

Emerging possibilities and constraints to Papua New Guinean smallholder coffee producers entering the speciality coffee market¹

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Abstract

Papua New Guinea produces around 1 percent of the world's coffee, most of it Arabica. The average price it achieves for its coffee is below the price of many comparable Arabica-producing countries. Most of Papua New Guinea's coffee comes from smallholders producing parchment using a village-level, wet processing method. One of the major obstacles to the improvement of coffee quality in Papua New Guinea is the failure of the current marketing system to give the right price signals to growers, in terms of different prices for different qualities of parchment. The marketing system is highly competitive, with large numbers of traders and roadside buyers purchasing small quantities of parchment from smallholder coffee producers. Since many of the taste faults in coffee cannot be detected at the parchment stage it is not possible to reward smallholders who produce superior tasting coffee. Historically, two coffee chains have coexisted in the Papua New Guinea industry, with the plantation chains, a remnant of colonial occupation, producing higher quality coffee for the speciality market. In contrast, the smallholder chains produce coffee for the soluble market. While the market determines quality and hence price essentially by consistency of taste, the government regulated grading system for green bean determines quality by bean size and the level of defects. The two are not necessarily correlated. Furthermore, cultural differences between plantation farmers, exporters and smallholder farmers, contribute to the perception by smallholders that lower prices are due to excessive profits in the processing-export sector rather than to any inherent problems with coffee quality. A number of solutions have begun to emerge which will be explored.

Background to the Papua New Guinea coffee industry

Production and prices

Papua New Guinea is a relatively small player in the world coffee market, producing around 1 percent of world coffee exports or 1 million (60 kg) bags. In 2005, the major importers of Papua New Guinean coffee were Germany (48 percent), the United States or America (14 percent), Australia (14 percent) and Japan (9 percent) (Dambui *et al.*, 2006b). Much of the coffee exported to Germany, Australia and Japan goes to the soluble coffee market and hence attracts lower prices than those achieved in the speciality market.

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Almost all of the coffee exported from Papua New Guinea is Arabica, which is produced in the Highlands at altitudes above 1 000 metres. Under the International Coffee Organization classification system, Papua New Guinean coffee is grouped in the Other Mild Arabicas category. While this is potentially good quality coffee, historically Papua New Guinean coffee has received lower prices than the average, as most Papua New Guinean coffee sells at a discount to the Other Mild Arabicas Grade on the New York Board of Trade (or NY ‘C’). In 2004 and 2005, around 60 percent of Papua New Guinean exports sold at a discount averaging 13 to 14 USc per pound (Dambui *et al.*, 2006a). In 2005, around 80 percent of Papua New Guinean coffee was sold as smallholder Y grade coffee (PSC, Y₁ & Y₃) while only 20 percent was sold into the speciality market (A, X, Organic and Fair Trade). While Y grade coffees were sold at a discount to the NY ‘C’, the speciality coffees received price premiums (Table 1).

Table 1: Green bean prices & differentials to NY ‘C’ for Papua New Guinea coffee (2005)

<i>Grade</i>	<i>Price Lae (t/kg)</i>	Differentials (USc/lb)
A, AA	804	25
X	793	7
Organic	801	19
Fair Trade	920	
PSC	648	-7
Y1	606	-13
Y3	265	-66

Source: Dambui *et al.*, 2006: p. 22.

A dualistic coffee production system

Coffee production in Papua New Guinea comes from three main types of farms: smallholders, blockholders and plantations. Between 80 and 90 percent of production comes from around 250 000 smallholders involved in subsistence agriculture on customary land (Stapleton, 2000). Smallholders generally cultivate a few trees or a few hectares among their subsistence food crops. Coffee is the main source of cash income, which is used to pay school fees, purchase trade goods and meet traditional social obligations. Most of the coffee is sold as parchment, often to local roadside traders or has to be flown out in the case of the more remote locations. The parchment is produced using highly variable wet processing techniques. Suitable pulpers are in short supply, fermentation often occurs in bags and washing is incomplete or uses muddy water. Consequently, the quality of the parchment is highly variable as is the taste of the coffee made from this parchment.

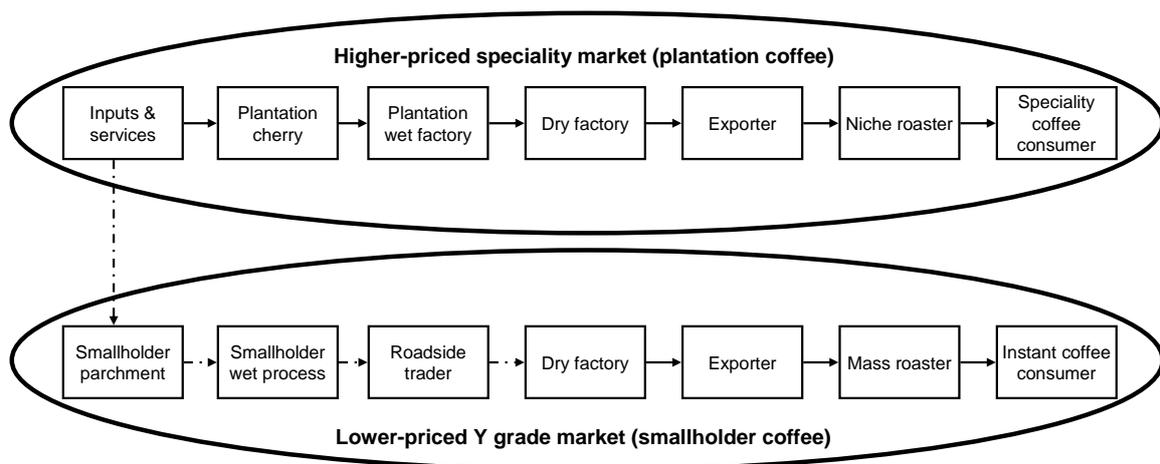
The blockholder sector is the smallest and is derived from a 1980s scheme that provided 20–hectare lots to around 250 business groups (Stapleton, 2000). Research indicates that many of these have since been subdivided between family members, so there is now a wide range of sizes. These farms tend to be run along more commercial lines with the use of wage labour and cash inputs, while processing is usually carried out using a pulper and a small wet mill. However, in many respects, the quality of their

