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Securing the profitability of the Flores coffee industry

SADI-ACIAR research report

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Australia Indonesia Partnership

Kemitraan Australia Indonesia

ACIAR's participation in the Australia–Indonesian Partnership

The Australia Indonesia Partnership (AIP), comprising $500 million in grants and $500 million in highly concessional loans over five years, was announced in January 2005. The partnership supports Indonesia's reconstruction and development efforts, both in and beyond tsunami-affected areas. Assistance involves long-term sustained cooperation focused on economic and social development projects and Indonesia's programs of reform and democratisation.

ACIAR is committed to the partnership through the management of a component of the Smallholder Agribusiness Development Initiative (SADI), which aims to improve rural sector productivity and growth in four Eastern provinces—East Nusa Tenggara, West Nusa Tenggara, South East Sulawesi and South Sulawesi.

This initiative will improve incomes and productivity for farmers and agribusiness in response to market opportunities, through a process that is underpinned by improved adaptive research and development capacity.

ACIAR's role in the initiative is to strengthen province-based agricultural research and development capacity that is market and client-driven, and effectively transfers knowledge to end users. A key part of this approach is delivered through market-driven adaptive projects which are priorities for smallholders, farmer groups, agribusiness, government and other supporting agencies.

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2 Executive summary

The island of Flores has produced significant volumes of coffee for well over a century. Coffee is a smallholder crop in Flores, grown within a subsistence-based agricultural system, and is the principal source of farm income in the Districts of Manggarai and Ngada. The natural environment in these Districts, with high altitudes, seasonal rainfall and extremely fertile soils, is well-suited to coffee production.

An estimated 2,500 tons of Arabica, and 4,000 tons of Robusta, is produced annually on Flores, almost all of which is traded through the East Javanese port of Surabaya. Green coffee beans are either transported overland in trucks and ferries, or shipped via the Reo Harbour on Flores' north coast direct to Surabaya. Whilst demand for Flores Robusta coffee appears to be good, Flores Arabica coffee is relatively undeveloped and does not currently possess an established market identity. (The primary end-use for Flores Arabica appears to be as a cheap substitute for blending by the exporters in Surabaya.) The local price differential between the two commodities is small. This is in contrast to many other growing regions where Arabica prices are often 30% to 50% higher than Robusta. A number of Arabica quality improvement initiatives have already commenced in Flores, funded by government agencies, international development agencies and the private sector. Whilst these initiatives are still embryonic, international specialty coffee buyers are already showing an increased interest in the origin. Considerable potential exists for developing heightened quality consciousness along the value chain and establishing Flores as a specialty coffee origin, which would raise rural incomes in coffee-growing villages.

The coffee trade in Flores is based around the town of Ruteng in Manggarai District, where a dozen or so traders buy and sell Arabica and Robusta green coffee from all over Flores. For the most part, these traders are not engaged directly with international buyers, and are isolated from the changing demands of the global coffee sector. Coffee is normally collected by traders and, without further processing, transported to Surabaya. There appear to be no quality-related price incentives for the various types of coffee processing performed at farm level. Very few traders have established direct relationships with farmers beyond the traditional *ijon* system of tied credit, and most to date, have little motivation to improve quality at the farm level. Whilst one local trader has made some inroads into seeking heightened Arabica quality, these efforts do not appear directly linked to the requirements of the international market and farmer engagement has been limited to motivating farmers through price incentives.

There are a number of clear strengths and opportunities which suggest that Flores could develop into a specialty Arabica coffee origin, whilst further building the reputation of its Robusta. In addition to the ideal coffee-growing environment of Flores, the established coffee-growing tradition within the communities provides a good basis on which to develop a high value industry. The name 'Flores' also lends itself to the construction of symbolic coffee value, and the relevant government institutions appear supportive of coffee-related initiatives. The present combination of poor primary processing and lack of market understanding provide potential to quickly add value to this coffee. However, to capitalise on these strengths and opportunities, a range of constraints must be addressed and overcome.

Geographical isolation is the major constraint for the industry. Those involved in the industry lack knowledge about market opportunities and the technical requirements for quality improvement and value adding. The industry has no strategic plan and it will be difficult for any single small intervention to transform the industry without major investment. The farm system is highly risk averse, such that changes to farm-level production and processing methods must be clearly demonstrable as being beneficial to farmers. Farmers currently lack information and the means for effective knowledge

transfer is limited. To facilitate a shift towards a high value coffee industry in Flores, infrastructure improvements are also required. An efficient port and/or improved export documentation procedures in Flores would allow export-ready coffee to be traded more efficiently. At the farm level, improved water supply to villages is required to allow production of high quality washed coffee.

In Flores, the potential exists to help create a world class speciality coffee origin, resulting in increased farm incomes for the estimated 75,000 families currently involved in coffee production. Intervention can contribute to a quality-oriented shift in the Flores coffee industry. If technical issues can be resolved, an industry strategy formulated, and interaction between the various stakeholders supported, the scene is set for larger scale inputs to continue the development of the industry.

