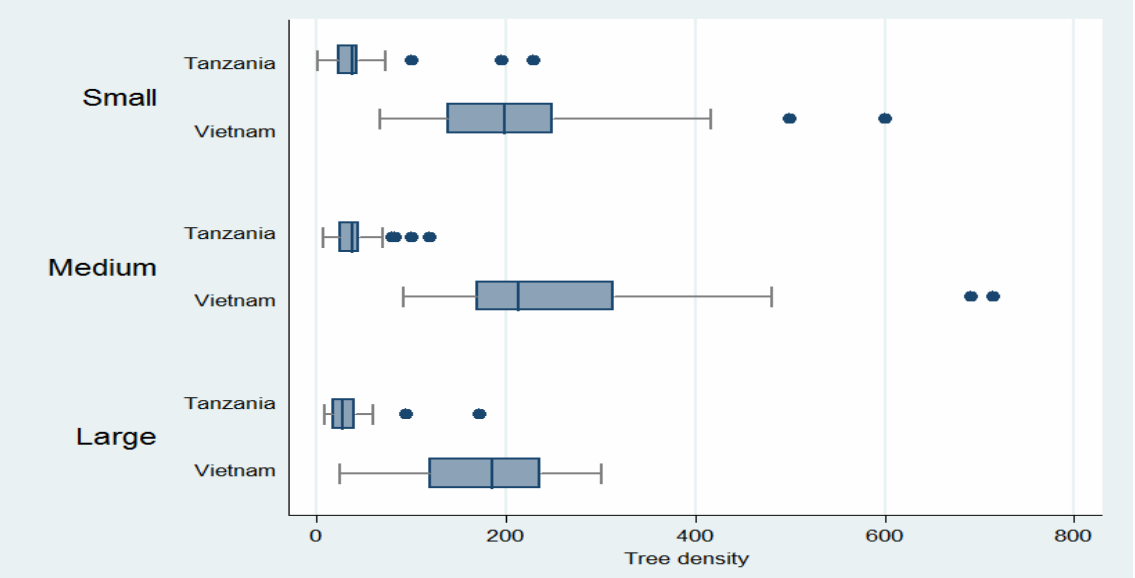

Source: Household survey.

*Figure 4A5* Yield distribution



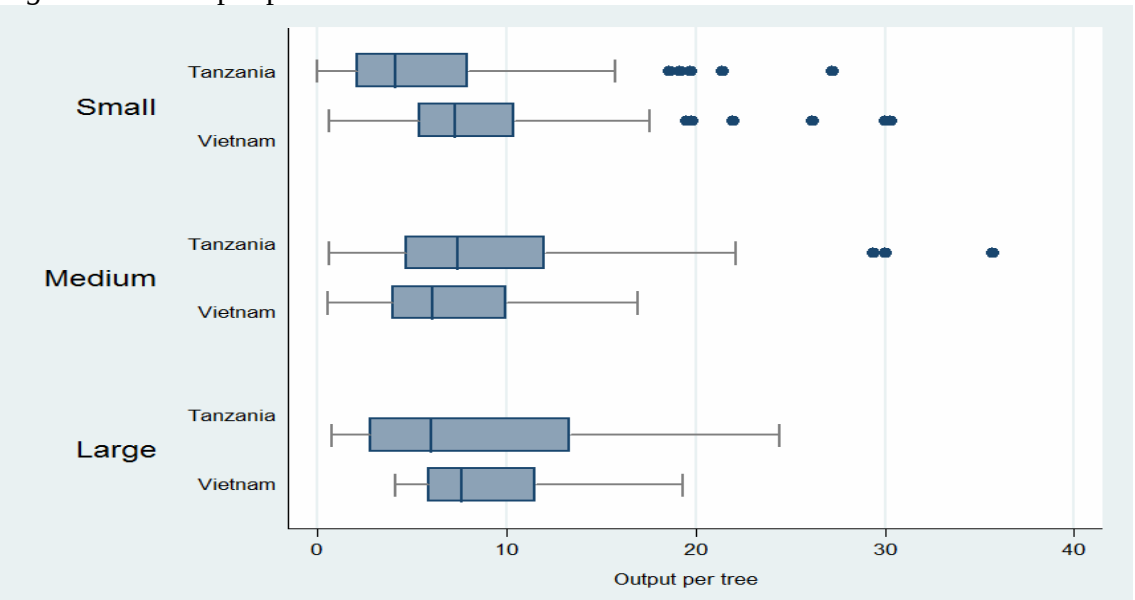

Source: Household survey.