coffee is similar to that produced by the smallholder sector, for the quality of the parchment produced is highly variable and reflected in the taste of the coffee.

The few remaining plantations now produce less than 10 percent of total production. They are larger in size (hundreds of hectares) and often occupy leased land. Almost all are majority or totally owned by nationals (Stapleton, 2000). These plantations achieve higher production per tree and per hectare. They use commercial operating principles and rely on wage labour and cash inputs to achieve this. The quality of their coffee tends to be better, mainly because of the better quality control systems employed in their wet processing mills. Some also have their own dry mills, but many use the same dry mills that are used to process the smallholder and blockholder coffee.

The traditional Papua New Guinean industry can be characterized as a dualistic supply chain model (Figure 1), composed of smallholder subsistence farmers and large plantations. The plantation sector sells most of its coffee into the speciality market, while the smallholder sector sells much of its coffee into the soluble or instant coffee market. Consequently, the decline in size of the plantation sector has contributed to a decline in the average quality and price of Papua New Guinean coffee.

Figure 1: Traditional dualistic Papua New Guinean coffee systems



Problem perceptions

Some blockholder and smallholder coffee is sold as A or X grade coffee and hence finds its way into the speciality chain. However, the perceived wealth of processors and exporters, cultural differences between smallholders, plantation managers and exporters, and the higher prices paid for plantation coffee, lead to the perception by many smallholders and politicians that low prices for smallholder coffee are due to high margins in the processing and trading sectors and a failure to pass on prices for better quality coffee to smallholders. In response, government programmes have been formulated (Papua New Guinea Coffee Industry Corporation, 2002) to support grower groups to process and market their own coffee. Some of these programmes have focused on processing and marketing to traders (e.g. farmer cooperatives formed under the

Smallholder Agricultural Credit Scheme and the EU-funded Stabex project). Other smallholders have tried to form cooperatives with direct links to overseas buyers (e.g. Papua New Guinea Coffee Federation).

With these issues in mind, this project was initially set up to address the problem that “one of the major obstacles to the improvement of coffee quality in Papua New Guinea is the failure of the current marketing system to give the right price signals to growers in terms of different prices for different qualities of parchment”. This paper sets out to explore the validity of this statement and to redefine the problem in a more positive light to show how “the operations of the coffee chains can be improved so that relative prices for Papua New Guinean coffee will improve and farmers will be appropriately rewarded for their role”. The results presented are based on interviews and focus group meetings with farmers, farmer groups, processors, exporters and staff from the Coffee Industry Corporation.

The key issue is one of establishing systems whereby it will be possible for buyers along the chain to have confidence that they are buying higher quality coffee and therefore to pay an appropriate price for the improved quality. A number of solutions, which have emerged to resolve this problem will be discussed.

Quality determination in world coffee and in the Papua New Guinean coffee industry

Coffee is prepared for the consumers in two main ways: in a soluble or instant form or in a roasted and ground form. Around three quarters of all coffee consumed in the world is roast and ground, with the rest being consumed in soluble forms, although the proportion going to each varies widely from country to country (International Trade Centre UNCTAD/WTO, 2002). Soluble coffee can be further divided into spray-dried and freeze-dried forms with spray-dried being at the cheaper end of the market. Almost all of these coffees are derived from blends of beans from a range of sources. Cheaper coffees are produced from lower-priced Robusta coffee and the lower-priced Arabica coffees. This market is highly price-competitive and dominated by a few large roasters.

Roast coffee comes in many forms, but the mainstream market is for blended coffee with the coffees coming from many sources, which are often interchangeable (International Trade Centre UNCTAD/WTO, 2002). Essentially roasters in this market blend to a taste and price and the market is very competitive. Many coffees that do not have particular characteristics to set them apart end up in this market where they face stiff competition. Concentration has been less pronounced in this sector because of the recent expansion in what can be called the speciality sector.

The speciality sector is a broad term to cover coffees “which either command a premium price over other coffees or are perceived by consumers as being different from widely available mainstream brands of coffee” (International Trade Centre UNCTAD/WTO, 2002: p. 65). This sector includes coffees that have niche market characteristics or have other certifications that attract premiums (e.g. Café Practices, Organic and Fair Trade).