Flores Farm Family with traditionally processed Arabica Coffee

3 Introduction

The objectives of the report are to:

- Identify constraints affecting the profitability of the coffee industry in Flores,
- Understand the capacity of the industry and supporting agencies to contribute to regional development in Flores for the benefit of coffee smallholders, and
- Provide recommendations on how these constraints can be addressed

The focus is on the two main coffee production Districts of Manggarai and Ngada with information generated through interviews with stakeholders and general field observations, although there is a limitation due to the coffee harvest had not begun and there was little coffee being traded at the time of data gathering.

This report is focused primarily on Arabica coffee. However, it should also be acknowledged that current Robusta production is twice that of Arabica for Flores and there appears to be further opportunities for the development and value adding of Robusta in Flores as well as Arabica.

4 The Flores Coffee Industry

Flores is a long narrow island in East Nusa Tenggara (NTT) Province, in Eastern Indonesia. The two districts of Manggarai and Ngada (Figure 1), both in the western half of the island, contain the two major coffee production areas on the island, constituting an estimated 90% of production for both Arabica and Robusta coffee. These production areas are focused around the District towns of Ruteng and Bajawa. Ruteng is the centre for coffee trading operations on Flores.

There is a broad range of agricultural production in the coffee areas of both Districts. Soils in the Manggarai coffee area are fertile but are often spread across steep slopes, whilst soils in Ngada appear to be even more fertile and are located on a gently sloping upland plateau. Coffee is clearly the most important cash crop for farmers in both regions, although farmers cultivate a number of other food and cash crops in addition to coffee. These diverse production systems suggest a particularly risk adverse farmer, such that a shift towards more intensive commodity production remains a challenge in this relatively isolated part of Indonesia.

Arabica and Robusta coffee are grown passively in Flores with virtually no chemical fertilisers or pesticides. Both crops are mostly unpruned and widely intercropped, sometimes with Arabica and Robusta grown together. Coffee is mostly grown under the shade of *Erythrina* or *Albizia* trees, which are very tall and unpruned. Growing conditions are ideal for both Arabica and Robusta with deep fertile soils, adequate rainfall and a good dry season to ensure flowering and fruit set (overbearing could be a problem in these conditions). Coffee is healthy with no obvious diseases of major economic significance.