*Figure 4A6* Trees density distribution



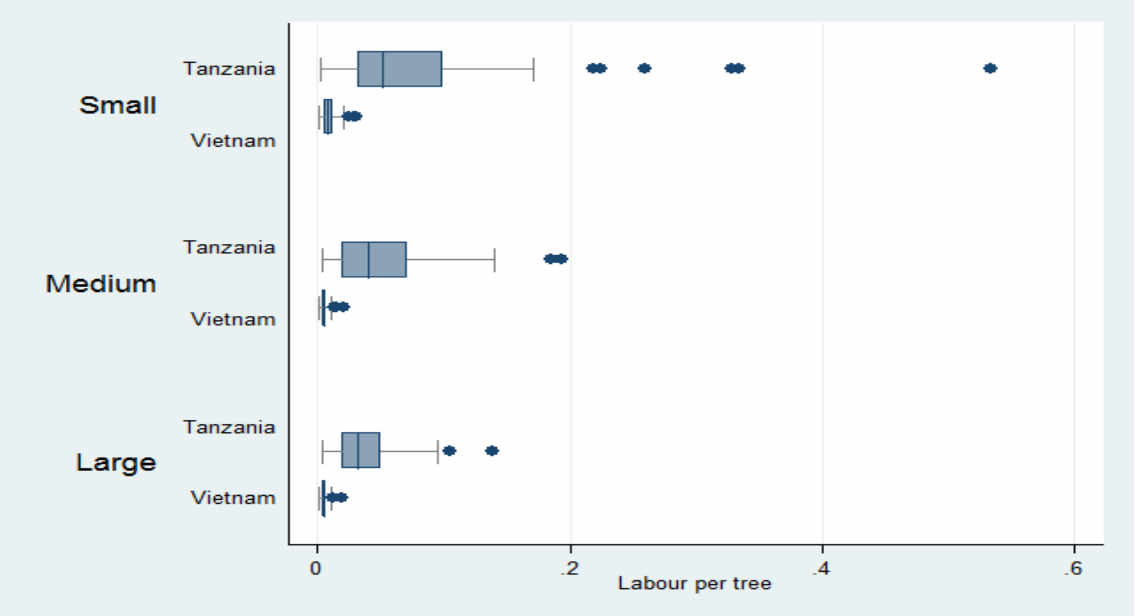

Source: Household survey.

*Figure 4A7* Output per tree distribution




Source: Household survey.

Figure *4A8* Distribution of labour per tree




Source: Household survey.

*Table 5A1* Prices of raw cashew in Tanzania 2006/2007-2010/2011 (TSh)

| | Indicative | Market price | | FOB | |
|---|---|---|---|---|---|
| | Price | Low | high | price | Marketing |
| 2006/07 | 600 | | | | Free market |
| 2007/08 | 610 | 750 | 1100 | 872 | WRS |
| 2008/09* | 675 | 700 | 990 | 925 | WRS |
| 2009/10 | 700 | 900 | 1428 | 950 | WRS |
| 2010/11 | 800 | 1501 | 2182 | 100 | WRS |

* World financial crisis

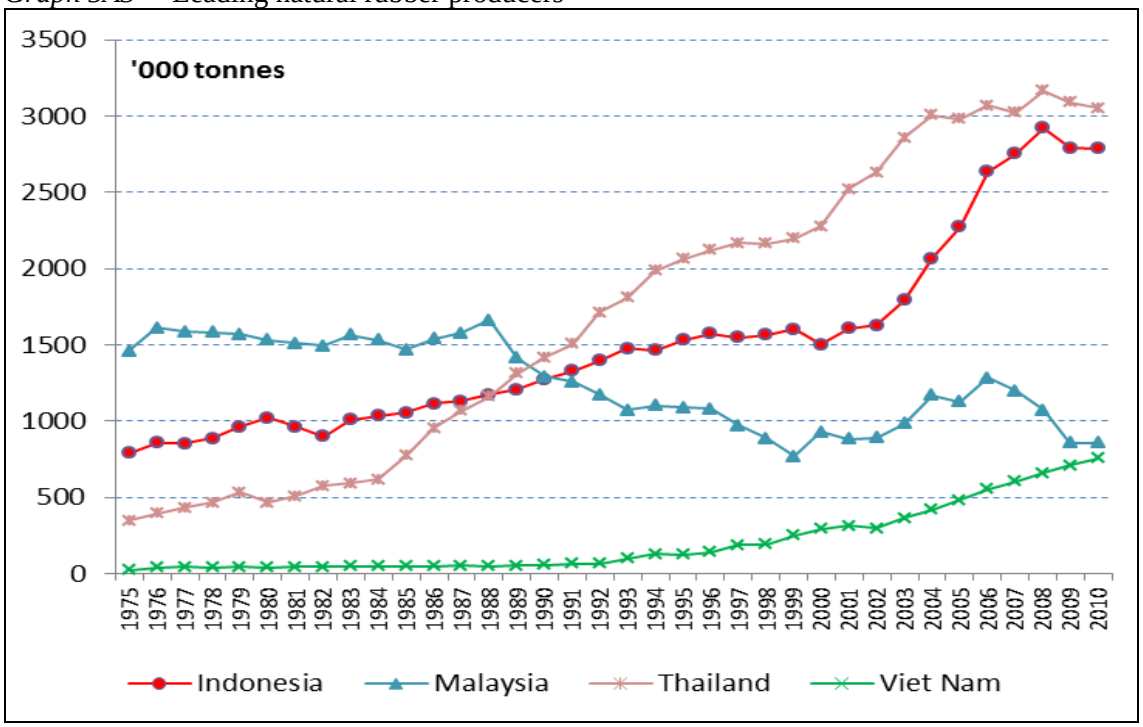
Source: Cashewmut Board of Tanzania, 2010