A coffee's suitability for a niche market depends on whether it meets certain quality and availability characteristics. The price will tend to increase with increasing quality and decreasing availability. Examples of price being determined by exclusivity include *Café Chon* from Vietnam and *Civit* coffee from the Philippines. Both are extremely rare because the beans are manually extracted from the faeces of, respectively, foxes and native cats that have consumed the beans.

Quality of coffee is essentially a subjective characteristic determined by the tastes of the particular country and the segments within the market. Quality coffee can be categorized into three groups (International Trade Centre UNCTAD/WTO, 2002: p. 65): exemplary (limited availability and fine or unique cup); high quality or premium (either single origin or blends but of good cupping quality, may not be visually perfect); and mainstream (average quality). Good quality coffees can attract considerable premiums at retail level, which can also result in worthwhile although still lower premiums to farmers. Nevertheless, it is important to recognize that speciality coffees account for less than 15 percent of the world market.

As indicated in Table 1, Papua New Guinean coffee going into the speciality market does attract a premium but most are not attracting high quality premiums. This implies that Papua New Guinean coffee is competing in the larger segment of the speciality market for high and mainstream quality coffees. Nevertheless, it signifies that there is scope to sell more coffee into this market if it is properly processed.

The other segments of the speciality market which have been largely untapped by Papua New Guinea are the organic and various forms of environmental, sustainable and ethical markets. In 2004–2005, only 7 545 bags (0.7 percent) of Papua New Guinean coffee were sold as organic (Dambui *et al.*, 2006b), despite the fact that a large proportion of the coffee is grown under organic conditions. Similarly only 5 250 bags (0.5 percent) were sold as Fair Trade. While the trend has been increasing, this is a small proportion compared with some other countries (e.g. 13 percent in Mexico [Kilian *et al.*, 2004]).

For historical reasons related to the colonial past and different wet processing systems, there has essentially been a dualistic grading system for Papua New Guinean coffee that corresponds to the dualistic coffee chains: the plantation grades (A & X) and the smallholder grades (known as Y grade). However, this is not immediately apparent as the parchment grading system highlights moisture, defects and colour, while the green bean grading system highlights bean size, defects and colour, with cup quality as an additional largely intangible factor. While coffee can be graded for bean size and levels of defects, it is not possible to grade for taste until it is roasted and cupped. Even if most of the coffee has a suitable taste, only a very small number of off-flavoured beans can ruin the taste of a batch of coffee and hence reduce the price.

Consequently, while the market determines quality and hence price ultimately by subjective taste or flavour characteristics and the consistency of these tastes, the Papua New Guinean grading system does not emphasize this. This puts Papua New Guinean coffee producers at a disadvantage since taste characteristics are becoming more important as coffee is produced to meet the higher priced speciality markets. Most parchment is graded for moisture and defects while green bean is graded largely by bean

size and levels of defects. Particularly in the Y grade market, traders grade and blend to meet maximum defect specifications and cupping is mainly practiced to ensure that off-flavours are not present. Some parchment buyers further degrade the system by offering “*wan prais*” (one price) for all parchment.

Notwithstanding these problems, there is still a ready market for Y-grade smallholder coffee because of its fruity and wild taste (Wheeler and Kufinale, 2005). However, the problem is with consistency of taste. This lack of consistency is derived from the variation in processing (particularly smallholder wet processing) and deficiencies in the grading and payment systems. Lack of consistency is the major reason for the discounting of Y grade coffee compared with the NY ‘C’ and other washed Arabicas.

Constraints to the improvement of quality in the Papua New Guinean coffee industry

There are many constraints to improving the quality and hence price paid for Papua New Guinean coffee. Some of these are external constraints to the industry, which can only be solved by government action. These include poor roads and communications, law and order, uncertain land tenure and lack of bank finance to the coffee industry. Although each of these may have an impact on possible solutions, they are not discussed in this paper. Other constraints, which will be discussed include: confusion about quality; inconsistent quality due to processing methods; confusion about causes of low and fluctuating prices; social and cultural distance between sectors of the industry; and the small amounts of coffee available for sale. There are often overlapping elements between these constraints.

Confusion about quality

Many smallholder coffee producers have the perception that quality is determined by bean size and defect levels. They are aware that A grade beans, which are larger and have lower levels of defects, receive higher prices and that dry processors are able to grade green bean to take out larger beans and remove defects. Some of this coffee is sold as A grade. What they do not realize is that the average quality A grade coffee receives only a small premium to New York ‘C’ compared with plantation A grade that has a recognized brand backed up by consistent performance over time.

Smallholders have almost no understanding of the operations of the coffee market beyond their relationship with the roadside trader or factory buyer. They do not drink coffee and have not been exposed to differences in taste between the various qualities of coffee. They have little understanding of the operations of a dry processing mill or of the functions of an exporter and no understanding of the various markets for their coffee. Consequently, they do not make the link between their own processing procedures and the prices they receive for quality. This confusion about quality leads to calls from smallholders and politicians for them to be able to process and market their own coffee without going through the established processors and marketers so that they can obtain better prices for their coffee.