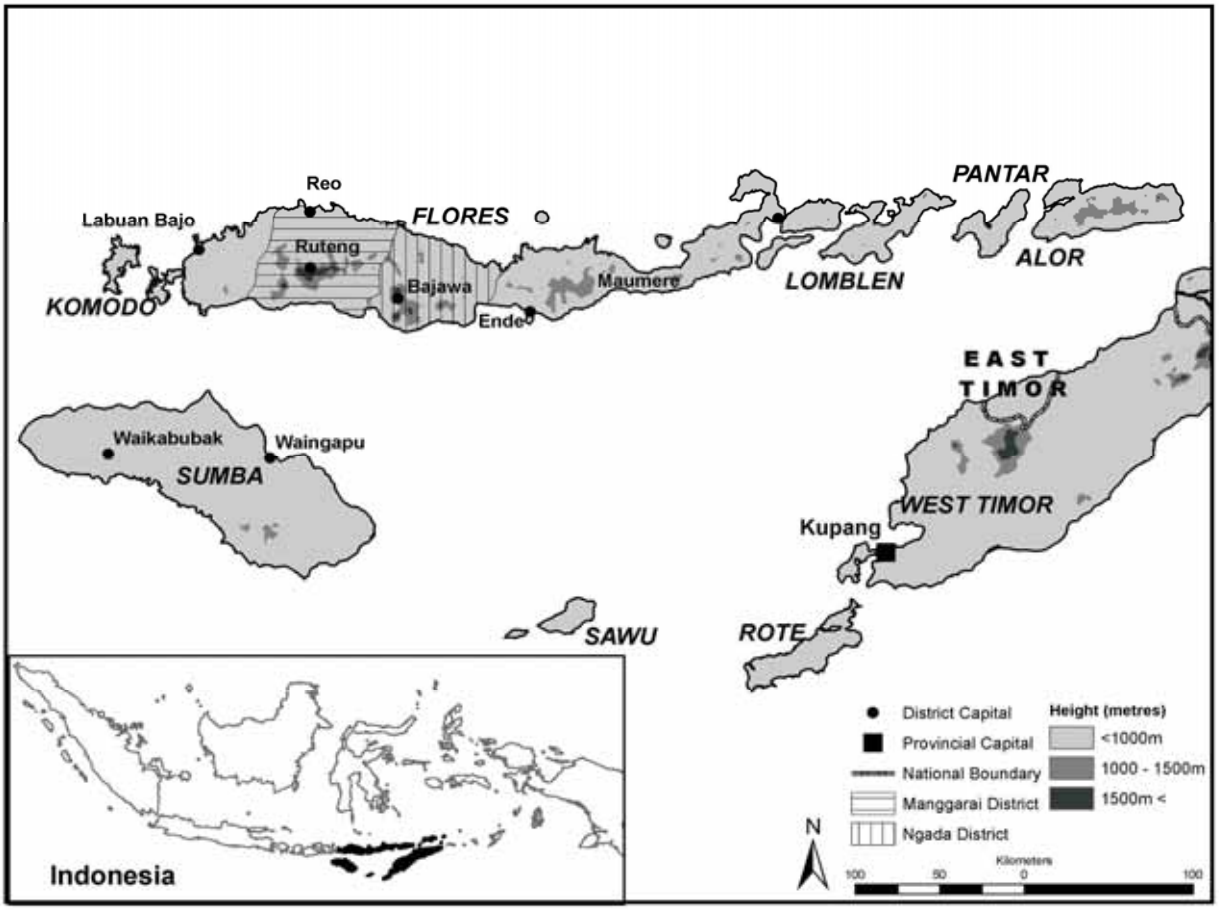
5 Production Areas

5.1 Manggarai

The coffee-growing area of Manggarai is concentrated around the steep slopes of Mount Ranaka (2358m), and a short chain of associated peaks stretching some 50 km in an east-west direction. Ruteng (altitude 1150m) is located just to the north of Mount Ranaka. Coffee production begins with Robusta grown on the lower slopes from 500m in altitude, then merges with Arabica in the middle altitudes of 800 to 1200m, and is then dominated by Arabica up to 1800m. The coffee areas in Manggarai are spread across a number of sub-districts, including Poco Ranaka, Borong, Elar, Kota Komba, Ruteng, and Lambeleda. These areas tend to be characterised by ageing coffee trees and declining production. Farmers appear to be more dependent on coffee in these areas than in the Ngada coffee areas. Manggarai is the main Robusta producing District in NTT.

We were provided with conflicting production estimates from different sources. The official National Estate Crops Statistics of Indonesia (published by the Department of Agriculture in Jakarta for the period 2003 to 2005) suggest that, in 2003, total annual production of Robusta coffee in Manggarai alone was 9,431 tonnes, and for NTT Province was 14,120 tonnes (Arabica data was not available). The local agriculture (Disbun) office in Ruteng, however, has recently revised its methods for estimating production and now reports that only 4,492 tonnes of Robusta is grown in Manggarai District. This Disbun office now reports that 1,241 tonnes of Arabica is grown in Manggarai. These latter estimates seem to correlate fairly closely with estimates made by a range of traders and industry stakeholders. Revised production estimates are based on tree counts, and then using standard planting distances (2.5m by 2.5m for Arabica and 3m by 3m for Robusta) to calculate total areas under cultivation.

Table 1 provides coffee production data for Manggarai District. Extrapolating from this data, average farm size is 0.12 hectares (132 trees) for Robusta and 0.08 hectares (128 trees) for Arabica. Field observations, however, suggest that (in some areas at least) farmers have coffee holdings far in excess of this (at least 0.5 hectares). Stakeholders suggest that up to 80% of farm families in the area grow some coffee, although it is probably little more than a backyard crop for many. Certainly, however, average holdings of coffee in Flores are small, indicating the general lack of focus on intensive coffee production within the farm system. Also extrapolating from Table 1, average yields from the productive areas are 376 kg GBE[1]/ha (Robusta) and 301 kg GBE/ha (Arabica) which seems to accurately reflect the condition of farms observed.



Map showing the Two Major Coffee-growing Districts on Flores

Table 1. Coffee Production Data for Manggarai District

	Immature (Ha)	Productive (Ha)	Ageing (Ha)	Total (Ha)	Production (Tonnes GBE)	Families with Coffee
Robusta	4,294	11,931	1,194	17,419	4,492	36,980
Arabica	1,264	4,117	388	5,769	1,240	13,918

Source: Department of Estate Crops and Horticulture Manggarai District 2007

[1] *GBE (Green Bean Equivalent) is used when volumes are actually based on another stage of processing such as red cherries or parchment coffee, and a conversion has been made to green beans.*

Rice terraces and coffee areas near Ruteng, Manggarai District

Coffee Production area of Colol near Ruteng, Manggarai District

5.2 Ngada

The town of Bajawa is situated on an upland plateau (at 1200m altitude), which is surrounded by a complex of volcanic domes. The Ngada coffee areas are spread across this plateau, with large areas of relatively flat areas found between 1000 and 1400m altitude. The steeply-sloping volcanic cone of Mount Inerie, at 2200m, dominates the landscape to the south of Bajawa. Due to the relatively expansive land area found at these altitudes, coffee production in Ngada is dominated by Arabica cultivation (Table 2 shows this to be about 80% of total production). Production in Ngada is concentrated in the two key sub-districts of Ngada Bawa and Golewa (estimated to collectively account for

more than 90% of the Districts' total Arabica production). The Ngada area is characterised by very fertile soils, younger coffee trees and increasing production.