*Table 5A2* List of key informants' interviews conducted

| *Name* | *Organization* |
|---|---|
| Dr. Shamte H Shomari | NARI |
| Dr. Mark Sijaona | NARI |
| Dr Louis Kasuga | NARI |
| Dr. Peter Massawe | NARI |
| Mushtak Fazal | Premier Cashew Industries |
| Juma A. Shitta | Integrated Foods and Pharmaceuticals Ltd |
| Dr. John Shao | Researcher |
| Dr. Brian Cooksey | Researcher |
| Mr Majogo | Crop Officer Tandahimba |
| Clarence Kunjumu | Regional Cooperative Officer |
| Shabani Y Simuli | CBT - Quality Control Manager |
| (The Late) Benno Mhagama | CBT - Director General |
| Mr Mohamed Hanga | CBT - Director of Marketing and Information Services |
| Yasin | Micronix Likongwe- Warehouse Operator |
| J R Mmuko | SMS Subject Mater Specialist- Cashew – Mtwara Rural District |
| John B Henjewelle | DCO – Mtwara Rural District |
| Munjai | DCO – Tandahimba |
| Gervas J Mahanga | Tandahimba |
| Isabella Dismas | DALDO – Tandahimba |
| Jikwamue Group | Nursery- Malopokelo- Tandahimba |
| Mustafa Chiwile | Tandahimba AMCUs-Primary Society |
| Yahya Salum Mahinyo | CDC Nanhyanga |
| Hassan Dadi Chipyango | Cooperative Society Manager- TANECU |
| Mashaka Mfaume | DALDO- Masasi |
| Augustine Tenge | Ag DED Newala |
| R Mmunda | DCO Newala |
| Shweth Rai | OLAM- Mtwara |
| Mustafa Matata | BUCO-Masasi |
| Hon. Diwani | KIMWODEA |
| Tweta Issa Mandanda | VEO- Mnyoma |
| Mr Vu Ngoc Nguyen | Binh Phuoc |
| Mr Giang Hoang Dang | VINACAS General Secretary |
| Mr Nguyen Thai Hoc | Donafoods Director |
| Mr Vu Duc Bo | Tien Hung Cashew Sustainable Development Group |
| Nguyen Thi Tho - | Owner- Doanh Nghiep Tu Nhan Minh Tho- Dak O |
| Luong Thi Hoai- | Cashew Trader Thuong Hoai- Dak O |
| Mr Hiep | AMYCO Owner – Long An |
| Mrs My Le | MY LE – Owner – Binh Phuoc |
| Ms | HAMYCO – Manager – Binh Phuoc |
| Nguyen Thanh Binh | VINAFIMEX Binh Phuoc |
| Nguyen Van Chieu | LAFOOCO Long An www.lafooco.vn/ |
| Abdulkarim Ngarama | Branch Manager of OLAM |
| Tuntufye Mwambusi | Former worker OLAM |