Inconsistent quality due to processing methods

Coffee in Papua New Guinea is produced using the wet processing method. However, there is considerable difference between the quality of parchment produced from a large wet mill with proper quality control procedures and parchment produced by most smallholders. Handling of coffee from harvesting to parchment is the major determinant of the differences between Y grade coffee and some of the plantation A coffees sold as speciality coffees. Average quality Y grade coffee has a range of winey and fruity flavours and is often thin. As previously indicated this has a market, but it is not a speciality market. The same cherry processed in a properly managed wet mill will lack these flavours and in most respects cannot be differentiated in taste from a cherry picked from a well run plantation. As one major coffee company manager says: "There is no such thing as bad coffee on the tree".

The problems of inconsistent quality in smallholder coffee begin with the failure to harvest and process only red cherry and end with poor drying. Other factors leading to inconsistencies include:

- not pulping all cherry on the same day as harvest;
- poorly adjusted pulpers or use of other pulping methods;
- failure to separate rubbish, floaters, chipped or broken beans from properly pulped beans;
- overfermentation often in unclean bags;
- poor washing of beans or washing in unclean or muddy water;
- drying on the ground or in situations leading to contamination or extended drying periods;
- incomplete drying.

The key problem is that most smallholders process their own coffee and there is very little consistency in this process from one farmer to the next. Accordingly, each farmer's parchment will have different characteristics. The causes of this problem are a lack of knowledge of proper processing methods and the link between processing and price and the difficulty of getting a large number of farmers to process exactly the same way.

Confusion about causes of low and fluctuating prices

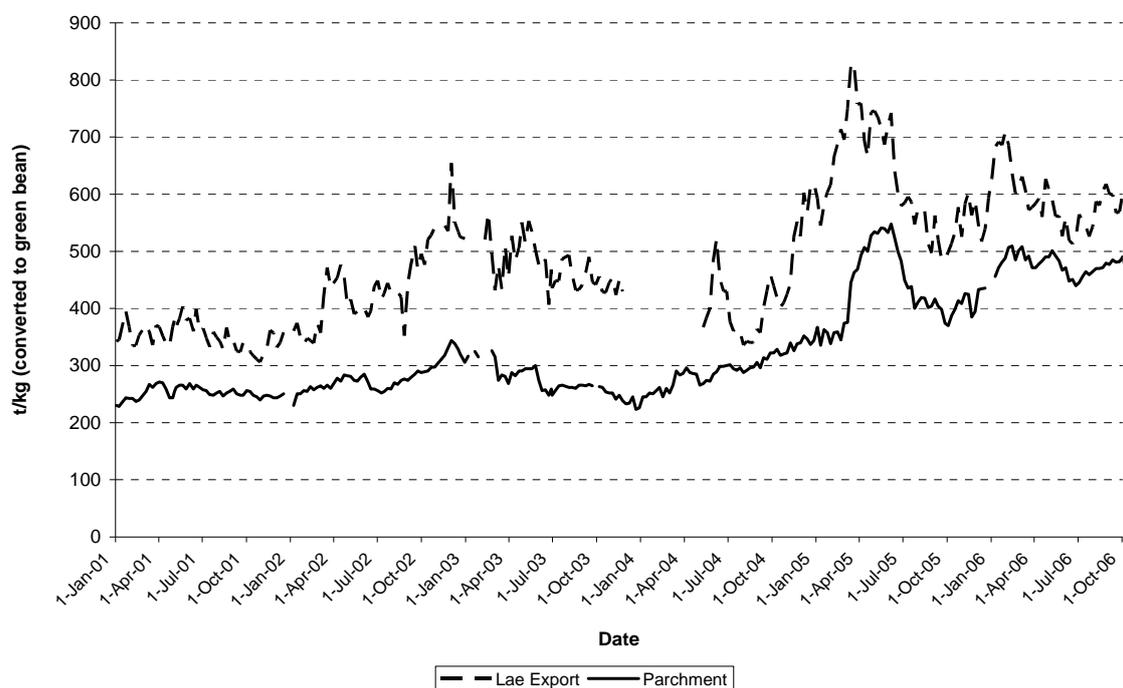
There is also a widespread belief that low prices are the result of high margins and fraud in the processing and exporting sector. Smallholders have almost no understanding about the causes of fluctuations in world coffee prices and the size and quality of Papua New Guinean coffee relative to other countries in the world. Consequently, they blame low prices and fluctuations in prices on unscrupulous buyers and traders.

While there will always be some unscrupulous buyers and traders in any market, Papua New Guinea has a highly competitive free market when it comes to buying parchment. There are many thousands of roadside buyers, 57 registered dry factories and 17 registered exporters (Dambui *et al.*, 2006a). Most smallholders have a range of choices when it comes to selling their coffee.

Evidence from Papua New Guinea Coffee Industry Corporation (CIC) weekly statistics suggests that smallholders receive a very competitive proportion of the FOB price for

green bean. As shown in Figure 2, which is based on weekly No. 1 grade parchment prices at the factory door converted to green bean price and the export price at Lae for Y grade, parchment prices are highly correlated with export prices. The Pearson correlation coefficient between the two prices from 2001 to October 2006 is 0.90. For the main months from April to September for the years 2001 to 2006, the price for No. 1 grade parchment at the factory door averaged 72 percent of the export green bean price at Lae based on an assumed recovery rate of 73 percent. The FOB Lae prices are also highly correlated with the NY 'C' price with a correlation coefficient of 0.96 between 2001 and 2006.