National Statistics data was not available for Ngada. The local Disbun provided the data shown in Table 2. The District production estimates of 368 tonnes (Robusta) and 1,727 tonnes (Arabica) correlate fairly accurately with estimates provided by a range of traders and industry stakeholders. Extrapolating from this data, yields are estimated to average 1030 kg GBE/ha for Robusta and 691 kg GBE/ha for Arabica (based on productive areas). At first glance, these appear to be very high yields, unlikely to be obtained on unimproved smallholder plots. Whilst it is possible that favourable conditions, such as fertile soils, relatively flat lands and young trees, are combining to encourage extremely high productivity, it is more likely that this is merely an underestimation of the productive area.

Table 2. Coffee Production Data for Ngada District

	Immature (Ha)	Productive (Ha)	Total (Ha)	Production (Tonnes)
Arabica	2,850	2,501	5,351	1,728
Robusta	438	357	796	368

Source: Department of Estate Crops Ngada District 2006

Volcanic Mount Inerie and gently sloping landscape of Ngada District

The town of Bajawa nestled in a heavily forested upland valley

5.2.1 The Social Setting of Coffee Production

In both producing Districts, there appear to be strong cultural traditions closely inter-woven with farm practices. Livestock is commonly reared for ceremonial use and participation in these ceremonies is a major financial commitment for many families. Distinctive Flores architecture and traditional culture (*Bajawa*) appears to be especially pervasive in Ngada. The diverse resource and labour requirements of a traditional society appear to be a factor contributing to a lack of intensification within coffee production systems in Flores.

Overlaying traditional culture in Flores is the widespread influence of the Catholicism, reportedly adhered to by 97% of the population. It is clear that the Catholic Church plays a dominant role in the lives of people in these parts of Flores, with churches dominating both rural and urban landscapes. In addition to providing spiritual guidance, the Catholic Church is actively involved in economic and development activities in the area. In Ngada, the Church owns some large coffee estates and that an 'Economic Commission' is active within the Archdiocese of Ende (and under it the Diocese of Ruteng). It will be important to understand the Catholic Church's role in the daily life of farmers and to engage the Church as a stakeholder in any development activity in the area.

Farmers practice a broad based, mixed farming system with the benefit of extremely fertile soils, growing a range of food crops, with corn being the main staple along with dry and wet rice, soy and kidney beans. A wide range of vegetables, such as green beans, are also grown. Popular cash crops in western Flores include candlenut, cocoa, and cashews, whilst large stands of bamboo are also cultivated. Small livestock are an important part of the agricultural system. This diversified farm system is an apparent response to risks of food security. In recent years, extended drought and failed harvests have led to widespread food shortages in eastern Flores, particularly in Sikka, Ende and Flores Timur.

In 2006, floods in Ngada destroyed large areas of food crops, whilst the 2007 landside in Manggarai (following localised drought and failed corn harvest) destroyed wet rice and dry fields, again threatening food supplies. The inability of existing institutions and government agencies in Flores to cope with localised food shortages seems to reinforce farmer concerns over intensifying commodity production. Government programs to stimulate export crop production (such as coffee and cocoa) in Flores have also been targeted by several local NGOs as contributing to food shortages and starvation.

Traditional Bajawa Adat Village

A further social issue is land uncertainty and clashes with forestry officials. In 2002 and 2003, local government officials commenced a campaign to evict coffee farmers who, it was claimed, were illegally occupying forest lands in Manggarai (near Colol village). The ensuing conflict came to a head in 2004 and included the chain-sawing of smallholder coffee trees, arrests and protests. Uncertainty over land rights is clearly an important issue in Manggarai, and is possibly associated with a disinclination amongst farmers to make long-term investments in their farms.

5.2.2 Coffee Types and Varieties

Only two out of the more than eighty species of coffee are grown commercially around the world. These are Arabica (*Coffea arabica*) and Robusta (*Coffea canephora*). Each requires slightly different agro-climatic conditions (with some overlap). Arabica is grown at cooler, higher altitudes of 1000 to 2000 metres whilst Robusta grows from sea level to 1000m. Good rainfall of at least 1600mm per annum is required for both species. In general, Arabica is a more complex crop to grow and process. Both Arabica and Robusta can be grown either intensively (200 man-days and one tonne of fertiliser per hectare) or passively (where farmers simply harvest the cherries with little crop maintenance). The system adopted by farmers depends on a range of social and economic factors. If good production, processing and marketing requirements are met, Arabica generally achieves a higher farm-gate price than Robusta. While Robusta is generally lower priced, it can yield up to twice as much coffee per hectare than a comparable Arabica production system. Quality and marketing tend to be the key factors in improving Arabica profitability, whilst high productivity and farm efficiency are often the key factors in Robusta profitability.

Typical smallholder farm with rice and coffee under mixed shade, Manggarai

Coffee under Erythrina Shade, Ngada

Arabica and Robusta tend to have their own specific markets and uses. Robusta is generally considered a lower quality coffee compared to Arabica. The export price normally reflects this, with Robusta prices being approximately half to two thirds that of Arabica. Robusta flavours are harsher and do not have the fine and delicate flavours associated with Arabica. Robusta also has twice the caffeine of Arabica. For these

reasons, Robustas are normally used in the cheaper blends for less discerning markets and for instant coffees or mixed sparingly with Arabicas. Robusta, however, was traditionally a key component within Italian espresso blends, and whilst the speciality coffee market has tended to favour Arabicas, high grown and well processed Robusta can are also sometimes use in quality blends. In simple terms Robusta is used as a 'base' in such coffees providing the 'body' or 'mouth feel', whilst Arabica provides acidity, aroma, and a range of subtle flavours. For this reason, both Flores Robusta and Arabica have good value adding and marketing potential.