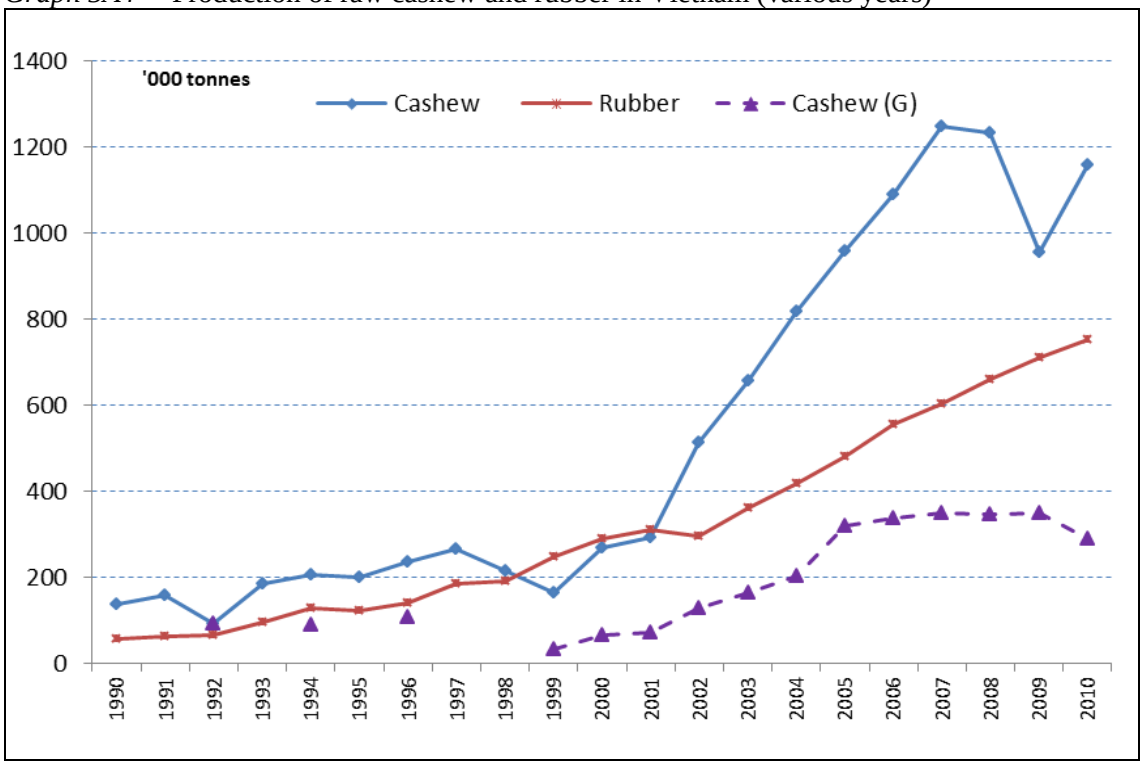
*Photo 1A* Some of the facilities visited

*Graph 5A3* Leading natural rubber producers



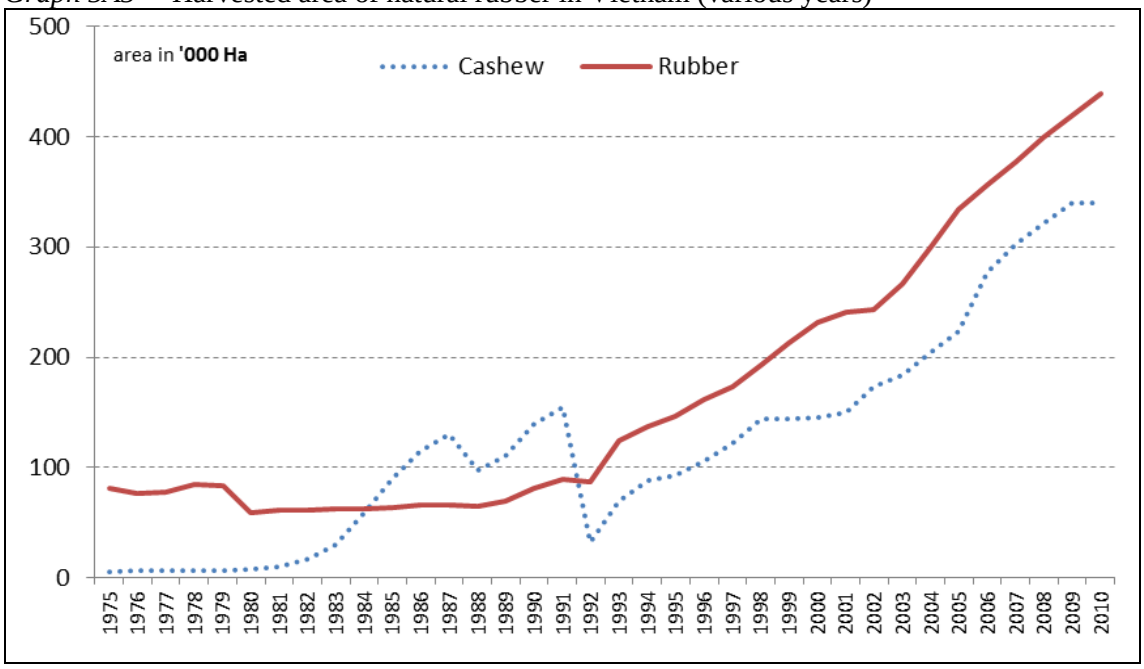

Source: FAOSTAT | © FAO Statistics Division 2012 | 14 April 2012

*Graph 5A4* Production of raw cashew and rubber in Vietnam (various years)




Source: FAOSTAT | © FAO Statistics Division 2012 | 14 April 2012 production output for Vietnam; cashew (G) uses data from Vietnam Cashew Association (1990 to 2006) and General Statistics Office of Vietnam GSO (2007 to 2011)

*Graph 5A5* Harvested area of natural rubber in Vietnam (various years)




Source: FAOSTAT | © FAO Statistics Division 2012 | 14 April 2012

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