Figure 2: Y grade export prices (FOB Lae) & No. 1 grade factory door parchment prices 2001–2006 (t/kg Green Bean equivalent)



Source: Derived from Papua New Guinea Coffee Industry Corporation. 2001–October 2006 Weekly Market Prices for Broadcast

Social and cultural distance between smallholders and the plantations, processors and exporters

The hangovers of a colonial past with its race-based social hierarchy and the dualistic nature of the industry still resonate in the Papua New Guinean coffee industry. Most of the large plantations, processing factories and export operations are managed by people whose cultural backgrounds distinguish them from smallholders. While they are not necessarily wealthy in comparison with managers of similar operations in developed countries, they are still much wealthier than smallholder farmers. In addition, most do not belong to any of the clans of the Highlands, although many have been born or spent most of their life in Papua New Guinea and have a good understanding of the culture. In

combination, these factors exacerbate the belief by smallholders that they are not receiving a fair deal.

Small quantities of coffee for sale

Because of the small numbers of coffee trees owned, picked and processed by each smallholder farmer, the quantity of parchment they have for sale at any one time is small. Parchment is also a liquid item and farmers store parchment for sale when they need cash for family and social obligations. Here roadside traders serve a useful function since they buy small quantities of coffee for cash and aggregate these small lots of coffee into larger numbers of bags. They then sell the parchment to a dry mill that in turn processes it and sells it to an exporter. However, the quality of this coffee is highly variable.

The problem for processors and exporters is that they sell and ship coffee in 300-bag containers or 18-tonne lots. The buyer of this container expects all the bags to be of the same consistent quality, which will include size of bean, level of defects and taste. Some characteristics are obvious in the parchment, but taste is generally not, so there are information problems in the purchasing transaction. In almost all cases, whether the processor is buying from a farmer or a roadside trader, neither party will have any real knowledge about the taste characteristics of the coffee. It only becomes economic to taste coffee when buying around 30-bag lots. Consequently, parchment buyers face risks when buying and discount the price to allow for this.

A similar problem also exists for a farmer. If the farmer is producing high quality parchment, but only has a small amount, they are unlikely to be rewarded as the trader cannot source enough to fill a container. The roadside traders have no way of determining superior quality or of being rewarded for purchasing superior quality coffee because they face a similar problem when selling to a processor. Similarly, a processing factory can only reward a farmer for the visual quality of their coffee, not the taste, because it is not feasible or economic to taste small lots of coffee.

Implications of these constraints to the problem of improving quality and price

While the mainstream Y grade coffee chain in Papua New Guinea is highly competitive and is efficient in that it quickly adjusts to world prices and provides smallholders with a fair proportion of export prices, it is not able to reward smallholders for producing better quality coffee. In fact, the system tends to have the opposite effect because smallholders who produce poor quality coffee can often receive the same price as smallholders producing superior quality coffee.

Although it is possible to make improvements in this system through education, its inherent problems will remain. This does not mean that government should ban roadside traders because, as already indicated, they provide a valuable service for village farmers and industry. For smallholders they act as a source of cash by buying coffee at the village level and for industry, they take the risk of buying and transporting coffee from remote villages over very poor quality roads and the risk of theft by rascals. Systems to overcome these constraints are emerging.

Emerging coffee chains aimed at achieving higher prices

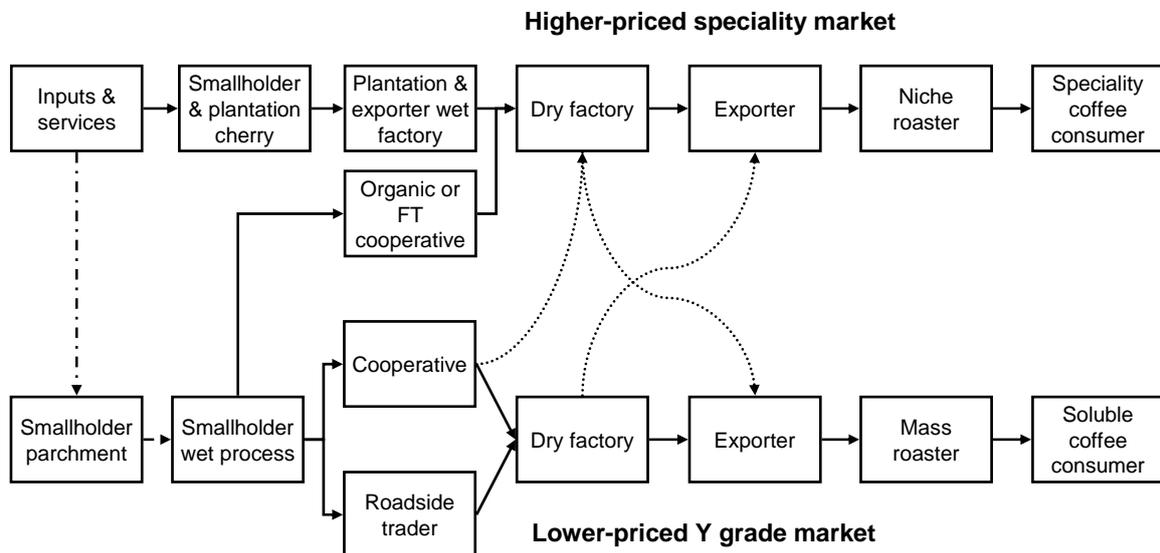
As is obvious from Table 1, Papua New Guinean coffee that achieves A grade, Organic or Fair Trade grades is sold at a considerable premium to NY 'C'. Unfortunately, only around 10 percent achieves this status. The key reason for this difference in price, which is around US\$30–40 per pound, is the poor processing at the village level, leading to inconsistent product quality.

