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International Agricultural Research**

*project*

# Securing the profitability of the Toraja coffee industry

SADI-ACIAR research report

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**Australia Indonesia Partnership**

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## 2 Executive summary

Sulawesi coffee accounts for only a fraction of Indonesia's total coffee exports (about 2%), and yet this regional production centre is an important supplier of the rapidly growing international specialty coffee sector. Coffee roasters, in the key markets of Japan and the United States, coordinate global supply chains to ensure access to high-quality Arabica coffee grown by smallholders in upland Sulawesi. Competition amongst buyers can be intense, particularly in the preferred growing District of Tana Toraja (widely known simply as 'Toraja'). Despite substantial foreign investment in both plantations and milling operations in the District, annual production in Toraja is limited to some 2,000 tonnes and yields are very low by global standards (perhaps only 150kg of processed green beans per hectare). Given the strong international demand for this coffee, there exists significant potential to raise rural incomes through: i) enhanced farm productivity, and ii) improved farmer organisation leading to improved prices. There are, however, major constraints to increasing farm productivity in Toraja, and current farm-gate prices are already some of the highest in the world.

The estimated size of the southern Sulawesi Arabica coffee industry is 7,000 tonnes, with production spread across the Districts of Toraja, Enrekang, Gowa and Sinjai in South Sulawesi, and in the Mamasa District of West Sulawesi. Exports are channelled through the Makassar port (official data suggests annual exports averaging between 3,000 and 4,000 tonnes over the last five years), with some interregional trade to Surabaya, Jakarta and Medan. A smaller volume of Robusta coffee (roughly estimated at 3,000 tonnes) is also produced in South and West Sulawesi, which for the most part is consumed locally (less than 500 tonnes is currently exported).

Shifting consumer demands in major world coffee markets have resulted in the emergence of various certification schemes related to sustainable coffee production. This wider development is now starting to exert a major influence on the way coffee is produced and traded in Sulawesi. The increasingly small numbers of active coffee exporters in Makassar are moving to initiate tightened upstream linkages with growers to ensure an adequate supply of high quality coffee, and to facilitate impending certification requirements. Farmer organisations in the coffee districts of Sulawesi are poorly developed at present and coffee farmers are not linked to a functioning extension service. The increasing willingness of several major buyers, therefore, to engage directly with coffee farmers in Sulawesi suggests the potential for developing an 'Industry Partnership' focused around farmer access to improved technologies. A potential threat to the competitive buying environment in Sulawesi coffee markets, however, is the potential for certification processes to lead to the capture of producer groups by downstream interests.

Whilst most industry actors agree that the market could easily absorb increased production from Toraja, the challenges to improving yields are substantial. Farm-gate prices in the markets of northern Toraja have increased from an average of Rp3,300 / litre in 2003 to Rp8,000 / litre in 2006, due to a combination of rising world markets and increasing buyer interest. And yet, these prices have not stimulated a corresponding heightened interest in improved coffee cultivation. Whilst new coffee plantings are evident adjacent to, and often within, the remote forest areas of Toraja, this reflects a continued extensification of agriculture rather than a shift to more efficient production. A key issue is the need to better understand farmer decision-making processes and incentive structures within Toraja to encourage improved farm practices, mitigate against deforestation, and ultimately increase productivity and household income.

The legal protection of the *Toraja* or *Kalosi* trade names, through the establishment of a Geographical Indication (GI), offers the potential to increase value retained within the growing community. However, the establishment and monitoring costs of such an activity would be substantial, and current institutional settings within Sulawesi are probably not yet

conducive for such a development. Effective regional brand management within specialty coffee markets is certainly vital in the long term, and the development of industry support structures should be considered to assist the industry move in this direction.

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## 3 Introduction

The primary objectives of this report are to:

1. Identify and prioritise constraints affecting the profitability of the coffee industry in Toraja
2. Understand the capacity of the industry and supporting agencies to contribute to regional development in Toraja for the benefit of coffee smallholders
3. Provide recommendations on how these constraints can be addressed
4. Identify potential collaborators in Indonesia and Australia for future SADI project(s) in Eastern Indonesia.

The initial geographical focus was to be the Toraja District of South Sulawesi. However, Toraja is only one producing centre (albeit a strategically important one) within a regional coffee industry converging on Makassar (as the key export node) and including a number of growing Districts across South and West Sulawesi. Therefore, whilst a focus on Toraja has been maintained, an attempt has also been made to situate Toraja within this wider regional industry by including an overview of these production systems.

It should also be acknowledged that current exports from Makassar are overwhelmingly dominated by Arabica coffee, and that the international reputation of Sulawesi coffee in specialty markets is based on the Arabica variety. Apart from a brief discussion of Robusta production and trade, much of this report is therefore focused on the Arabica coffee sub-sector.

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## 4 The Sulawesi Coffee Industry

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### 4.1 Background

Coffee was already a major export commodity from Makassar in the mid 19<sup>th</sup> century, when production was concentrated in government lands near Makassar, around the present-day District of Gowa (Figure 1). A secondary area was located further north near Pare-Pare, including the present-day Districts of Enrekang, Toraja and Mamasa. The product from these northern districts was commonly traded as *Boengie*<sup>1</sup> coffee, a 'fancy' grade which demanded a premium price in international markets. Whilst production in the southern area was severely affected by leaf rust in the 1880s, production of high quality Arabica continued in Toraja and Enrekang. By 1973 however, following the disruptions of war and regional unrest, only 120 tonnes of Arabica (along with 560 tonnes of Robusta coffee) was exported from Makassar. In this post-colonial period, the designation *Kalosi* (a trading town supporting a coffee-growing hinterland in Enrekang District) became a popular trade name for this coffee instead of *Boengie*.

An important player in the post-war recovery of the regional coffee industry was the Japanese coffee company, Kimura Coffee Co. Ltd (later Key Coffee). In 1977, through a

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<sup>1</sup>*Boengie* was the name of a small trading port south of Polewali, from which prahu sailing vessels transported the coffee to Makassar for export until at least 1890. Even after trade ceased to flow through this port, the Boengie name continued to be used for at least another 50 years because of the strong market recognition of this name.

Sulawesi-based joint venture, PT Toarco Jaya established an estate and a smallholder buying station in Toraja (Figure 3). The 'Toarco' name is an acronym of 'Toraja Arabica Coffee', and *Toarco Toraja* became a trademarked flagship product for Key Coffee. The company was pivotal in promoting the *Toraja* designation in international coffee markets, particularly in Japan, where they hold an exclusive trademark over the use of the *Toraja* name. The company was also influential in changing local processing techniques, in particular through encouraging farmers to wet-process their coffee.

More recently, Sulawesi coffee has become a favoured origin in the rapidly expanding international specialty coffee market in the United States. Annual Arabica exports from Makassar increased from an average of less than 400 tonnes in the 1980s to around 2,000 tonnes throughout the 1990s (Figure 2), with the US emerging as the dominant market. This demand has fuelled the increased upstream influence of various international coffee companies. In 1998, a major mill was established in Toraja, through a joint venture between the US-based Cooperative Business International (CBI) and two local partners. This operation is known locally as the 'KUD' after one of these partners. In 2003, another internationally-funded investor, CV. Lion Lestari (for a period aligned with the US-based Holland Coffee Group) also established a strong buying presence in the Toraja district (with a mill in Makassar). A key driver in these upstream developments has been the substantial purchasing power of the Starbucks Coffee Company, which is thought to now buy as much as 50% of the total Sulawesi crop.

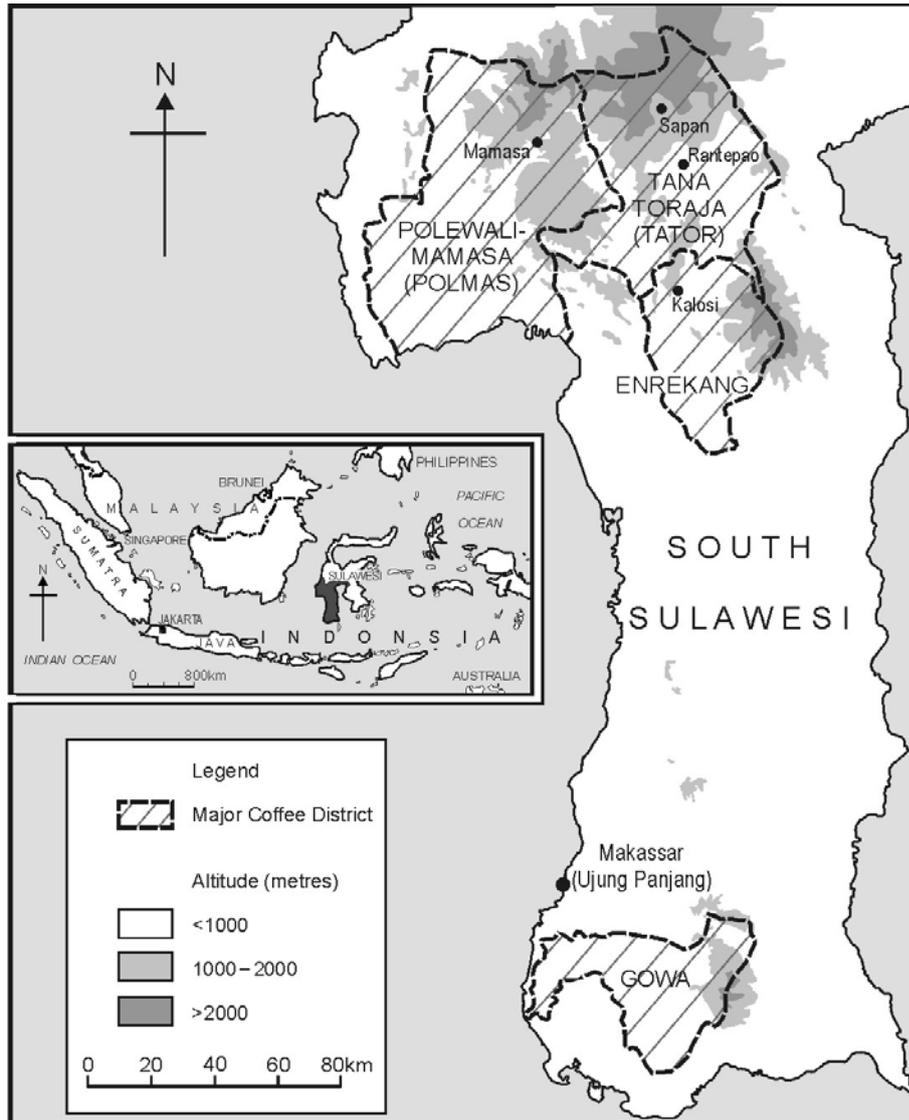
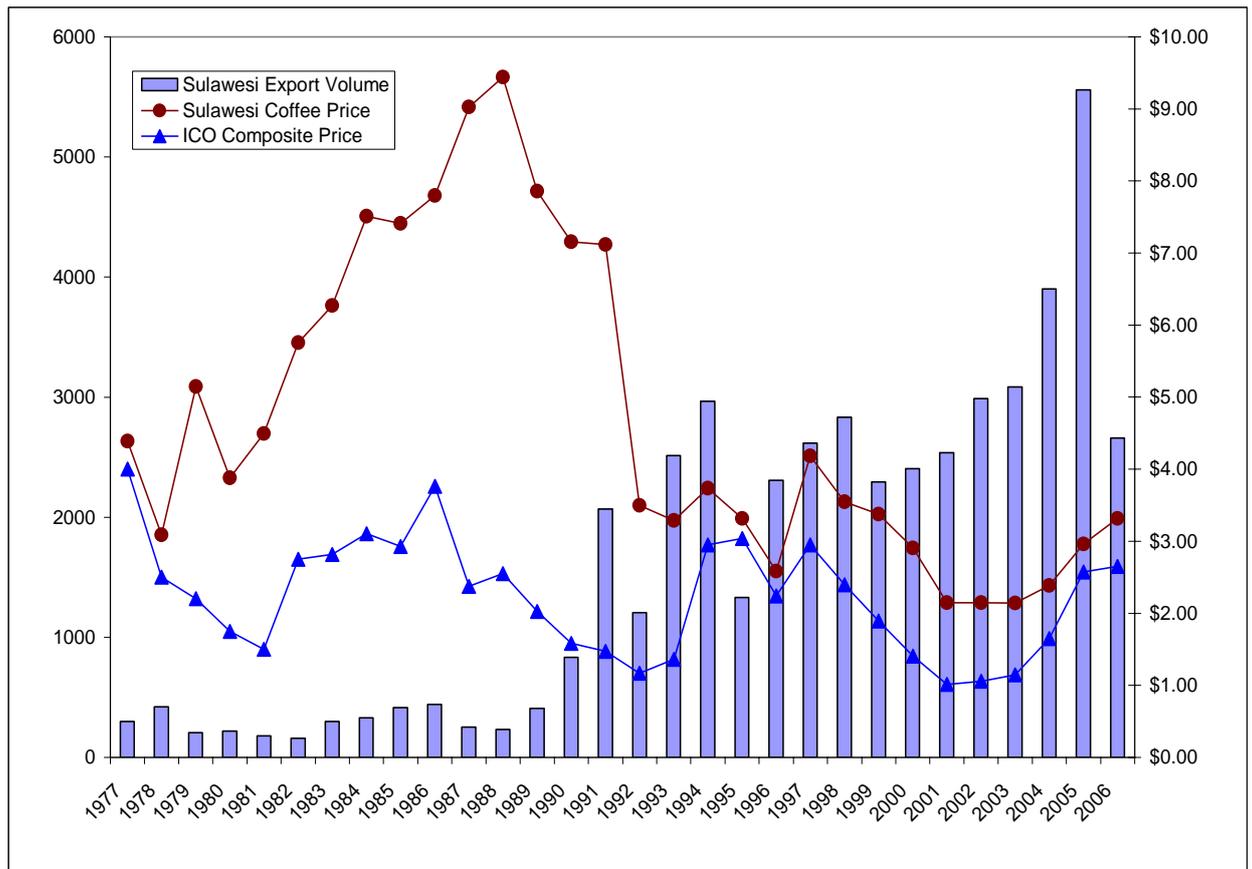