Little is known about the Arabica varieties found in Flores, as these have been of little interest to buyers in a commoditised, low quality Arabica market. However, Arabica varieties will become a topic of interest if the Flores coffee does move toward a specialty market as variety composition may be a key strategy in developing a Flores 'character'. ICCRI researchers believe that the dominant Arabica variety in Flores is S795, with localised concentrations of Typica, Catimor and Hybrido de Timor. A high concentration of an old local Arabica variety called 'Juria' was observed, which a much larger form than normal Arabica. These trees are obviously Arabica, but the actual variety is not known and needs further investigation. The unique size of these trees may provide additional marketing potential.

Even less is known about the Robusta varieties found in Flores. Varieties are normally of little interest to buyers in the commoditised Robusta market. Varietal interest in Robustas is normally limited to issues such as disease resistance, productivity and bean size. However, Robusta varieties may be a topic of interest if the Flores coffee does move to build upon its existing Robusta quality reputation.

It is also possible that the fertile and mountainous environment of Flores contains unique microclimates, where interesting combinations of environment and varieties create possibilities for specialised market development. The Ngada area is believed to be much cooler than the Manggarai area, even though they are both at about 1200m altitude, with clear differences between Ngada and Manggarai Robusta described by some industry actors.

Large 'Juria' Arabica trees, Manggarai

5.2.3 Harvesting and Processing

The harvest seasons of Arabica and Robusta overlap, with Arabica harvested from May to August and Robusta harvested from July to September. As both Arabica and Robust are large unpruned trees, the harvest is a slow process. It is reported that ripe Arabica cherry is selectively harvested, with farmers visiting each tree four to five times over the four month season. This needs to be confirmed, as it appears to be in contrast with the marketing process where there is no incentive for quality and strip-picking (harvesting all coffee when only about 60% of the cherry is actually ripe). Under such conditions, harvesting of green coffee would be more cost-effective. It is also reported that Robusta cherry is selectively harvested like Arabica, which would be rather unusual in Robusta production systems where strip-picking usually dominates, and may be a reason why Flores Robusta is a relatively sought after origin. It was reported that Flores farmers believe that strip picking can damage the coffee tree.

There is no standardised system for processing Arabica cherry to green bean. Coffee is bought by traders as *Asalan* (unsorted and ungraded green bean). There is no price differentiation in the local market for how this is produced. A number of primary processing methods were reported such as: i) drying whole cherry (natural method) and then hulling the dry cherry to produce *Asalan*; ii) pulping and then drying the coffee without fermentation (semi-washed) and then drying and hulling the parchment to produce *Asalan*; and iii) pulping, fermenting and washing (full-washed) prior to drying and hulling the parchment to produce *Asalan*. Some coffee is also wet-hulled and some is dry-hulled. It can be concluded that due to the range of processing methods used by farmers and accepted by traders the normal Arabica quality of Flores will be extremely low.

Robusta tends to more uniformly processed with farmers reportedly using the 'natural' process to produce dry cherry (as is common for Robusta). Coffee is hulled at farm level prior to sale.

The processing of fresh cherry to dry cherry or dry parchment is an extremely critical in step to maintain quality. A further critical area is the storage of the dry coffee and then the hulling of coffee to produce *Asalan* for sale. A large proportion of the crop is hulled by farmers pounding it in stone mortars which will produce a range of flavour defects to add to the already poor quality primary processing of the fresh cherry. All of these factors contribute to the poor quality of Flores coffee compared to the potential of the coffee on the tree.

5.2.4 Trading System

Coffee is traded from farmers through traditional middle traders (called *Ijon* or *kaki-tangan*) to the major traders, all based in Ruteng. *Asalan* is sold by weight with little to no regard for quality. In the past, two traders had facilities capable of producing export ready coffee. However, it appears that the majority of Arabica and Robusta is now bulked and shipped to Surabaya as *Asalan* with no processing performed in Flores.

Flores Arabica is virtually unknown outside the local Indonesian market as these coffees are reportedly mixed and blended in Surabaya with other Indonesian coffees. Flores Robusta is apparently sought after for specific markets in Japan where it is sometimes sold under the Flores name ('Flores' or 'Reo' coffee). It was also reported by one trader that visits had been made to Ruteng by Japanese and Dutch buyers to monitor the Flores Robusta supply chain (possibly looking for direct sources of Flores Robusta in an attempt to stop adulteration in Surabaya).

5.2.5 Local Coffee Traders

The Manggarai District collects a 'tax' of Rp50 per kilogram of coffee traded out of the District (prior to September 2006, this was Rp100 per kilogram). An official database therefore exists for the interregional trade in coffee from Flores, although such data is expected to underestimate actual trade (Table 3). The dominance of coffee in agricultural income in the District is also evident in the table. Again according to this District data, there were ten local traders, all based in Ruteng, actively trading coffee in 2005.