A number of chains have overcome this problem by improving quality or delivering to accredited organic or Fair Trade markets through:

- purchase of smallholder and blockholder cherry by centralized wet mills owned by plantations and exporters, to produce speciality coffee;
- exporters who have established relationships with smallholder cooperative groups to improve the quality of their coffee and receive accreditation to deliver to the organic and Fair Trade markets;
- smallholder cooperative groups trained to deliver higher-quality coffee to exporters.

The first two of these options directly target the speciality market to achieve higher prices, while the third attempts to improve price by overcoming the inconsistent quality and small quantity constraints. These chains are illustrated in Figure 3.

Figure 3: Emerging Papua New Guinean coffee chains



Chains in which centralized wet mills purchase cherry

In the key coffee producing provinces of the Papua New Guinea highlands, many smallholders have access by road to large wet processing mills. These mills can be on existing plantations who buy cherry from surrounding farmers, forming a type of nucleus estate model. The other model is a specially built wet mill that buys cherry from

surrounding farmers. The catchment zones are generally a 20- to 30-kilometre radius from the factory, depending on the quality of the roads and the location of the factories. In some cases, farmers deliver directly to the mill and in others, the factory sends out trucks to procure the cherry from the farmers.

While there are a number of variations in the operations of the nucleus estate model, the key is to process the smallholder's cherry using the same processes used for their own coffee and to sell it to the speciality coffee market as plantation grade coffees. In some cases, the coffee is kept separate from the plantation coffee for traceability and other reasons, although this is not universal. In some cases, the plantations have their own dry mill and exporting arm, while in others they use other companies as dry processors and exporters. In the latter cases, they tend to establish close relationships with the exporter. Similarly, there are a number of variations with the stand-alone wet mill model. In some cases, the wet mills are co-located with a dry mill or the company has its own dry mill. It may also be a subsidiary of an exporter or have an established relationship with an exporter.

To achieve higher prices for their coffee, these chains are following two strategies. The first is to attain volumes of coffee processed to the standards that exist in the Papua New Guinean plantation sector. This coffee can sell at plantation prices because it has consistent standards and hence taste. To this end, they emphasize buying only ripe red cherry, as this is a critical factor in achieving consistent wet processing. The second strategy is to achieve accreditation to a speciality coffee market. An example of this is Starbucks and their Café Practices programme. Some of these cherry chains have already obtained preferred supplier status and are aiming at strategic supplier status.

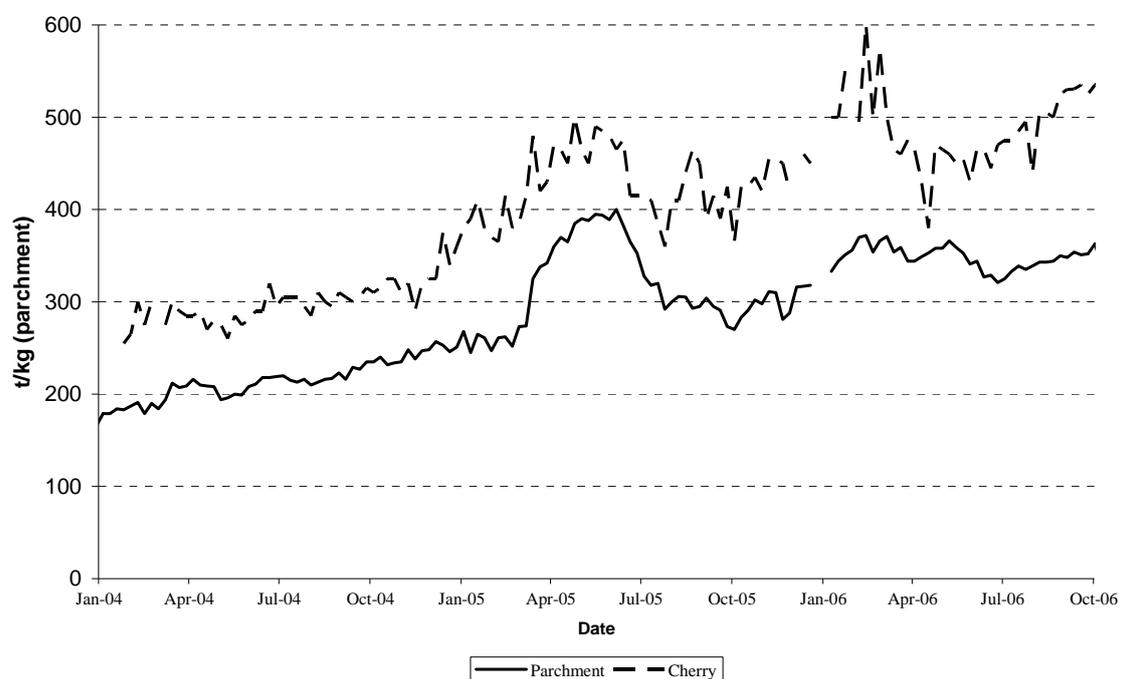
These strategies have been successful in obtaining higher prices for Papua New Guinean coffee and in passing on a considerable proportion of these prices to farmers. As is indicated in Figure 4 farmers who sold cherry rather than parchment received an average of around 100 Papua New Guinean toea (US\$35) per kilogram parchment equivalent (or one-third) more during the 2004, 2005 and 2006 coffee seasons. The difference varies from season to season depending on the world price and domestic seasonal factors. In 2006, with high world prices and a local shortage of coffee, fierce competition increased the premium to around 130 Papua New Guinean toea (US\$45) per kilogram parchment equivalent or around 38 percent. It also appears that the level of competition for cherry has been increasing over the years and that farmers are receiving a higher relative price for cherry.