Figure 1. Coffee Map of Sulawesi



(Sources: Office of the Department of Trade, Makassar, BPS, and [www.ico.org](http://www.ico.org))

**Figure 2. Growth in Arabica Exports from Makassar (Values in tonnes and USD/kg)**

## 4.2 Major Coffee Producing Districts of Sulawesi

Whilst the total volume of annual Arabica exports from Makassar (around 4,000 tonnes) is still modest by global standards, coffee production dominates the local economies where it is grown. Within South Sulawesi, the major Arabica-producing Districts are Toraja and Enrekang in the northern complex (with smaller volumes in North Luwu / Seko), and Gowa and Sinjai in the southern complex. A significant volume of coffee is also produced in the Mamasa District of the newly formed West Sulawesi Province. Official production statistics are not based on detailed field surveys and tend to overestimate production by up to 300%. Based on field observations, traded volumes at local markets, demographics and average yields, and estimates made by various industry participants, Table 1 is considered to be a fairly accurate account of Sulawesi coffee production.

Table 1. Annual Production Estimates for major Sulawesi Coffee Districts (Tonnes)

District	Arabica	Robusta
Tana Toraja	(Smallholders) 1,500 (Estates) 500	500
Enrekang	2,000	200
Mamasa	2,000	1,000
North Luwu	300	500
Polewali	0	300
Gowa	500	200
Bantaeng	200	300
Sinjai	200	500
<b>Total</b>	<b>7,200</b>	<b>3,500</b>

#### 4.2.1 Coffee Production, Processing and Trade in the Toraja District

Coffee production systems in Toraja are distinct within the various sites of Sulawesi coffee production, and are generally believed to produce a higher quality final product. The heart of smallholder production in Toraja is in the north (Plate 1), which is estimated to account for 70% of the District's production, with a further 25% grown in the southern area around Getengan and Buntu, and about 5% grown in the western sub-district of Bittuang (Figure 3).

The landscape of northern Toraja is dominated by three parallel highland valleys, each with an associated market that serves as a collection point for the coffee at Minanga, Sapan and Barrupu villages. A fourth central market is also located at Ke'pe (Figure 3). The coffee growing villages are mostly located above 1,500 metres altitude and generally have very poor road accessibility (using 4WD vehicles, it can take more than two hours to reach these villages from the central town of Rantepao). Coffee plots in northern Toraja are generally found in fairly close proximity to the village hamlet, and may consist of only a few hundred trees. Crop maintenance is minimal, and frequently the only labour input is during the harvesting and processing of cherries. Coffee trees are rarely capped or pruned. Farmers rarely apply synthetic fertilisers, although manure from adjacent pigpens and buffalo stables may sometimes be applied. Almost all plots are planted under a thin shade cover of *dadap* trees (*Erythrina lithosperma*), and sometimes intermixed under jackfruit, avocado, *uru* timber species, rambutan, tamarind, and sugar palm. Yields are low, and estimated to average between 100 to 200 kg (GBE<sup>2</sup>)/ha.

<sup>2</sup> 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.

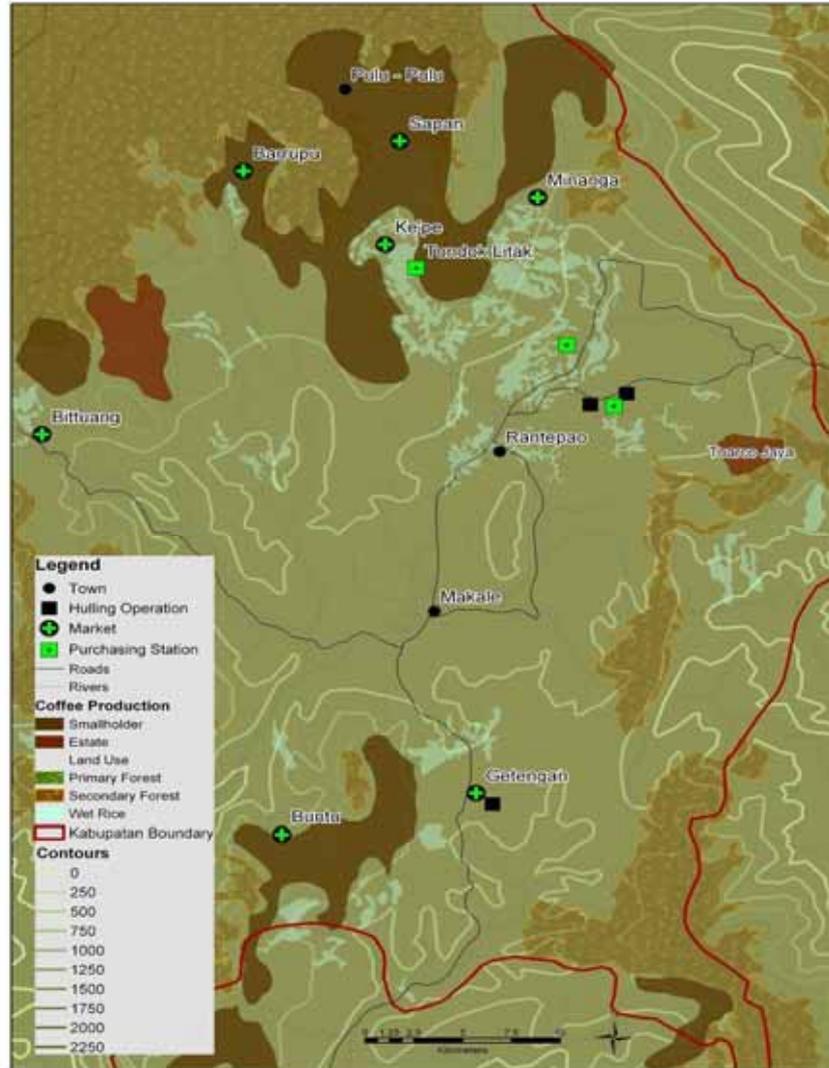


Figure 3. Coffee Map of Toraja District



Plate 1. Coffee Growing Landscape in northern Toraja



Plate 2. Hand Pulping in Toraja

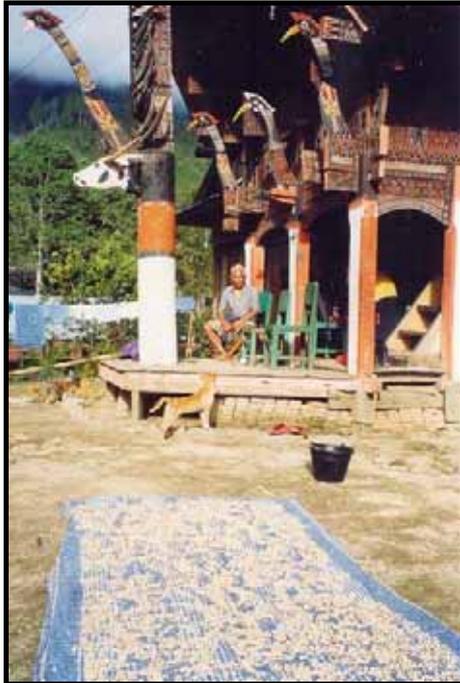


Plate 3. Sun Drying in northern Toraja



Plate 4. Measuring Coffee in the Sapan Market

Production in southern and western Toraja is similar to northern Toraja, although it is often part of a more diverse farm system, and coffee is not grown at the same consistently high altitudes as in northern Toraja. Production areas in western Toraja merge with those in Mamasa, and those in the south merge with Enrekang (Figure 3), with significant trade across these administrative boundaries. Coffee grown in northern Toraja is generally believed by buyers to be superior in quality compared to western and southern Toraja.

The peak coffee harvest in Toraja occurs between May and August. Generally, only ripe cherries are picked, and trees can be picked over four or five rounds throughout the harvest. Most households in northern Toraja possess a wooden hand-powered pulping machine (Plate 2), and cherry pulping is rarely delayed more than a night. The wet parchment coffee is then usually 'fermented' overnight in buckets, plastic bags or sacks, although this is a fairly haphazard affair and varies considerably between individual farmers. Some farmers ferment for a second night, although this is done frequently because weather conditions do not permit immediate drying. Growers will then wash the coffee the following day to remove the mucilage. The parchment coffee is sun-dried by the grower for four to five hours (Plate 3). This semi-dried parchment coffee is then traded at local markets. An estimated 5,000 families depend primarily on coffee for cash income in northern Toraja, and no other cash crops are widely grown in these villages.

Traditional markets in Toraja are held on six-day cycles, with different villages hosting markets on different days within a particular cycle. Names of the days in the six-day Toraja week are commonly borrowed from the local market on which they fall. The seven main Arabica coffee markets in Toraja are shown in Figure 3. During the peak coffee harvest, around 30,000 litres of parchment coffee (10,000 kilograms GBE) is commonly traded daily at each of the major markets. Farmers generally transport their own produce to the market, in hand-carried sacks, strapped to horseback or sometimes pooled together in old 4WDs.