Table 3. Interregional Commodity Trade from Manggarai District

Trade from Manggarai (tonnes)			
	Coffee	**Cocoa**	**Cashews**
2004	3876	672	670
2005	3110	550	693
2006	4027	513	484

Source: Economics Division, Manggarai District Regional Secretariat

According to local sources, all of these traders are ethnic Chinese and most deal in a range of commodities. The largest Ruteng-based trader is CV. Matahari, which also roasts and markets its own coffee locally. The traders operate in a very competitive local market, where coffee is bought and sold on margins with very little interest in quality or value-adding (ie. a commodity market). Green coffee is pooled in Ruteng and sold on to Surabaya, based on contract request and price indications from Surabaya. Some of the traders are sub-offices for Surabaya exporters, whilst others appear to be more independent. The Ruteng traders are isolated from international markets and do not have access to information and knowledge about new, emerging markets particularly in the specialty sector.

5.2.6 Transport, Shipping and Export

Virtually all of the coffee produced in Manggarai and Ngada Districts is shipped through the Port of Reo. This is a small port. It is capable of taking ships up to 1000 tonnes, although most ships are in the range of 200-300 tonnes. Reo appears to be the main gateway for inbound rice and other essential commodities (such as fertilisers) to Western Flores and these ships are given priority at the port. Long delays are reported by traders shipping coffee out from Reo.

It is also possible to transport coffee overland from Flores to Surabaya using trucking companies and four inter-island ferry crossings. This appears to be more costly, slower and is considered riskier in terms of theft.

Preparation of export shipments from Flores has been conducted in the past by some traders. However, the difficulty of arranging export documentation via the provincial capital of Kupang (and also the port authorities in Surabaya), and the risk of transport and handling export-ready coffee break-bulk in small inter-island ship routes, has proved difficult.

The size and capability of the Reo Port limits the export capacity and opportunities for Flores coffee. A port is reportedly being upgraded on the south coast of Flores near Aimere, which would appear to be in the wrong location to serve the export industries as shipping lines need more direct links to Surabaya via the north coast of Flores. Currently, the largest port on Flores, and the only port officially registered as a 'commercial' port (operated by Pelindo III) is Maumere.

5.3 Pricing and Market Potential of Flores coffee

5.3.1 Arabica coffee

Key questions remain on the final use of Flores Arabica. International buyers have had little exposure or offerings of traditional Flores Arabica coffee, which indicates that is mainly blended and mixed into other Indonesian coffees in Surabaya.

The majority of the 2500 tonnes of Flores Arabica is either processed as a 'natural' or a 'semi-washed' coffee, with few quality incentives and of relatively low quality. Confirmation of the low quality of Arabica being produced on Flores is indicated by the 2006 season maximum local factory door price (for *Asalan*) of only Rp16,000/kg. This is only slightly higher than the Robusta price at Rp14,000/kg.

Price discussions with local traders and quality comparisons with other recently developed specialty coffee origins, such as East Timor, suggest that existing Flores Arabica coffee, if offered on the world market, would be priced at minus 20 to minus 25 cents below the NY 'C'. To check this price assumption, NY 'C' price averaged roughly 120cents/lb over the last six months of 2006. Discounting 20cents/lb gives a potential export price of Flores coffee of 100 cents/lb or around Rp20,020/kg FOB Surabaya (at Rp9,100/USD). A Ruteng purchase price in 2006 of Rp16,000/kg leaves just over Rp4,000/kg to cover inter-island shipping, sorting, grading and export preparation in Surabaya, as well as a reasonable profit margin for the Surabaya trader.

From experiences in origins such as East Timor, it is likely that improved Flores Arabica could, however, be sold at prices of plus 10 to plus 15 cents/lb to the NY 'C'. (Toraja and Mandheling coffees are at prices of plus 40c/lb over the NY 'C', which in a 120c/lb market equates to an FOB price of $3.52/kg). There are indications that for a small increase in processing costs and a focus on quality management in the processing and marketing

chain, FOB prices could increase by Rp5,500/kg or 25%. In turn, much of this could be translated to significantly improved farm-gate prices.

The East Timorese coffee industry is a case where a poor quality filler coffee was transformed in the 1990s into a recognised quality origin by the deliberate efforts of donor agencies and value chain leaders. Indonesian Arabicas are sought after origins in the global market speciality coffee market, providing an important platform for acceptance of Flores coffee.

5.3.2 Robusta coffee

Discussion with traders indicate that Flores Robusta is a sought after coffee and is exported under the 'Flores' name or under the name of the Port, 'Reo', although little is known about the coffee or end-uses. It appears to be traded at about a $100 to $200 premium per tonne over the London market for Robusta, which is much higher than Lampung Robusta (which commonly sells at a discount to the London price). Japan is reported to be the key market.