The model of centralized processing of cherry is expanding in Papua New Guinea and has the potential to expand further. There is still considerable room for improvement through adopting quality assurance schemes and achieving accreditation to speciality markets such as Starbucks. However, there are some constraints to some of these as the Café-Practices model has been developed for the Central and South American system and this creates problems for Papua New Guinea with its large numbers of very small coffee farmers. However, some of the chains have or are developing systems to overcome these problems.

A major constraint to the expansion of the schemes is the poor condition of the roads and to a lesser extent, problems of law and order. Cherry must be delivered to the mill for processing on the same day it is harvested. Because the Papua New Guinean coffee industry is widely dispersed, often in remote areas, the system is only suitable for limited parts of the industry until roads are improved.

Another emerging problem is the increase in cherry theft. This is occurring because of the higher prices for coffee over the last two years as well as the increase in cherry buying. The expansion in mills buying cherry is occurring at two levels: the buyers of ripe red cherry who are aiming at the speciality market; and buyers of poorer quality cherry who have problems achieving premiums for their green bean. Cherry theft has led to calls for a ban on cherry buying similar to a ban that existed previously. Much of the cherry theft occurs at night. Because the coffee trees are strip picked, the quality of the cherry is poor and can only be sold to the less discerning buyers. Some of the speciality buyers have schemes that demand traceability under quality assurance programmes to limit this problem. Most cherry buyers do not. It remains to be seen whether the buyers of the poorer quality cherry will be able to compete as they are currently paying similar prices to the speciality buyers for their cherry but will not be able to achieve the same quality and thus be unable to access the speciality market.

Figure 4: Papua New Guinean factory door cherry and No. 1 grade parchment prices 2004–2006 (converted to parchment at 5kg cherry = 1 kg parchment)



Source: Derived from Papua New Guinea Coffee Industry Corporation. 2004–October 2006 Weekly Market Prices for Broadcast.

Chains aimed at the organic and Fair Trade markets

A couple of chains are emerging that are targeting speciality markets by achieving certification for organic and Fair Trade, although at this stage they produce less than 2 percent of exports. These chains involve a relationship between exporters and farmer cooperatives. As shown by Table 1, considerable premiums are available for coffee that is certified under these schemes, with dual certification providing additional advantages. Others are also possible, such as Rainforest Alliance and Utz Kapeh, but these are not significant at this stage. While organic certification is possible for both plantation and smallholder coffee, the latter is the focus of this discussion.

The systems that are needed for organic and Fair Trade certification with smallholders are similar and require the establishment of cooperatives and traceability systems. Providing these requirements are met, much of Papua New Guinean coffee would be eligible for certification under these systems. Because of their remoteness, most smallholders use very little if any chemicals and produce their coffee in sustainable multi-cropping systems. It would seem therefore that this system provides an opportunity for considerable expansion, because of the relatively small size of the Papua New Guinean industry. However, some key constraints are limiting this.

One of the key constraints is establishing and maintaining cooperatives and traceability systems. Cooperatives have a poor record in Papua New Guinea. Relatively low levels of education of village farmers and cultural issues generally lead to the failure of cooperatives due to a combination of conflict, poor management and corruption. Furthermore, in order to achieve certification, especially for organic, the process may take up to three years. Although no price premiums will be realized, the costs for inspection and auditing must still be met. As most smallholder farmers do not have the financial resources, the schemes that are overcoming these problems in Papua New Guinea generally involve a close relationship between an exporter and the farmer cooperatives. Considerable support, effort and costs are required from the exporter to facilitate the establishment and continued operation of the cooperative to ensure good governance and management. This is a slow process and is very much dependent upon the quality of local leadership. Certification is also complex and expensive, and arranging this would appear to be beyond the capabilities of most farmer cooperatives without the assistance of an exporter. Consequently, rapid expansion of these systems is unlikely and farmers and exporters who move too fast will probably fail. It requires committed exporters with an appropriate cultural understanding and patience.