Village traders (known locally as *pa'sambu* or *tengkulak*) wait on the outskirts of the market to intercept coffee carried by farmers. The coffee is measured on an open sarong (*sambu*) using a one litre measuring tin (Plate 4). This process allows the *tengkulak* to

make a brief inspection and quality estimation of the coffee prior to purchase. The *tengkulak* frequently pays a premium for low-defect parchment. In the markets, coffee is measured based on a heaped litre (*bocco*), whereas it is sold to key buyers in Rantepao as a levelled litre (*sasa*). Approximately every *bocco* litre in the markets is equivalent to 1.21 *sasa* litres sold in Rantepao; the difference is profit for the *tengkulak*. Many growers are already tied to a particular *tengkulak* through interlocked credit markets, particularly in the remoter villages of Northern Toraja. In addition to market collection, *tengkulak* collectors will also visit individual houses to monitor and /or collect the harvest. Most *tengkulak* immediately supply the semi-dried parchment coffee to one of the major buying stations near Rantepao (Toarco Jaya, the 'KUD' or Lion Lestari). For many years, Toarco Jaya operated a permanent purchasing station near the Ke'pe market at Tondok Litak (shown in Figure 3), strategically located to be accessible to coffee grown in all three of the northern valleys. In 2007, most purchases were being made at their Bolu office. Due to enhanced competition in recent years, however, Toarco has also established, at considerable cost, buying stations in remote coffee-growing villages above the Minanga, Sapan and Barrupu markets.

There is one final point to be made with regards different methods of coffee processing in Toraja. Toarco buys semi-dried parchment coffee, dries the parchment using mechanical driers and then hulls the coffee upon receiving an export order (this is the traditional system of processing known as 'dry hulling'). In contrast, most other operations in Sulawesi also buy semi-dried parchment coffee, but then immediately hull and then dry the green beans in the sun (a system apparently unique to Sulawesi and northern Sumatra, which is referred to as 'wet hulling' in this report). The influence of these different processing systems appears to be an important determinant of final cup quality, with 'wet hulling' believed to increase the level of body, and decrease acidity, in the cup.

#### 4.2.2 'Kalosi' Coffee in Enrekang District

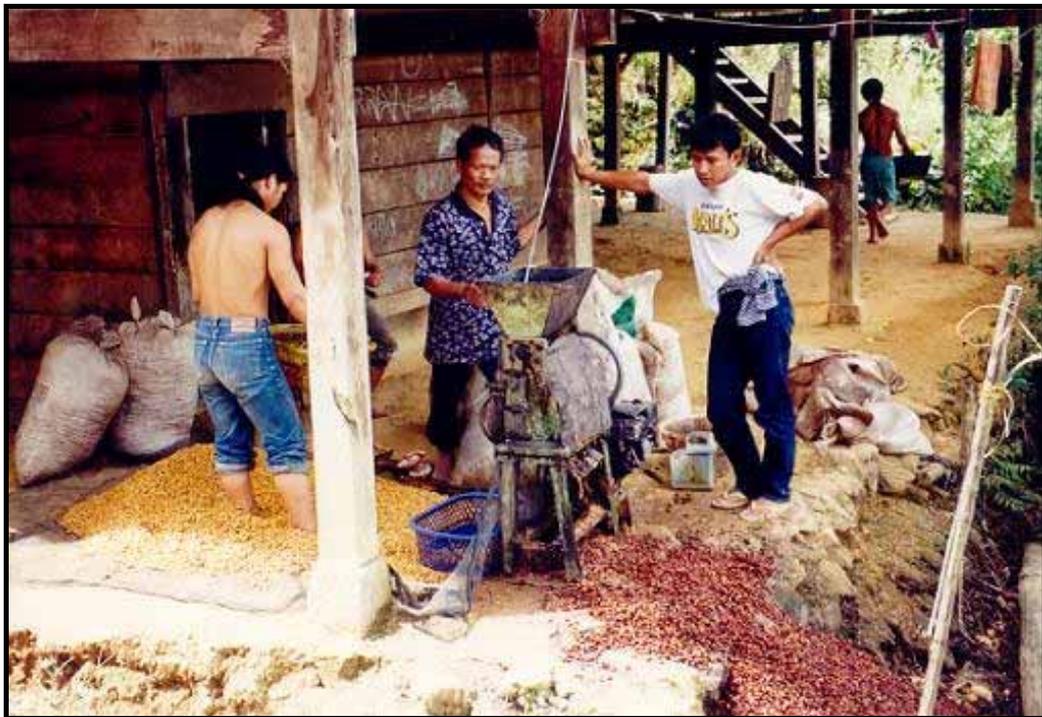
Kalosi (also known as Sudu) is a small market town in Enrekang on the main road between Toraja and Makassar. The international specialty coffee industry frequently uses the *Kalosi* (sometimes spelt *Kalossie*) identity as a common trade name for all Arabica coffee exported from Sulawesi. Kalosi has never signified a growing area *per se*, but refers to a trading centre whose hinterland is now ordinarily restricted to Enrekang District. The District of Enrekang (also known as *Duri*) is located directly south of Toraja, and is estimated to produce an equivalent volume of Arabica coffee to Toraja. *Duri* farmers grow various products for market, including cabbage, shallots, potatoes, papaya, *salak* (snake-skin fruit), cocoa, pepper, and cloves. A well-maintained road network links rural producers to central markets and buyers in Makassar.

There are two distinct coffee-growing areas in Enrekang: Baraka in the east and Alla in the west. The latter gradually merges with adjacent growing districts in southern Toraja. Coffee is generally grown at altitudes ranging from 1,000-1,500m in Enrekang. Individual holdings are slightly larger in Enrekang than in Toraja, and average around 2,000 trees per household. Coffee production in Enrekang is generally more intensive than in Toraja, and includes the widespread use of agrochemical inputs, less shade, and the cultivation of steep slopes. Coffee trees are commonly capped at about 1.5 metres, and pruning to improve light exposure and fruit production is common. As a result, average yields are considerably higher in Enrekang than in Toraja (estimated at 400-500kg GBE/ha).

Small market traders in Kalosi claimed to be selling up to 30 mechanised, coffee pulping machines per month, and a village cooperative at Benteng Alla indicated that at least 50% of its farmers now own such a machine. This indicates a high degree of mechanisation (shown in Plate 5), which is probably leading to improved quality in Enrekang. In the past, farmers would frequently delay pulping for up to a week due a lack of mechanised pulping machines. This would lead to poor 'fruity' tasting coffee. Semi-dried parchment coffee,

however, is not always immediately sold to local traders, and is commonly stored homes and warehouses, inevitably resulting in mouldy coffee.

There are two main coffee markets held twice weekly in Enrekang: the Kalosi (Sudu) market in the west; and Baraka market in the east. Much larger volumes are traded at these markets compared to Toraja. Traders from Enrekang may also purchase parchment coffee from the two coffee markets in southern Toraja (Getengan and Buntu) to supply their mills. However, it is more common for Enrekang-grown coffee to enter the southern Toraja markets, or be sold to one of the Toraja-based mills, where prices are notably higher. There is a high concentration of hulling operations in Enrekang (at least 15 in 2007), where the parchment is removed prior to drying and then transported (as green beans) to Makassar-based exporters. Plate 6 shows a typical Kalosi hulling operation. Parchment coffee from Mamasa and Gowa is also frequently processed at these mills. Each hulling operation finances village collectors to scout the coffee-growing villages to collect coffee, often providing financial support to farmers, interlinking credit with product marketing. Strict quality control measures are not usually enforced in Enrekang and it is rare for financial incentives to be offered for desired bean qualities or for beans to be rejected due to quality concerns.



**Plate 5. Mechanical Pulping in Enrekang**



**Plate 6. Kalosi Hulling operations and drying yard**

### **4.2.3 Poor Environmental Practices in The Mamasa Valley<sup>3</sup>**

The economy of the recently formed Mamasa District is heavily dependent on coffee production. In 2003, however, there was not one hulling machine in the valley, and all coffee was trucked to the coastal city of Polewali for further processing. Coffee production in Mamasa is characterised by poorly capitalised trade networks, ecologically unsustainable cultivation, and spatial dislocation from established village settlements. The District is hampered by poor road accessibility and communications, an undeveloped banking sector, and limited power supply. The Mamasa valley is enclosed by high mountain ridges and a single road links it to Polewali by a four-hour drive along unsealed roads. The main valley is also linked by a 2-day walk to Toraja, although there are ongoing plans to allow vehicle access across this very difficult terrain. Closely related languages, social practices, architecture and religion all indicate a shared cultural history between Toraja and Mamasa. Mamasa is sometimes referred to as 'West Toraja'.

Poor land management and forest clearing are serious problems in Mamasa. Much of the main valley is now covered with bracken fern and pine, as farmers retreat further and further up the slopes to clear forest for growing coffee. A combination of thin soils, steep slopes and little erosion control result in a limited productive life (sometimes only five or six years) for coffee trees before weeds invade the site and plots are abandoned. Plates 7, 8 and 9 show the various stages of forest clearing and planting, production and abandonment commonly found across Mamasa. Newly established communities, often reliant on coffee, are continually cut out of primary forest in remote locations within, and increasingly outside of, the main catchment. Due to the remote locations of many new plantings, farmers often stay there in rudimentary shacks during the harvest or planting periods.

Coffee is processed on farm as in Toraja, although fermentation is even more haphazard, and drying is commonly performed directly on the ground without using plastic sheets. In remote locations, the parchment may be dried longer than one day to reduce transport weight, leading to inconsistent quality. Most farmers carry their own coffee to one of the three main markets held weekly at Mamasa, Tamalantik, and Malabo, where 60,000 litres

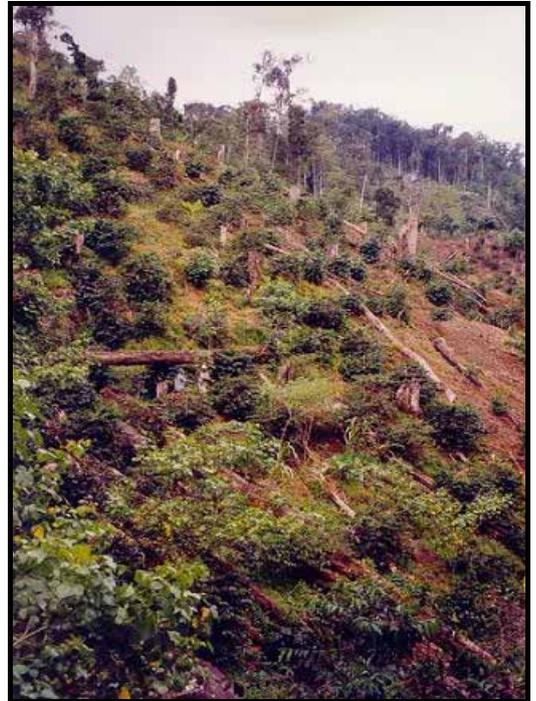
<sup>3</sup> Mamasa was not visited during the 2007 visit. This discussion is based on fieldwork performed in 2003.

of coffee (20 tonnes GBE) can be traded at each market during the harvest. With limited wet-rice production in the valley, farmers frequently barter coffee directly for rice.

Farmers in Mamasa do not generally have access to even informal credit, and as a result are generally not tied to any particular buyer in the market. Hundreds of collectors line the entrance to the Mamasan markets, buying coffee from local farmers, and then offload their stock to one of the larger local traders (only three traders were controlling the entire Mamasa market trade in 2003). These traders transport the parchment coffee to Polewali (where there were three active mills in 2003), although it is also commonly transported to Toraja and Enrekang (some ten hours away) if prices there are favourable. The Polewali mills can process ten tonnes of green beans daily and each claim to each hull about 500 tonnes in a season. The parchment coffee is hulled wet and after two to three days of sun-drying in the coastal heat, the green beans are sold to Makassar-based exporters, generally without prior sorting or selection. The lengthy supply chain from remote forest plots in Mamasa to coastal hulling operations means that coffee is often stored as semi-dried parchment for extended periods and can be extremely mouldy as a result.