It is not clear what characteristic set Flores Robusta apart from other Robusta origins. Most of the other processes in the chain are rudimentary, such as hulling by traditional pounding. Robusta is sold by farmers as *Asalan*. Flores Robusta is reported as being a small, hard, dense bean. It is also reported that Flores Robusta is selectively picked when ripe and not strip-picked, which would have a clear impact on quality. Higher altitude growing areas will also play a part in creating a distinct flavour character. Even though Flores Robusta appears to be a known coffee, it is by no means a Speciality Robusta. There is scope to help improve value of Flores Robusta by technical, quality and marketing interventions.

5.4 Role of Coffee Processing in Creating Quality

The role that coffee variety and growing environment play in influencing coffee quality and character is widely acknowledged. There has been much less acknowledgment of the role of coffee processing in influencing taste profiles. Coffee quality is often assessed at a significant distance from production areas, with coffee trading companies using cup tasting to assess, then accept or reject, coffees presented to them in shipment samples. Despite their skill in assessing quality, there is little technical understanding of the processes that develop particular coffee flavours. Often processing is seen as an inert activity which merely maintains the natural character and flavour of coffee, if done correctly, and is the cause of deterioration when quality is a problem.

There is now growing interest in understanding the role processing plays in the development of coffee character, as the speciality coffee industry has begun to seek out unique and specialised flavours, and to demand more reliability and consistency in quality. It is now realised that a range of characters and flavours are possible for a single origin if different primary processing methods are used.

Most coffee origins are linked to a defined processing method which has evolved over time and through the influence of factors such as colonial industry, local culture, climate, labour, water availability, and market signals. Flores, however, currently does not have a clearly-defined, characteristic processing method. At present, a range of processes are used which combine to create inconsistent, low quality coffee. Apart from the range of traditional processing systems in Flores, two small initiatives focused on developing coffee for the speciality market are under way. One is using a 'wet-hulled' technique to produce a coffee with high body and low acidity, while another is using a full-washed technique to produce a clean, acidic coffee with lower body coffee. An objective evaluation of the most

appropriate processing technology for the long term benefit of the Flores Coffee industry, suited to local culture, infrastructure and environmental conditions is needed.

6 Industry Strengths

Farm-gate prices for Arabica coffee in Flores are currently low by Indonesian standards. The industry, however, possesses a number of favourable conditions which would support the establishment of 'Flores' as a recognised origin within the international specialty coffee sector. If managed appropriately, quality improvement and integration into speciality marketing chains would significantly increase the rural incomes of an estimated 75,000 farm families in Flores.

As a simple measure of possible impact, Flores farmers could benefit from price increases of 25% (and possibly up to 40%) for speciality coffee over farm-gate prices for traditionally processed and marketed coffee. This potential price increase may be a trigger to increase the generally low farm productivity. In addition to better prices, linking farmers into the speciality coffee marketing chains opens farming communities to a range of opportunities, such as access to information, community groupings and more reliable business partnerships. These information linkages, partnerships and groupings then have the potential to become the conduits and catalysts for further farmer livelihood improvement initiatives and community development activities.

Several factors are conducive to the future development of specialty coffee production in Flores.

6.1 The Physical Environment

Coffee produced in the districts of Manggarai and Ngada has an important competitive advantage over many other coffee-growing regions in Indonesia and around the world. Both districts are fortunate to possess fertile, well drained volcanic soils, which are well suited to quality Arabica production. Higher altitude coffee production generates superior tasting coffee, and Arabica production in Flores appears to range from around 1200 meters up to 1700 metres altitude. Much of the Robusta production is also relatively high-grown, found between 500 and 1200 metres altitude. Physiologically, the coffee plant requires a period of water stress to stimulate flowering balanced with annual high rainfall. The seasonal weather patterns on Flores seem well-suited to reasonably high coffee production.

6.2 Existing Coffee-growing Culture

Coffee has been grown on Flores for at least 150 years, and the local communities are highly familiar (through intergenerational learning) with the crop. Coffee production is integrated within existing farm systems. Whilst farm systems are diverse, coffee is undoubtedly a vital source of cash income in villages. At these altitudes, few other agricultural commodities possess the same environmental requirements and flexibilities in production and trade as coffee. The estimated 2,500 tons of Arabica now grown in Flores easily satisfies the critical mass (of at least 500 tonnes) which is generally required to establish a reliable new origin within the specialty coffee sector.

6.3 Potential for 'Symbolic' Quality Construction

The name 'Flores' has certain marketable associations which, combined with a unique culture (particularly in Ngada District), lends itself to construction of symbolic coffee quality. In his book, *The Perfect Cup*, Tim Castle writes:

"If a cup of coffee tastes good, it's not as good as one that reminds you it came from a place and that people grew it."

Indeed, the ability for an origin to tell a story is an increasingly important 'quality' within the specialty coffee sector. A successful case of consciously utilising cultural imagery to increase the symbolic quality of coffee is that of Key Coffee in the Toraja coffee industry in the 1970s and 1980s. The rugged, volcanic Flores landscape (adjacent to Komodo Island) is home to several, distinct traditional ethnic groups, which would seem to offer several potential points of departure for telling a unique 'Flores' story.