Another constraint is that much of the organic and Fair Trade coffee is produced using similar processing systems to that used by producers of the mainstream Y grade coffee. This means it is still susceptible to problems of variation in quality and taste. If this issue is not addressed, customers are likely to complain about quality and markets could be lost. However, because of higher prices, more effort can be put into overcoming these issues. Existing chains focus on training in the village, with local inspections of parchment quality and hand sorting of the green bean.

Smallholder cooperatives delivering higher quality parchment or green bean to exporters

A third approach, which has two schemes; one supported by the Coffee Industry Corporation and the other by an EU-funded project, is to support smallholder cooperatives in bulking up parchment, which a dry mill then processes under contract before it is sold to an exporter.

The Coffee Credit Guarantee Scheme (CCGS) was established in 1997 by the CIC under the Smallholder Agricultural Credit Scheme. The scheme was initiated by the CIC as a means of providing capital to smallholder coffee producers, who without sufficient collateral, security and equity, are unable to borrow from the banks. To facilitate the repayment of loans, those coffee producers who borrowed from the CCGS were placed into clusters at either the village level or on the basis of clans. Under Phase Two of the Smallholder Agricultural Credit Scheme, CIC established a farmers' marketing cooperative to process the smallholders' coffee into green bean. The green bean is then sold on consignment to the exporter who offers the highest price. Considerable support is provided by the CIC to run this scheme, particularly when it comes to arranging collection, processing and sale of the green bean. Because of the central role of the CIC in the formation and support of these groups, there is no formal chain, because the CIC organizes the farmer group's parchment to be processed in a commercial dry mill and then facilitates the sale to an exporter.

Other farmer cooperatives are supported by the EU-funded Stabex project which is assisting grower groups to improve the quality of parchment delivered to processors and exporters. The project provides training, audits the books and helps groups to look for buyers, but does not make the decision for the group on whom to sell to. The Stabex project provides subsidies for dry processing to participants. The subsidy declines over time and disappears after three years. Once again there is no formal chain, because the relationships with processors and exporters are fluid.

Like the organic and Fair Trade schemes, both these schemes produce coffee using village-level wet processing methods and hence potentially have problems with consistency of quality and taste. Problems arise with variation in cherry quality, wet processing methods and moisture levels of parchment. There are no existing quality assurance programmes except for the focus on quality by group members and any systems implemented by the dry factory and exporter. Some smallholders are hand-sorting cherry prior to pulping to remove green cherry, but not overripe cherry, while others sort parchment. Consequently, it is difficult for these schemes to produce coffee suitable for the speciality market and their green bean is often just better quality Y grade or PSC coffee. They may achieve some price advantages through being able to sell larger volumes of coffee and avoiding the roadside traders.

Once again a key constraint to the long-term success of these schemes is the sustainability of the cooperatives. At present, they rely on support from the CIC and the Stabex project. It is possible that some of the groups will achieve the necessary cohesion and skills to become self supporting, but many may not for the reasons already discussed.

Another constraint is that these schemes cannot be easily expanded because of staff constraints in the CIC and the Stabex project. Possible solutions to these issues depend upon the location and characteristics of the group. Where groups are close to existing centralized wet processing mills, they may be able to establish a relationship to deliver cherry either as individuals or as a group. Another solution for more remote groups is to establish a relationship with an exporter who is willing to help them achieve organic and Fair Trade certification. The exporter may also be able to facilitate the maintenance of the cooperative. A third solution is for the cooperative to build and operate a wet mill that produces consistent quality parchment. While this is theoretically possible, it requires considerable cohesion and management skills by the leaders of the cooperative and probably support by a third party such as the CIC and will be unlikely to have a high success rate.

Conclusion

Papua New Guinea sells the majority of its coffee at a discount to NY 'C' due to inherent problems with consistency of quality and taste. While the industry is highly competitive, the systems in place make it difficult to reward smallholder farmers for producing superior quality coffee. Only around 10 percent of Papua New Guinean coffee achieves significant premiums to NY 'C' and hence qualifies as speciality coffee. Most of this comes from the small numbers of remaining plantations. The challenge is to encourage systems that overcome the inherent constraints in the mainstream coffee industry so that more smallholder farmers can receive higher prices when they deliver superior quality coffee. The approaches to achieve this include:

1. Assist the expansion of commercial wet factories buying cherry and implement quality assurance schemes that enable them to sell to speciality coffee buyers. These schemes are providing price incentives of around one-third for farmers. Key constraints to the expansion of this approach are problems with achieving certification in the Papua New Guinean context, poor roads, law and order, and cherry theft.
2. Form organic and Fair Trade certified chains. These chains are also producing premiums for growers, although they entail higher costs because of the certification requirements. The key constraint to the expansion of these schemes is the need to have a functioning cooperative and product traceability. This is difficult in Papua New Guinea and the current successful schemes rely on a strong relationship between exporter and cooperative. Because they produce coffee with village wet processing methods, achieving consistent quality is an ongoing issue.
3. Form cooperative groups that produce larger quantities of consistent parchment that is dry-processed under contract and the green bean sold to an exporter. The successful schemes here currently receive support from the CIC and an EU-funded Stabex project. There is a question mark over the sustainability of these schemes when this support is withdrawn. Most of the coffee produced under these schemes is superior Y grade or PSC coffee rather than speciality coffee because of the variation in quality and hence it does not attract the same premiums as the other two approaches.

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