**Plate 7. Forest clearing for coffee planting in Mamasa**



**Plate 8. Coffee production in Mamasa**



**Plate 9. Coffee taken over by bracken fern and abandoned**

#### **4.2.4 Problems of Quality in Gowa District<sup>4</sup>**

Coffee is grown in all five southern Districts surrounding Mt Lompobattang near Makassar (Gowa, Bantaeng, Sinjai, Bulukumba and Jeneponoto). Arabica Production in this area has increased significantly over the last 20 years, and is now concentrated mostly in Gowa District. The township of Malakaji, with at least one processing mill, has emerged as an important trading centre, and the name *Malakaji* is often used to identify coffee from all five Districts. Production here contrasts again to the production systems found in the three northern Districts already discussed and is generally considered to produce an inferior quality coffee. The contemporary history of coffee growing in this region can be traced to provincial government initiatives in the 1980s when, prompted apparently by solid international demand for Sulawesi Arabica, cultivation was encouraged in all upland areas. Government extension activities were an important factor contributing to the implementation of intensive agricultural practices in the region. Government support for the coffee industry has been particularly strong in Gowa, where processing equipment has been purchased for farmer groups and land made available for large-scale investment.

Farmer knowledge concerning crop maintenance, pruning methods and fertiliser application is generally advanced and productivity high as a result (estimated at 500kg GBE/ha). The quality of coffee, however, is significantly affected by the poor state of harvest and post-harvest processing. During field visits in 2003, coffee was universally harvested in a grossly unripe state (Plate 10). This practice was justified by the labour savings made by non-selective strip harvesting, by the avoidance of theft (which is apparently widespread), and by a belief that premature harvesting would reduce the demand on soil nutrients. The skins of immature coffee, however, adhere closely to the parchment and are difficult to remove. As a result, farmers often prepare the green cherries by mixing them with a chemical ripening agent, and storing in *goni* bags for one to two weeks prior to pulping. Generalised hullers, used also for rice and corn, are adjusted to pulp the coffee. These 'pulpers' do not actually separate the parchment coffee from the skins, and further separation is required. It is common for coffee then to be separated or 'washed' in local street drains using foul water (Plate 11). These processing methods, understandably, result in a very bad tasting coffee.

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<sup>4</sup> Neither Gowa nor the other producing districts in the south were visited during 2007. This discussion is based on fieldwork performed in 2003 and a meeting with Dinas Perkebunan in Makassar in March 2007.

Over the last five years, *Malakaji* coffee has been increasingly mixed in with better quality coffee from Toraja, Enrekang and Mamasa prior to export. Although a number of rejected containers from Makassar in recent years appear to have been caused by the inclusion of *Malakaji* coffee in export batches, such mixing undoubtedly continues. Quality complaints from international buyers have, however, started filtering up the supply chain and coffee prices in Gowa can sometimes be as low as 50% of prices in the northern complex. This in turn has led to a substantial inter-regional trade from Gowa to trading centres in Enrekang and Toraja. This marked difference in coffee quality across Sulawesi has been a key driver of the increased willingness of buyers to trace back the geographic origins of coffee in Sulawesi or, at the very least, to introduce new forms of coordination to monitor quality along the supply chain. The international image of Sulawesi coffee as a quality origin has been severely affected in recent years, due in part to the penetration of poor quality *Malakaji* coffee into export markets.

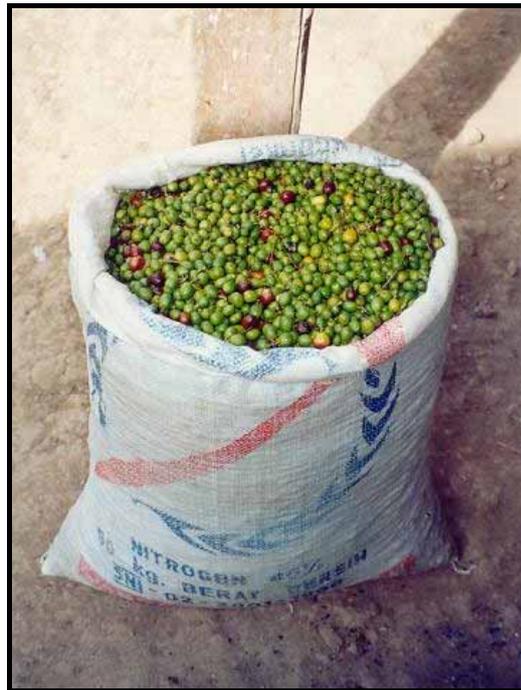


Plate 10. Freshly harvested Green cherries in Gowa District



Plate 11. 'Washing' the coffee in street drains in Gowa District

#### 4.2.5 Large-scale Commercial Estates in Toraja

A commercial plantation sector also exists in Toraja. The first to be established in the modern era was the 500 ha Toarco estate at Pedamaran, which now produces around 120 tonnes of green beans annually. The lower altitudes (900-1,250 metres) of this estate are not ideal for coffee growing, and production costs are high to prevent pests and disease, and to maintain soil fertility. Coffee is processed using traditional dry hulling and smallholder-purchased coffee is also processed at the estate. Mechanical dryers are used. Despite renewing their lease for a further 30 years in 2003, the company claims to maintain the Pedamaran plantation at a significant financial loss. Key Coffee emphasises estate ownership through their marketing material in Japan, and yet the Pedamaran estate only contributes about 20% to Toarco's total exports from Sulawesi.

Another 5,000 hectares of land is included within six nationally-owned estate leases, mostly located between Bittuang and Barrupu in North-West Toraja (shown in Figure 3). Many of these estates were established in late 1980s or early 1990s, and an estimated 40% of the leased area has now been planted with coffee. Primary access to these estates is from Makale in southern Toraja, unlike the northern coffee belt, which is linked to Rantepao. Land clearing, initial planting and infrastructure required a substantial investment that most estates now consider irrecoverable, and most of the estates are now in various stages of abandonment. We were told that, prior to 1998, the estates combined to form a 'Torajan Planters Association', but this is no longer operational.

The first estate to be established, largest and most professionally operated of the national estates is Solutco, owned by the Kapal Api Group. Solutco covers 1,199 hectares of land, and includes the lands of a Dutch-era coffee (and tea) estate, which was abandoned during the Second World War. The plantation includes areas up to an altitude of 1,800 metres. Coffee is pulped, fermented and then dried on canopied tables for two to three weeks before being dry-hulled on the estate upon request (ie. a similar process to Toarco). Solutco has been able to consistently sell into international markets in the US, Japan, Singapore and Australia at good prices. Green bean production on the state is around 160 tonnes.

Of the remaining national estates, none is managed in the professional manner of the Toarco and Sulutco estates, and none have consistently penetrated international markets. Despite their size, these estates are mostly managed in a semi-traditional style. Yields on the Torajan estates (approximately 300 kg GBE/ha) are well below those on intensively managed estates in Java (1,000kg GBE/ha). All estates identified labour difficulties as a primary constraint to developing a commercially viable operation in Toraja. It also appears that many of these estates were established on poor quality (acidic) soils.

### 4.3 International Trade in Sulawesi Coffee

Almost all coffee exported from Sulawesi is traded through the container port in Makassar, with an undocumented smaller volume shipped first to either Surabaya or Medan. With the exception of the two Toraja-based operations (Kud Sane/CBI and Toarco Jaya), exporters generally perform cleaning, sorting, grading, and polishing at Makassar-based warehouses. The number of active exporters has gradually decreased over time, with only three companies responsible for approximately 70% of total exports in 2006. Some of the major exporters (and approximate annual export volumes) are:

- KUD Sane (CBI): 1,200 tonnes
- Toarco Jaya: 500 tonnes
- Megahputra Sejahtera: 400 tonnes
- Sari Hasil Utama: 200 tonnes
- Lion Lestari: 150 tonnes

Two countries (the United States and Japan) dominate export destinations for Sulawesi coffee from Makassar (Table 2). Together, these countries account for more than 80% of total exports. Prior to 2000, Japan was the most important destination, although the growing specialty coffee sector in the US has since made it the dominant market. A major end-user of Sulawesi coffee is the Starbucks Coffee Company which, in the past, had purchased Sulawesi coffee via intermediaries, such as Royal Coffee and Holland Coffee. Starbucks now buys virtually all its requirements directly from KUD Sane/CBI, and smaller volumes from other exporters (usually through brokers). Whilst it is understandably difficult to obtain precise data, estimates are that Starbucks alone requires 70 containers of Sulawesi coffee (1,260 tonnes) annually. This now clearly dwarfs the requirements of Key Coffee in Japan (approximately 500 tonnes annually). Other international buyers active in Sulawesi over recent years include Holland Coffee, Royal Coffee, Daarnhouwer, UCC Ueshima and Brooks of Japan.

Table 2. Major Export Destinations for Arabica Coffee shipped from Makassar Port

Importing Country	2003	2005	2006	Share of total exports (average)
United States	1,608	2,937	1,172	57%
Japan	673	1,471	827	27%
Belgium	358	311	162	8%
Singapore	118	325	136	5%
Netherlands	58	159	66	<3%
Germany	63	159	36	<3%
Australia	54	54	72	<3%
Other	18	142	187	<3%
<b>Total</b>	<b>2,950</b>	<b>5,558</b>	<b>2,658</b>	<b>100%</b>

(Source: Office of the Department of Trade, Makassar)



(Sources: Office of the Department of Trade, Makassar, and [www.ico.org](http://www.ico.org))

**Figure 4. Prices for Sulawesi Coffee Relative to Global Markets (USD/kg)**

Over the last decade, average export prices for Sulawesi Arabica coffee in Makassar have stayed consistently above the indicator prices in world markets (Figure 4). Whilst prices paid for specialty coffees, such as Sulawesi, remain linked to fluctuations on the New York exchange, access to specialty markets provides a mild buffer against severe price falls. When world prices are relatively high (such as in 2005 and 2006) the ratio between the 'Free on board' (FOB) Makassar price and the ICO indicator price is about 1.3. When world prices are low (such as they were in 2002 and 2003), the FOB Makassar price was more than double the ICO indicator price. Price fluctuations in Sulawesi are also influenced by local supply and demand dynamics.

#### 4.3.1 Geographical Identities for Sulawesi Coffee in International Markets

There is a range of Arabica coffees available in the global coffee trade, beginning at low quality industrial and commercial grades through to specialty Arabica coffees. Within the specialty Arabica market itself, there are good coffees (perhaps used for blending) and then there are coffees considered to possess superior cup characteristics leading to their use as single-origin coffees. Sulawesi coffee is widely used as such a single-origin coffee.

It is customary for coffee to be traded globally using the recognised names of origins as a signifier of certain quality attributes. The use of such geographic identities for individual shipments from Sulawesi varies considerably depending on consuming country preferences. The *Kalosi* trade identity is recognised by European buyers, whilst both the *Kalosi* and *Toraja* trade names are popular in the US market, whereas the Japanese market is more familiar with the *Toraja* name. In practice, the international buyer requests a particular identity to be printed on bags of green beans (this identity is also specified in ICO and other export documentation). The relationship between actual local origins and the use of geographic identities is a tenuous one. A coffee marked *Kalosi* does not necessarily come from Enrekang, and the volume of coffee traded within Indonesia and abroad under the *Toraja* label would seem to far exceed actual production in that District. At best, such designations are a proxy marker for the presence of particular quality attributes in the coffee. At worst, they are subject to blatant geographical fraud, such as in 2002, when several containers of coffee marked *Mandheling* were exported from the Makassar port.