6.4 Supportive Government Institutions

As the primary commercial agricultural commodity in the districts of Manggarai and Ngada, coffee is afforded a high priority by local governments. The Department of Estate Crops offices in both Manggarai and Ngada Districts are actively involved in on-going coffee development projects. In addition to central government funding, significant district budget allocations are also made towards coffee improvement.

6.5 Existing Industry Efforts at Quality Improvement

Robusta farmers in Flores are already paid a slight premium for their coffee, which still has the potential to be developed further. Initial attempts to develop inroads into the speciality Arabica market, by several small projects, have shown promising results. Activities in Flores coordinated by the Indonesian Coffee and Cocoa Research Institute (ICCRI) led to at least three containers of full-washed Arabica (dry hulled by local cooperatives) being sold into international specialty markets in 2006.

6.6 Demand for Speciality Coffee

Overall world consumption of coffee has increased only slightly in recent years. However, the speciality coffee market sector has seen dramatic growth over the last five to ten years, driven by demand from companies like Starbucks and a range of medium-size companies, eager to source speciality coffees from all over the world. There are consistent market signals suggesting that there would be a demand for an improved Flores origin in this growing market. Whilst the demand exists, a successful reputation as a speciality coffee must be built through consistent delivery of a unique speciality coffee with the key attributes of quality, consistency, low risk and reliability over at least a five year period. International specialty roasters have been supportive of initial attempts to develop a specialty origin in Flores.

7 Industry Constraints

The previous section set out the opportunities for future development of the Flores coffee industry. These opportunities rely on building quality (both actual and symbolic) leading to acceptance of Flores coffee in international specialty markets. However, to perform the successful transition towards quality oriented markets, the following existing constraints will need to be addressed. Five broad categories of constraints have been identified

containing a range of sub-categories, many of which are cross-cutting. The constraints are not prioritised and are designed only to give a general sense of the key issues.

7.1 Limited Quality Orientation within Existing Coffee Trade Networks

Developing over several generations, the Flores coffee industry has not generally been oriented towards quality markets. The traditional 'trader mentality' has focused on Arabica coffee as a commodity, which is bought and sold on margins with very little interest in value-adding. Green coffee beans originating from various Arabica varieties, produced through a number of distinctly different processing methods, are pooled together in Ruteng and sold on to Surabaya, where it is presumably used as a cheap filler coffee. The Ruteng traders are isolated from international markets and do not have access to information and knowledge about new, emerging markets (particularly in the specialty sector). In this environment, there is very little incentive for traders to develop an understanding of coffee quality attributes, to improve technology or to work closely with farmers. Farmers, in turn, are not generally exposed to price incentives for higher quality coffee.

7.2 Lack of Strategic Industry Planning

The ad hoc development of the coffee industry in Flores has meant that a coordinated approach to industry development or strategic planning does not exist. This is exemplified by the variety of processing technologies currently used, and the number of distinct Arabica coffee varieties grown in Flores, with uncertain implications for cup quality. This has resulted in a range of coffee qualities and flavours emanating from the island, such that Flores coffee does not currently have a regional reputation or distinct image in the international market. Regional marketing of Flores coffee does not really exist. The industry is currently being pulled in different directions by industry actors, government departments and development agencies.

7.3 Risk Adverse Farmers and Diverse Farm Systems

Whilst coffee is the primary source of cash income in many villages, farmers are particularly risk adverse and manage a highly diverse farming system. They may be reluctant to devote additional resources to increasing coffee production and quality improvement. If farmers are not adequately motivated to invest in coffee improvement, any intervention is unlikely to succeed.

7.4 Poor Farmer Access to Knowledge and Extension

The changes wrought by regional autonomy across Indonesia have exacerbated existing problems of inadequate extension for Indonesian tree crop farmers. As a result, District-level Disbun offices no longer have their own extension staff. Instead, Disbun programs are implemented through Sub-District Farmer Extension Offices (Balai Penyuluhan Petani-BPP), and field Officers (Penyuluhan Petani Lapangan-PPL) below them. Institutionally, these offices are coordinated administratively through the Agency for Food Crop Development (Dinas Pertahanan Pangan) or equivalent agencies reporting directly to the District head (Bupati). Field officers are often trained in core food crop production such as rice and corn, and frequently do not have the specific technical knowledge required for improving tree crop production.

7.5 Poor Supporting Infrastructure

At the village level, the introduction of wet-processing systems requires reliable access to water supply during the harvest period (which frequently coincides with the dry season). In

many villages, access to such a water supply is not currently available, particularly in Ngada district.

The current inability to containerise coffee at a port in Flores severely limits the construction of a distinct market identity for Flores coffee, and contributes to the isolation of Ruteng traders from international markets. The administrative requirements for Flores-based export activities are considerable, involving coordination with both Kupang and Surabaya.

Insufficient formal credit appears to be available in the coffee districts for agricultural investment and upgrading.

Road construction to remote coffee-growing villages is likely to be an issue, limiting accessibility and the ability of coffee value chains to transfer price incentives to farmers.