Growth in the international specialty coffee sector, including roaster-retailer chains such as Starbucks, has seen an accompanying interest in geographically distinct (single-origin) coffees. Starbucks offers more than a dozen such single-origin coffees, including *Sulawesi*, usually marketed along with romantic place-related imagery. Strictly speaking, Starbucks accurately uses *Sulawesi* as a geographic designator, as the coffee it buys comes from the various growing regions of Sulawesi. Most roasters, however, tend to use the identifiers *Toraja* or *Kalosi* (virtually interchangeably), and this coffee has earned a reputation as a rare and unique origin. Sulawesi coffee is generally appreciated as a low acidity, high body coffee. The use of cultural imagery in the marketing of Sulawesi coffee is a common tool used by specialty roasters, and a survey of roaster websites included the following:

- Coffee means a lot to Toraja people, and they tend it with loving care. (2F Coffee)
- The Toraja people have an interesting cultural history that carries over to their methods of producing coffee in very traditional ways. (Peets Coffee and Tea)
- The Toraja people, from the island of Sulawesi, grow this most classic Indonesian coffee. (Allegro Coffee)
- The coffee formerly known as Celebes Kalossi ...but let's not call it that anymore. Kalossi was the colonial Dutch name for the Toraja region, incredible mystical densely forested region with weird giant bats hanging from trees, and ancestral homes shaped like ships. (Sweet Maria's)
- The coffee corresponds with the individuality of their culture in every aspect. (Interamerican Coffee)
- The region and the coffee, Toraja, are named after the colorful indigenous people of the region. (The Coffee Review)



Plate 12. Culturally-specific marketing for Toraja coffee used by Starbucks (left) and InterAmerican Coffee (right)

Despite contributing to less than a third of total Arabica production in Sulawesi, Toraja is the only growing district whose culture is evoked in a descriptive marketing sense by specialty roasters. The Toarco logo for example, now a patented trademark, consists of a stylised representation of a traditional *tongkonan* clan house. Whilst the Toraja District

does have distinct geographic features, such as higher altitude production, and greater care is generally given to processing, the ability of an origin to ‘tell a story’ is also an important attraction within the specialty coffee market (refer to Plate 12). In this sense, the cultural traditions of the Toraja people are an important asset in the construction of place-informed quality.

Sulawesi coffee has been further transformed by several international roasters to an ultra-gourmet product, demanding especially high premiums. *Aged Sulawesi Peaberry* has been sold at Peets Coffee and Tea in Berkeley for US\$132/kg (Peets also offered *Lost Toraja* at a premium price). Starbucks’ *Kopi Kampung* sold as a Black Label Special in 2006 for US\$57/kg. But, perhaps the most audacious attempt to value-add Sulawesi coffee is that of the Interamerican Coffee Group, through their Hamburg branch, with their *Kopi Tongkonan Toraja*, which sells as green beans for US\$50/kg. This coffee has then been sold as roasted coffee (by such purveyors as Imperial Teas of Lincoln in the UK) for the equivalent of US\$480/kg. This coffee is sold in hand-carved barrels, imitating sales in the local Rantepao market, complete with an interpretation of the designs and motifs used on the barrel. Admittedly, only very small volumes (perhaps only one tonne annually) of this coffee are sold in the market. However, it indicates that Toraja coffee is capable of serving an elite coffee segment at prices well above the standard specialty market.

### 4.3.2 Certified Coffees

In the global coffee market, the specific social or environmental conditions of production are often used to signify quality attributes to final consumers. Increasingly, such coffees require independent audits, certification and traceable supply chains to verify their claims. A recent Offering Sheet (March 2007) posted by the California-based specialty coffee trader, Royal Coffee ([www.royalcoffee.com](http://www.royalcoffee.com)), specifies whether each shipment meets the following criteria:

- *Organic*: This coffee is certified organic,
- *Bird Friendly*: The Smithsonian Institution has certified this coffee as Bird Friendly-Shade Grown (Roasters must register with the Smithsonian Institution and pay a royalty in order to sell the coffee as Bird Friendly-TM or to use the Smithsonian Institution name),
- *Co-Operatively grown*: This coffee is procured from cooperatively-organised farmers,
- *Estate*: This coffee is grown and processed on one farm,
- *Fair Trade*: This is a registered Fair Trade coffee. Roasters must be registered with Fair Trade / TransFair and pay a royalty in order to sell this as a Fair Trade Coffee,
- *Rainforest Alliance*: This producer has been inspected and certified by Rainforest Alliance,
- *Shade Grown*: A representative from Royal Coffee has visited farms and verified that the coffee is grown under a canopy of shade trees.

In a very general sense, the presentation of such process-related attributes has traditionally allowed particular origins to create additional value and so demand a market premium. Increasingly, however, certification of coffee production systems is being required as a pre-requisite for market access, and is not necessarily associated with a market premium. An increasingly popular form of coffee certification in the European market is ‘Utz Kapeh’, which is benchmarked against the EUREPGAP codes for European retailers, and is used to designate socially and environmentally responsible production. Many end-users are now requiring that coffee is Utz Kapeh certified as a purchasing requirement. Most major roasters are now signatories of the Common Code for the Coffee Community (4C), a similar buyer-driven certification scheme. Furthermore, individual

buyers are establishing their own set of social and environmental procurement standards, such as the Starbucks CAFÉ Practices<sup>5</sup> program.

The certification of coffee production systems is still, at this stage, undeveloped across Sulawesi. However, the requirements of Starbucks CAFÉ Practices, in particular, are rapidly driving a regional push towards supply chain traceability and certified rural spaces. This trend is now a key factor driving restructuring along existing coffee supply chains. Various exporters are currently discussing proposals to obtain organic and fair-trade certification in Sulawesi.

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## 5 Issues of Relevance to the Sulawesi Coffee Industry

The following section addresses a range of issues of significance to the future successful development of the Sulawesi and Toraja coffee industries.

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### 5.1 Low Farm Yields

Estimated Arabica yields in Toraja are between 150 and 200 kg GBE /ha. These are much lower than yields in both Enrekang and Gowa (estimated to be closer to 500kg GBE/ha). Further research is required to determine the reasons behind these figures; however the use of improved technologies (such as fertiliser use, pruning, plant rehabilitation and pest management) in Toraja is certainly less intense than elsewhere. There have been no major coffee development projects in Toraja in the past (in contrast to both Gowa and Enrekang), and coffee has had little attention from Government agencies in the District. Perhaps, the greatest attempt at improving farm practices in Toraja to date has been performed by Toarco Jaya, but without much success. The company claims that farmer motivations are low and Torajan farmers are not interested in committing additional resources to improving yields. Whilst there might be some truth in this observation, it is also evident that a comprehensive crop management program has not yet been offered to Torajan coffee farmers. Farm-gate prices in the markets of northern Toraja have more than doubled from 2003 to 2006. Yet, these prices have not stimulated a corresponding heightened interest in improved coffee cultivation, suggesting that more than market forces alone are required to stimulate improved production in Toraja.

Understanding farmer incentive structures and motivations are necessary to improve yields. There may be limitations on the availability of investment capital or high opportunity costs involved in crop improvement. When a Torajan coffee farmer wishes to increase production, there have been few constraints, to date, for simply expanding their area under production by clearing forest and planting more coffee. There is ultimately, however, a limit to such expansion, and presumably Torajan coffee farmers are reaching this limit and will have a greater incentive for more intensive cultivation techniques in the future.

Even on the larger commercial estates, where presumably there is greater access to improved technologies, yields still appear to be relatively low (perhaps only approximately 300-400 kg GBE/ha). There may also be some important geographical factors inherently limiting production in Toraja, such as rainfall patterns, altitude and soil conditions.

**Conclusions: Torajan coffee farmers are probably capable of increasing coffee yields through the introduction of basic crop maintenance techniques, including soil management, pest control, pruning and rehabilitation. To date,**

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<sup>5</sup> *Coffee and Farmer Equity (CAFÉ) is an externally-verified compliance system mandatory for all suppliers to the company, encompassing various social and environmental criteria.*

however, they have not had access to a reliable extension service. There are also a number of issues regarding farmer willingness to intensify production related to available capital, opportunity costs, labour availability, and risk aversion which need further examination.

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## 5.2 Demand for Certified Coffee

The potential for value-adding Toraja coffee through certification, such as organic or fair-trade exists, but is limited by the fact that Toraja coffee already enjoys a significant premium in international markets due to quality attributes alone. Toraja coffee is already a niche product. Furthermore, the costs of introducing and managing a certification program can be considerable and experience elsewhere has shown that these costs are not always repaid through price premiums in the long term. Poor farmer organisation in Sulawesi compounds the cost of introducing certification programs.

However, certification and traceability are now realities within global coffee supply chains. Increasingly, certification is not so much a tool for value-adding, but a requirement of market access. Starbucks is a key driver of certification in Sulawesi, and the development of stronger upstream linkages. Since 2005, Starbucks has insisted on enhanced price transparency along their supply chain, and is now attempting to make its CAFÉ Practices compulsory. The implied traceability requirements of the system are exerting considerable pressure on suppliers to drastically restructure the way they manage their supply chain. In response, some international traders are establishing a more permanent presence in Sulawesi, or establishing joint-ventures with exporters in an attempt to create more solid trade relationships.

It is probably inevitable that Sulawesi coffee farmers will be involved in certification schemes in the near future. The question, then, becomes how this certification can be managed in a way which actually benefits coffee farmers. In the growing regions of Aceh, where certified coffee has had a longer history than elsewhere in Indonesia, exporters have paid the costs of farmer certification in an attempt to capture farmers within exclusive supply chains. There has been a history in Indonesia of agribusiness processing units, with exclusive access to a supply base (known as *Rayonisasi*), using their market power by depressing farm-gate prices.

**Conclusions: Certification is an emerging reality within Sulawesi coffee systems, although it is unclear whether this will increase farmer income and who will ultimately bear the costs. International coffee trading companies, rather than traditional Indonesian exporters, have greater experience in implementing such schemes and will probably gain a further market advantage as a result. Certification requires farmer organisation, which is poorly developed across Sulawesi. Attention needs to be given to ensure that certification does not lead to farmer capture by single buyers, impinging on the competitive farm-level buying environment in Sulawesi. A key test for certification programs is whether they benefit farmers and not merely trading companies.**

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## 5.3 Processing and Cup Quality

The dominating presence of Toarco over the last 30 years, with strict purchasing requirements, has significantly improved traditional on-farm processing methods employed by Torajan farmers. Due to financial incentives offered by the company, most growers have adhered closely to the company's preferred processing methods, to produce semi-dry parchment of a quality that was superior to other regions in Sulawesi. Toarco has then used a dry-hulled process to produce a high quality, clean acidic coffee for its Japanese market.

With the rise of the specialty coffee market over the last 10 years there has been an increasing demand for wet-hulled coffees from Sulawesi. Coffee is sold in local markets as semi-dried parchment, which can be subsequently processed either as dry-hulled coffee (as performed by Toarco) or as wet-hulled coffee (as performed by most other processors in Sulawesi). These two methods create coffees with distinctly different flavour profiles. The dry-hulled coffee possesses a ‘cleaner’ cup taste, with higher acidity and less body. The ‘wet-hulled’ coffee has a heavier body, little acidity and a more complex flavour. In the US market, Sulawesi coffee is valued as a full-bodied coffee. Few other origins, with the exception of *Mandheling*, from northern Sumatra (which appears to be the only other origin in the world to use this wet –hulled process) can contribute the heavy body desired in many of today’s specialty Arabica blends. At present, approximately 75% of Sulawesi coffee is now produced as a wet-hulled coffee.

There is, however, little understanding of the influence of geographical conditions on cup quality, and even less on the role of processing technology. The extent to which the flavour characteristics of Toraja coffee can be replicated by altering processing methods in other parts of Sulawesi, or from other islands such as Flores, in order to blend with Torajan Coffee, is poorly understood. Key questions remain surrounding the construction of quality and the degree to which this is determined by variety, physical growing conditions, initial processing and by practices such as ‘wet hulling’.

If the ‘body’ is the element of Sulawesi coffee which contributes to its value in the specialty markets of the world, then it would be of significant commercial interest to explore what actually creates body in a Sulawesi coffee.

**Conclusions: Further examination of the ‘wet–hulling’ processing technology would help to develop an understanding of what contributes to Sulawesi coffees’ unique specialty flavour. This may lead to opportunities to improve consistency and quality of Sulawesi coffee.**

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## 5.4 Geographical Authenticity

There are concerns that the unique brand credibility of Toraja coffee is being eroded by highly variable quality across Sulawesi and lack of appropriate traceability systems. There is certainly no way of guaranteeing the regional origin of all coffee sold in Makassar prior to export. Growing conditions, processing methods and trade networks vary considerably across major producing Districts, such that these heterogeneous conditions create coffees with markedly different cup characteristics. A high-value coffee means that there are high risks associated with adulteration. The mixing of various local origins prior to export is almost certainly diluting the reputation of *Toraja* or *Kalosi* in international markets. The nature of institutional arrangements (in an economic sense) along the supply chain is important in determining the most efficient mode of quality determination. There are various costs for buyers associated with ascertaining coffee quality, usually borne either by rigorous sampling or by investing in supply chain traceability and trust-based relationships.

**Conclusions: Initiatives to secure geographical authenticity in Sulawesi should be considered. There may be also value in developing a range of local origins in southern Sulawesi by assisting other regional origins to develop their own market identities and flavour profiles to help protect existing origins like Toraja from being adulterated.**

## 5.5 Risks of a Single-buyer

Starbucks currently absorbs an estimated 50% of Sulawesi Arabica exports. There are risks associated with an industry depending on any single buyer. As the dominant buyer, the quality demanded by Starbucks is fast becoming the quality standard in Sulawesi. Some high end exporters refer to this quality as 'commercial specialty', as the company requires both consistency of quality and volume, which may be leading to a simplified process at farm level and a loss of local quality diversity. The quality incentives for farmers in Toraja are rapidly changing due to the Starbucks influence, and there are concerns that this is affecting the primary product from farmers (semi-dried parchment), such that other producers (such as Toarco) will not be able to produce the product they need because of the lowered farmer quality requirements set by KUD / CBI (which ironically is purchased at a higher price).

With the exception of their 'Kopi Kampung' coffee, Starbucks has few geographical constraints for their Sulawesi coffee, and purchase coffee from all of over southern Sulawesi. Moreover, the volumes required by Starbucks make it impossible for the company to source exclusively from Toraja. A key question is then, what happens if Starbucks decides to stop buying the Sulawesi origin? Is there a need to mitigate risk by actively diversifying end-markets and encouraging a variety of local products? Indications are that various small roasters in the USA would like more access to high end Toraja coffee, but can't get access as sources are too controlled and volumes too limited.

**Conclusions: The Sulawesi industry has clearly benefited from Starbucks' demand for its coffee. Starbucks activities and access to coffee should not be restricted. However, the industry should be mindful of the risks of a single major buyer and efforts should be made to diversify market chains to ensure existing smaller market chains are not squeezed out. There is a risk that other market sectors may lose interest in Sulawesi coffee if they can not get access to quality and quantities they need, due the fierce competition in Sulawesi coffee markets. The development of unique qualities and specialised niche markets using combinations of variety, location and processing technology would allow smaller traders and exporters to maintain market links other than Starbucks. This would help maintain the image and linkage of Sulawesi coffee to other markets (Europe, Japan, US), even if quantities are small. If Starbucks were to 'fall out of love' with Sulawesi, then these markets could grow quickly again.**

## 5.6 Post-harvest Processing and Value-adding

What is the potential for greater value-adding of Sulawesi coffee by both farmers and the domestic industry prior to export? Coffee is currently sold by Sulawesi farmers as semi-dried parchment after performing relatively basic initial on-farm processing. Farm-level hulling is performed elsewhere in Indonesia and, to some extent, in neighbouring Enrekang. However, this involves significant quality risk. Centralised mills allow greater control over quality with less possibility of bean deterioration, and improve consistency. Furthermore, it is relatively simple for buyers to identify gross processing defects such as immature harvesting, delayed pulping, or mouldy coffee by a quick visual inspection of parchment coffee. This is considerably more difficult with green beans. Trade in semi-dried parchment also discourages inter-regional trading due to buyer demands for freshness, and so helps to ensure a degree of geographical authenticity. Farm-level hulling probably carries unnecessary risks in Toraja.

Coffee is almost exclusively exported as green beans. There have been very few successful cases of domestic roasting prior to export worldwide, and it is not realistic to contemplate a large-scale local roasting industry for the export market. Major end-users of

Sulawesi coffee are specialty coffee roasters who rely on a keen knowledge of consumer tastes to achieve market advantage. Roasting for the growing Indonesian domestic market offers some potential, and could potentially be developed in either the growing regions themselves or in Makassar. Successful coffee roasting in any context, however, depends on maintaining in-depth consumer knowledge and aggressive marketing, both of which are more likely to be achieved when roasters are in close proximity to their final market (ie. urban centres). There are a number of small coffee roasting operations in Toraja, which generally utilise primitive machinery to produce a poor quality product. Much of this is either sold locally in markets or packaged for sale as tourist souvenirs. The value of food tourism for regional branding has been demonstrated in various contexts, and could potentially be important in Toraja. However, at this stage it is not significant.

**Conclusions: There is not likely to be much benefit to farmers in processing past semi-dried parchment coffee at this stage, and may in fact adversely affect farm-incomes through the risk of declining quality. Local roasting activities are only of interest in relation to the local tourism industry. Value-adding Sulawesi coffee (sometimes known as ‘supplier upgrading’) is more likely to be achievable through improved quality and the development of industry institutions which allow greater producer-control over quality construction along the value chain.**

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## 5.7 Coffee Varieties

Of the two main coffee species, Arabica coffee currently is clearly dominant within the international specialty sector, with Robusta commonly relegated to lower quality markets. In fact, the two types should be considered two separate commodities. Robusta is generally a more productive tree, such that farm profits can sometimes be higher despite lower prices. The decision to plant Arabica or Robusta, however, is usually determined by the prevailing altitude, with Robusta planted in areas lower than 1,000m. Within Toraja, Robusta production is concentrated in western Toraja, and is usually pulped, fermented and washed like Arabica coffee. After that, however, the process varies. Robusta is then dried and hulled by farmers, who complain about the labour-intensive process of pounding off the husks in stone mortars prior to sale at the market. Mechanical hulling appears to be rare. Robusta is generally traded in local markets as green beans. Whilst there may be some potential for developing gourmet Robusta markets, these are currently undeveloped. Robusta prices are already quite high in Sulawesi by world standards (Rp15,000/kg in March 2007); well above prices in Lampung (and higher than Flores). This is apparently due to strong demand from the local market, as very little Robusta is actually exported from Makassar (only 72 tonnes in 2006).

Almost all of the Arabica coffee trees grown by smallholders in Toraja are of the so-called ‘S lineage’ varieties (known locally as *kopi Jember*). Probably the most popular of these is S795. These varieties are resistant to most types of leaf rust, and are widely believed to demonstrate good cup characteristics. The varieties were introduced to the Jember Research Institute, from India, in 1955 and released into Sulawesi in the late 1970s. A second wave of improved coffee varieties arrived in Toraja in about 1990, characterised by various ‘dwarf’ varieties known locally as CIFIC, Catimor, and Kartika. None of these have become widely accepted due to community perceptions that their disease resistance breaks down and bean size reduces with age, that they have poor longevity, that they require excessive fertiliser to maintain health, and that they produce inferior tasting coffee. Still, very little is understood regarding the influence of coffee varieties on cup characteristics.

Prior to the introduction of the S lineage varieties, almost all Arabica coffee was of the *typica* variety (now known locally as *arabica asli* or ‘original Arabica’). Despite apparently having a superior cup taste, these trees are extremely prone to leaf rust, bear biennially,

take a longer time to reach maturity, and have poor productivity. The cultivation of *typica* coffee in Toraja is currently restricted to a few isolated plots in the north of Toraja and to aging single trees elsewhere (it is however, said to be more common in the Seko valley of North Luwu). There is an almost nostalgic perception of *typica* held by some industry actors and government officials, leading to some observers advocating a return to *typica* production in Toraja as a development strategy to improve the quality, reputation and price of local coffee. In the past, attempts to market exclusive containers of *typica* coffee, however, have been frustrated by supply constraints and the market's unwillingness to pay a significant premium, leading to inadequate compensation for growers.

The South Sulawesi Disbun Office explained that two mother seed gardens for Arabica coffee (S-795 and a new ICCRI variety *Andung Sari* - each seven hectares) had been recently established in Enrekang (at Banteng Alla) and in Toraja (at Bittuang), however these were unable to be located during our field visit. To date, the Jember research station develops varieties and then distributes them to regional production centres with very little attention to local adaptations.

**Conclusions: Arabica coffee is likely to remain the most important coffee type in Sulawesi for international specialty markets. Robusta might be a viable crop in the lower-altitude Districts of South Sulawesi, although it is unlikely to be marketed as a specialty product. S795 is probably the most appropriate Arabica variety in Sulawesi, whilst attempts to encourage widespread planting with *typica* are risky and unlikely to be welcomed by farmers. Developing a small *typica* seed garden in a high altitude area of northern Toraja may be of benefit to maintain this old variety for future uses.**

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## 5.8 Pest and Disease

Coffee berry borer (CBB) was identified in earlier industry consultations as a significant issue in the Sulawesi coffee industry. CBB is an insect pest which completes part of its life cycle inside the developing coffee fruit. CBB-affected beans are characterised by a shot-hole which often encourages mould development and therefore a poor tasting coffee. High CBB levels can also lead to reduced productivity due to premature fruit drop. A comprehensive assessment of CBB prevalence across Sulawesi has not been performed, although discussions with many industry actors suggest that it is not a commercially significant problem at this stage. CBB-damaged bean prevalence is high at the beginning and end of the season, but not a major concern in the peak harvest. Various estimates of the percentage of beans affected by CBB seem to range from 5-20%. Altitude is a major factor determining the severity of CBB infestation, with coffee planted below 1000 meters being most at risk.

Spraying of insecticides is sometimes used to control CBB, although this is rare in Sulawesi. Spraying spores of *Beauveria bassiana*, a fungal pathogen of insects, can also be used as a microbial insecticide for CBB. After landing on the insect, *Beauveria* spores germinate, enter and kill the insect. Pheromone traps can also be used to attract and kill insects. Traps are widely used for monitoring of pest populations to determine the correct timing of other management methods such as insecticide application. Because of their expense (estimated at over US\$50/ha), such traps are probably not a viable option for at this stage beyond possible setting near pulping stations, or for monitoring. In general terms, CBB can usually be controlled through the implementation of good agricultural practices, focusing on adequate soil nutrition, complete harvesting and general plantation maintenance and plot sanitation. As such, CBB control is likely to be an important outcome of broader initiatives to improve crop management by Sulawesi coffee farmers.

Leaf Rust is found across Sulawesi, and is addressed principally through the planting of partially rust resistant varieties such as S795. Rust is also less of a concern in higher

altitudes, where Sulawesi coffee is mostly grown. Some lower altitude areas and commercial estates may resort to the spraying of copper fungicides to help control rust.

Nematodes are probably present in Sulawesi and having an adverse effect on tree health and farm productivity, however knowledge concerning their prevalence is poor. The presence of nematodes often goes undetected and their effects (noticeably yield losses) unnoticed or attributed to other causes. Nematodes may be a contributing factor to the observed low yields of Torajan coffee farms.

**Conclusions: No detailed coffee pest and disease surveys have been performed in Sulawesi. Coffee Berry Borer is found across Sulawesi, although it is not considered to be a commercially significant problem. Whilst there do not appear to be any serious pest and disease concerns that demand immediate intervention, or otherwise threaten the long-term viability of the industry, a more complete survey would yield useful insights which would contribute to improved farm profitability. Integrated pest management should be part of any broader initiative to improve farmer access to technical knowledge.**

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## 5.9 Empowerment of Farmers Groups / Industry Associations

The promotion of farmer groups / cooperatives is widely advocated as a means for improving the bargaining position of farmers along the value chain (supplier upgrading). Across Sulawesi, coffee farmers are not widely organised into producer groups or cooperatives. Instead, the organisation of production currently occurs at the family, and sometimes clan, level. Coffee is commonly sold individually into traditional, privately-coordinated trade networks. Indonesia, however, does have a long history of government support for producer cooperatives (*Koperasi Unit Desa*-KUD, or *Koperasi Pertanian*-KOPTAN) in various commodity contexts, and there have been several attempts to organise farmers into producer groups across Sulawesi. Two KOPTANs in Sulawesi (one in Enrekang and the other in Toraja) have had preliminary discussions with a Makassar-based exporter (Megahputra) regarding possible collective marketing to facilitate traceability. The capacity of such groups to engage in collective marketing is poorly understood, and is generally limited by their ability to manage the financial requirements of members. In many areas (notably excluding Mamasa), these requirements are often met by informal collectors / moneylenders and, despite the infrequent capital assistance from various government programs, the producer groups are frequently commercially uncompetitive.

A primary driving force for the formation of farmer groups and cooperatives is actually from the buyers themselves due to traceability demands. As such, there is renewed interest in investigating effective modes of farmer organisation, and how groups can contribute to enhanced traceability, effective technology transfer, development of social capital, and improved market access.

**Conclusions: Coffee farmers are not effectively organised across Sulawesi, either for advocacy or as producer organisations for collective marketing. Demands for supply chain traceability are now driving the formation of farmer groups in some instances. Improved farmer organisation offers several potential benefits for Sulawesi coffee farmers, and an investigation into how this could be best achieved in the Sulawesi context would be useful.**

## 5.10 Prices and Value Chain Analysis

Considering the valorisation of *Toraja* coffee as a high-quality gourmet product, in both domestic and international markets, it is interesting then to explore whether coffee farmers in the District are benefiting significantly from these quality associations. Certainly, by global standards, farm-gate prices in Toraja are high. To determine the approximate price received by farmers in Toraja in USD/lb, the following formula can be used:

$$\text{Price in USD/lb} = (m \times 1.43) / r$$

Where *m* is the highland market price and *r* is the Rupiah exchange rate. The coefficient 1.43 is based on a conversion of 3.16 litres (*bocco*) of semi-dried parchment coffee being needed for 1 kg of export quality green beans (1kg = 2.2046 pounds).

On August 10, 2006, for example, market prices at Sapan market were about Rp8,000/litre *bocco*, which meant that (with a prevailing exchange rate of Rp9,066), farmers were receiving a price of about US\$1.26/lb, when the price in New York for 'Other Arabica Milds' was US\$1.12/lb (a ratio of 1.125). This ratio generally ranges between 0.9-1.5, with significant variations occurring due to the effects of local competition. Of course, such variation could also be a result of farmers' poor access to global price information and trader profiteering. It is important also to remember that market prices are paid for a relatively unprocessed product at a remote location. The high prices are quite remarkable when we consider that: i) the coffee must still be transported from the highland markets to Rantepao on poor roads; ii) the wet parchment has yet to be processed (milled, dried, sorted, polished, etc; iii) that the beans must still be transported 8 hours to Makassar; and iv) there are still considerable handling and shipping costs at the port.

Table 3. Average Prices paid along the Sulawesi Value chain (2006)

Supply Chain Node	GBE Average Price (US\$/kg)	Comments
Farm-gate (north Torajan markets)	2.78	Based on a price of Rp8,000/litre <i>bocco</i> in highland markets
Local Processors (KUD, Toarco)	3.09	Based on an average price of Rp7,200/litre <i>sasa</i> . Elsewhere in Sulawesi, this price would be significantly lower
Export (FOB)	3.68	Based on the Starbucks market. Average FOB price was 3.32, whilst some sales to Japan were in excess of 5.10 USD/kg (CNF)
Consumer level in the US market	26.78	Starbucks sells Sulawesi coffee @ 12.15 USD/ lb)

Toraja coffee, however, is a specialty product, and so prices are expected to be above those for commercial grades. Another method of assessing whether farmers are receiving adequate compensation is by looking at farm-gate prices as a percentage of prices along the value chain (refer to Table 3). In 2006, at an export price of 3.68 USD/kg, Torajan farmers were receiving 76% of the FOB price in Makassar. This picture, however, is complicated by the fact that high-quality Toraja coffee is widely mixed with inferior coffee prior to export. The logic of this mixing is that Toraja coffee is more valuable than other regional origins, such that the value of the Toraja bean component of the FOB is actually higher than the average FOB price suggests, and as a result, Torajan farmers are subsidising this poorer quality coffee. Interestingly, using the same data sources in 2003, farm-gate prices in Toraja were calculated to be much lower at 60% of FOB. This could

alternatively be a result of tighter margins as global prices have risen, or could be a result of increasing end-user (Starbucks) demands for increased price transparency along the supply chain.

Growers of specialty coffees generally receive a smaller proportion of the final retail price of coffee than do growers of commercial grades due to the importance of symbolic values in the construction of quality by branded roasting firms. This is evident in Table 3, where farmers receive only 10% of the final retail value. Whilst such comparisons cannot possibly take into account the full costs of processing, distribution, weight loss due to roasting, and most importantly, marketing, of such specialty coffees, it serves to demonstrate the current inability of coffee growers to meaningfully share the premium prices available in the market.

Village traders obtain a considerable profit of 31 cents /kg (Table 3), whilst these traders do not actually perform any processing, and transport costs are estimated at only 1-2 cents/kg. The costs incurred by these traders are more generally associated with financial services provided to farmers and the burden of quality risk. A greater understanding of these services is required to determine whether this is an unreasonably high profit margin. Due to the availability of attractive price premiums for higher quality coffee paid by some of the mills in Toraja, the village traders have an important role in transferring price differentials to farmers. No other growing region in South Sulawesi offers such quality-sensitive price differentials at the farmer level.

**Conclusions: Farm-gate prices in Sulawesi are already some of the highest in the world, and the farmers' share of FOB price is around 70%, although the share of final retail price is low. The potential to improve the farm-gate share of FOB is closely linked to capacity-building within farmer organisations. Whilst the potential to improve the farm-gate share of final retail price is severely restricted at present, in the future this may be linked to the capacity of Sulawesi-based organisations to be involved in quality constructions along the value chain.**

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## 6 Recommendations for future development

Sulawesi coffee already possesses a good reputation in the international specialty coffee sector. Overseas buyers actively source coffee from the region through direct purchasing schemes, such that farm-gate prices (in Toraja especially) are high by world standards. The opportunities for further industry development, therefore, lie in such activities as enhancing the professionalism of industry associations, promoting environmental sustainability and certification, and improving technology adoption by farmers to increase productivity and farm profitability. The Sulawesi coffee industry should be working towards a future scenario where growers are well-organised, quality-conscious and obtaining a greater share of the retail value of coffee within specialty markets. The following five activities are considered important starting points for achieving such an outcome.

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### 6.1 Industry Partnership

A clear strategic vision for the industry would assist with the promotion and maintenance of a strong regional identity in the world market. There is currently no unified voice for developing the Sulawesi coffee industry, and existing industry associations are weak and ineffectual. A clear vision would help identify development activities where the pooling of industry resources would achieve greater benefits than the sum of individual activities alone. It is preferable that some form of industry-wide partnership be established, which could present a coherent vision for future industry development. This partnership would provide an umbrella for the coordination of various industry activities and act as a clearing

house for the exchange of relevant knowledge and information. Sulawesi is now an important origin within increasingly sophisticated global coffee chains, and yet, domestic industry representative bodies and government agencies are ill-prepared to engage with a constantly changing set of global trade dynamics. Despite the prominent role of international coffee companies in purchasing Sulawesi coffee, these companies are essentially excluded from existing associations and industry planning. An Industry Partnership, involving these global participants, could facilitate organisational learning along the supply chain in such a way to ensure long-term competitiveness of the regional sector.

A key challenge is to ensure that major industry partners perceive there to be clear benefits from greater collaboration. At present, there are a number of activities which have the potential to garner widespread industry support, including:

- The establishment of, and capacity building for, effective farmer organisations (especially those that facilitate traceability and certification),
- Increasing production in the Toraja District (through intensification rather than extensification),
- Improving the quality of farm-level processing (particularly in areas outside Toraja),
- Understanding the unique quality characteristics of Sulawesi coffee and the role the variety, growing location and processing play in its construction,
- Improved data collection and mapping of production areas,
- Establishing a strong market identity which demands a consistently high price in international specialty markets.

Most major coffee exporters in Sulawesi are already working towards a range of certification programs for farmer groups which are compliant with various social or environmental principles. This increased willingness to engage directly with farmers and to invest in farmer group development and farmer extension activities suggests the potential for coordinating existing industry resources through an industry-wide Partnership. Many of the constraints identified in the previous section are interrelated and the following suggested activities (Sections 4.2 to 4.6) all possess significant areas of commonality, such that, ultimately, a coordinated approach would yield better outcomes.

**Recommendation: Assess industry interest in, and then potentially support, the establishment of a ‘Sulawesi Coffee Partnership’ which would have sub-components of:**

- **Socio-economic Research on Farmer Decision-making Processes,**
- **Promoting Good Agricultural Practices and Environmental Sustainability**
- **Understanding Coffee Quality Determinants in Sulawesi,**
- **Regional Branding and Geographical Protection,**
- **Data Collection and Computer Mapping**

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## 6.2 Socio-economic Research on Farmer Decision-making Processes

The Sulawesi coffee industry is now at a stage where further development requires the active engagement of smallholder farmers. Buyers would like to see Sulawesi coffee farmers producing more coffee, increasing yields, adopting Good Agricultural Practices, improving quality, protecting the environment, and organising into transparent farmer groupings. There is currently a frustration (amongst buyers) that Sulawesi coffee farmers do not appear motivated to respond to these demands. This suggests a lacuna of knowledge regarding farmer incentive structures across Sulawesi, and especially within

Toraja. The socio-institutional environment within which farmers produce and sell coffee determines incentive structures, which in turn drive farmer decision-making processes. Market failures and imperfections with respect to labour, credit, access to land, information and future discounting are important determinants of household decision-making. Understanding these constraints, as well as the geographical and cultural context within which coffee is produced is fundamental to engaging farmers in future industry development, and high-quality socio-economic research would complement any other industry development initiative.

It is worthwhile pointing out that farmer decision-making processes are poorly understood right across Eastern Indonesia, and this suggested research activity could be as applicable to cocoa or cashews (for example), as it is to coffee. There are a number of commodity contexts across Eastern Indonesia where farmers have not adopted improved technologies, or are reluctant to work cooperatively with other farmers, when it would seem that to do so would improve farm profitability.

Suggested focus areas for this research include:

**Farmer Groups.** At present, farmer groups are being actively promoted across Indonesia for various agricultural commodities, primarily as a means for facilitating supply chain traceability and direct purchasing schemes by large agribusiness companies. Farmer groups are also being promoted, mostly through government-sponsored programs, to allow farmers to engage in value-added processing. The capacity of these farmer groups to perform such functions, however, has not been adequately assessed. Learning from past experiences would help inform appropriate modes of farmer organization in contemporary global value chains. Importantly, farmer groups are often perceived, by farmers especially, as a potential tool for 'escaping' from debt entrapment by local collectors.

**Tengkulak and Tied Credit.** Rural credit markets do not function perfectly in Sulawesi. The capacity for farmer organisations to function effectively is often dependent on their ability to provide better financial services to members than the existing informal credit arrangements of *tengkulak* collectors. In Sulawesi, and elsewhere, the services offered by the *tengkulak*, and implications for a competitive farm-level buying environment, are poorly understood. The failure of various 'direct-buying' initiatives and government interventions in the past was frequently due to a mistaken belief that 'shortening' the supply chain, and removing the middleman, would improve supply chain efficiency. Understanding informal credit arrangements in the coffee-growing districts should be a focus of socio-economic research.

**Access to Technical Knowledge.** How do farmers obtain information regarding on-farm technical improvements? In the Sulawesi coffee districts, government extension agencies do not currently play an important role in information dissemination. Rather, informal social networks, first-stage collectors and input distributors are principal sources of both technical and price information for coffee farmers. What is the quality of this advice? How can access to technical information for these collectors be supported and improved? Would better access to agricultural knowledge improve farm profitability and reduce pressures on forest pioneer fronts?

**Risk Management.** Formal risk management tools, such as insurance and hedging, are mostly absent in Sulawesi. Instead, farmers and traders rely on informal mechanisms to cope with risk. In an environment where farm profitability is as sensitive to price variability as to the absolute level of prices, the development of effective institutions to cope with risk is essential to increase farm efficiency. Risk minimisation is often a hidden factor influencing rational farmer decisions not to adopt improved agricultural practices. The extent of sharecropping and land pawning arrangements across Sulawesi is poorly

understood, and the nature of these institutions will significantly influence farm management decisions and the effectiveness of extension services. It is important to first understand what informal and formal risk management mechanisms currently exist in Sulawesi. Finally, are local prices in Sulawesi linked to the New York exchange and would access to global price movements help improve the bargaining position of Sulawesi coffee farmers?

**Farm Systems, Livelihoods and Remittances.** Perhaps the most important form of risk minimisation at the farmer level is crop and income diversification. In many instances, coffee is grown as one component of a mixed farm system, which might include rice and tuber crops for subsistence, livestock for ceremonial consumption and other commercial crops for an alternative cash income. Off-farm income generation and the role of remittances, in particular, are vital determinant of farmer willingness to allocate resources to coffee production. In Toraja, participation in a complex ceremonial system is a key factor determining resource allocation at the household level and will be a central component of any socio-economic study of the Sulawesi coffee industry. The relative importance of these various productive activities is still poorly understood in the coffee regions of Sulawesi, suggesting that a farm systems approach to household income generation should be adopted.

**Quality Incentives, Grades and Standards.** To maintain the international reputation of Sulawesi coffee as a premium product, adequate price incentives for quality production must be ensured along the entire supply chain. Importantly, quality improvement does not always result in improved farm incomes due to increased costs. Existing export grades and standards are probably less important in Sulawesi than elsewhere, although informal quality requirements set by private buying stations and enforced by village collectors and market traders are of paramount importance. It is possible that the opaque nature of quality standards and associated high transaction costs in the Sulawesi coffee industry is contributing to lower farm-gate prices. Furthermore, the role of cup-testing is a central concern within specialty markets and is still a poorly understood quality convention for many exporters. An analysis of quality conventions and standards employed at each node along the supply chain would help identify such sources of economic inefficiency.

**Recommendation: Initiate a comprehensive socio-economic research activity to understand farmer decision-making processes and incentive structures in Eastern Indonesia.**

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### 6.3 Promoting Good Agricultural Practices and Environmental Sustainability

Forest clearing for coffee production is an ongoing concern in the Sulawesi highlands, reflecting an extensive, rather than an intensive, approach to agriculture. Whilst these concerns have not yet been specifically targeted by either environmental organisations or government agencies in Sulawesi, it is reasonable to expect that this will change in the coming years. For example, a recent WWF report, *Gone in an Instant*, highlights the role of coffee farming and encroachment in ongoing deforestation across Lampung Province in Sumatra. Global coffee companies are increasingly apprehensive about having their valuable brand assets associated with environmental degradation in source countries, resulting in the plethora of corporate-driven certification schemes now found in the global coffee industry.

The reasons for coffee expansion into forest areas are varied and complex. A key component, however, is effective farmer extension promoting improved agricultural practices and a shift away from land-extensive production. Linked to global certification demands and environmental concerns, then, assisting the development of effective farmer

extension services in Sulawesi should be an industry priority. A corresponding benefit for farmers would be an improvement to the extremely low yields (in Toraja especially) and potentially improving farm income as a result.

The mechanism through which farmer extension would be most effectively implemented in Sulawesi is unclear at this stage. There are some indications that government extension offices across Indonesia will be significantly revitalised through the World Bank FEATI loan, which might improve service provision within the Sulawesi coffee sector in the future. In the short-term, however, various private-sector buyers are already working towards models of private extension delivery in Sulawesi. The impetus for these initiatives is generally to facilitate traceability. These efforts signify noteworthy attempts towards farmer engagement which could be further supported through more effective knowledge provision. First stage collectors also routinely provide technical advice to farmers. Private sector efforts at farmer extension activities within Toraja are also driven by an interest in stimulating increased production within this sought-after producing district. Importantly with regards the industry Partnership (suggested above), improving the productivity of existing coffee plots in Toraja potentially offers an activity of common interest to all major buyers.

**Recommendation: Determine the extent, and understand the driving factors, of coffee-related forest encroachment in Sulawesi. Then, support existing initiatives towards the implementation and certification of Good Agricultural Practices across Sulawesi through an improved agricultural extension service.**

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## 6.4 Construction of Physical Quality in Sulawesi

The unique flavour and character of Sulawesi coffee (physical quality) is a key component of the success of Sulawesi coffee industry (particularly Toraja). Along with the full-washed clean, high acidity coffee produced for over 30 years by Toraco, a unique process of wet hulling has evolved in Sulawesi and northern Sumatra, and is a key to producing the body which identifies this coffee in some markets. This wet-hulled process also gives the raw green bean a distinctive colour, which is one of the first indicators of quality sought by buyers of this specialty coffee. A number of larger processors / exporters have been developing, through empirical means, standardised processes to gain a more consistent quality for this wet hulled coffee which is now used for approximately 75% of exported coffee. However, there are reports that this standardisation of processes (to achieve more consistency for key large buyers) is reducing the uniqueness and complexity of the Sulawesi coffee. There is currently little understanding of the role of processing technology in determining quality, and how this interacts with geographical conditions and coffee variety. The degree to which the flavour characteristics of *Toraja* coffee can be replicated by using similar processing methods in other parts of Sulawesi, or in places such as Flores, is also poorly understood. There are questions on how 'special' the coffee of Toraja will be if processing methodologies are standardised and simplified to match with flavour profiles of coffee from other regions or islands in Indonesia. Achieving 'replicability' of coffee by having a range of sources of a similar coffee is a key strategy for large buyers. However, over time, this strategy and the influence of large buyers may make coffees like Toraja less unique and replaceable with a downward pressure on price.

There are benefits for the whole Sulawesi coffee industry to understand more clearly the inter-related roles of processing, growing location and coffee variety on coffee quality and consistency. This would be particularly useful for smaller processors / exporters trying to develop new and competitive unique market niches in the industry by understanding and managing quality. This process would necessarily require engagement with a range of buyers in cup tasting and evaluating coffees and help to create credibility and new market linkages.

**Recommendation:** Develop an improved understanding of factors that influence the physical quality of Sulawesi coffee to aid the industry to improve quality and consistency, and develop options to create value adding for smaller niche markets. Specifically, more needs to be known about the unique ‘wet-hulling’ process which helps to give Sulawesi coffee its unique specialty flavour. Also, assist other regional coffees to develop identities and reduce the reliance of trading on the *Toraja* reputation.

## 6.5 Regional Branding and Geographical Protection

Starbucks promotes coffee with the slogan ‘Geography is a Flavor’. Certainly, quality in the specialty coffee sub-sector is increasingly associated with the capacity of roasters to sell geographic origins. As it is already part of this international sub-sector, the Sulawesi coffee industry would benefit immensely from an effective regional brand management strategy. Globally, the trend is for coffee production regions to protect their marketing identities through the establishment of Geographical Indications (GIs or systems of appellation). The wine industry has demonstrated that GIs allow producers living in a bounded area to construct economic rents associated with a recognised regional identity, and so retain a greater share of the final retail price of their product. Interestingly, major coffee end-users, such as Starbucks, are also increasingly supportive of GIs as a less painful alternative than geographical trademarks now being proposed by producing country representatives<sup>6</sup>.

Both *Toraja* and *Kalosi* are recognised as specialty coffee identities, and could potentially benefit from legal geographical protection. Northern Toraja, in particular, is associated with a bounded production area, possesses a distinct cultural identity (which lends itself to the social construction of quality), has a unique growing environment due mainly to altitude and topography, and growers have developed an entrenched culture of quality processing. Assuming that demand for this origin remains high, and that production is effectively limited by geographical constraints, coffee growers living within the protected area would benefit from increased farm-gate prices. There are also considerable potential synergies with the Toraja tourism industry (once a rapidly growing sector, but now struggling), which could benefit from a stronger regional image, improved local roasting activities and agro-tourism development.

The establishment and monitoring of a GI, however, is a costly and time-consuming exercise, with no certainty of success. The legal framework within Indonesia for such protection is still poorly developed, and the potential for creating new rent-seeking opportunities, as a result of a GI, is considerable. Current CIRAD-sponsored efforts to establish a GI for *Kintamani Coffee* in Bali serve as a test-case for how a GI might be functional within the Indonesian context, and should be closely monitored and evaluated for possible applicability to Sulawesi.

The establishment of a GI (or similar legal protection) in Toraja/Sulawesi should be considered a long-term goal of the industry. Current institutional settings within Sulawesi, however, are probably not conducive to its immediate development. In particular, such an endeavour would require strong farmer organisations, a cohesive industry association, an operational legal framework, a motivated and supportive local government, and sustained buyer interest. Other activities mentioned above, such as an Industry Partnership, Socio-economic Research, and Farmer Development through Good Agricultural Practices, would however assist the industry move in this direction.

<sup>6</sup> Refer, for example to the ongoing Starbucks-Ethiopia Trademark dispute over identities such as *Sidamo*, *Yirgacheffe*, and *Harrar*, <http://poorfarmer.blogspot.com> provides a good overview of this case.

**Recommendation: Support initial activities with the long-term goal of establishing legal protection for regional coffee identities in Sulawesi.**

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## **6.6 Data Collection and Computer Mapping**

A final activity, both necessary for possible geographical protection in the long run and with immediate industry-wide benefits, is developing a reliable geographic database regarding Sulawesi coffee production. Improving the capacity of government agencies to collect and interpret data accurately would be of benefit to the industry. This database would also be an important baseline from which any subsequent development activity could be assessed. The use of remote sensing imagery could quite easily be incorporated into a computer mapping (GIS) system to identify major production areas. Such imagery could also be used to determine the extent of forest encroachment due to coffee farming in recent years.

**Recommendation: Provide support for relevant government agencies to conduct a comprehensive baseline assessment and mapping of the industry.**