

**School of Built Environment
Department of Planning and Geography**

The rise, fall and revival of the Papua New Guinea coffee industry

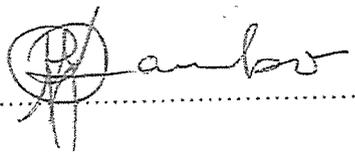
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**This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University**

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Declaration

To the best of my knowledge and belief, this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any other university

Signature: 

Date: 11th November, 2016

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Abstract

The Papua New Guinea coffee industry expanded rapidly in the 1960s and 1970s from initial small beginnings in the 1950s to become a thriving industry. The early European planters who established the industry forged partnerships with customary landowner groups and other village coffee farmers by providing support services, centralised processing and assisting villagers to plant coffee. As a result, Papua New Guinea had a reputation for producing premium quality coffee and consistently supplied overseas markets. However, coffee production began to plateau in the late 1980s, and coffee quality began to decline. From the 1990s to the present, the coffee industry has been in steady decline.

The study employed a mixed methods approach of quantitative and qualitative research methods. There were three primary sources of data: a review of the literature was undertaken to assess the past and present status of the industry; a cross-section of key industry stakeholders were interviewed including growers, coffee industry experts, chain leaders and lead partners; and case studies were developed for smallholder grower groups and coffee plantations to assess their performance.

Using the above methods, the thesis investigated the social, economic and political factors that have contributed to the decline of the coffee industry and identified potential strategies to reverse this trend. By analysing the experiences of successful and unsuccessful smallholders, block and plantation owners, the study identified the factors explaining the decline of the coffee industry, as well as the factors that have contributed to the successful resilience of a minority of coffee producers.

The thesis shows that the industry is besieged by poor institutional leadership, lack of partnerships, land disputes, poor extension services, policy failures, lawlessness and poor quality and declining rural infrastructure which have all contributed to the decline of the coffee industry. As for the managed subsector, it is beset with poor management and rising costs of farm inputs including labour. These problems are also exacerbated by plantations and blocks' lack of community engagement, and a

tendency for plantations and blocks to be managed to provide ‘prestige’ for owners rather than economic viability and profits. Moreover, the involvement of dishonest business leaders has contributed to mismanagement and the abuse of funds and assets in group-owned plantations and blocks which has led to their demise.

Although smallholder farmers produce 85% of coffee, they follow a low input-low output production system. This is because of the diverse livelihood strategies smallholders must juggle to allocate household resources, and coffee production is only one part of this mix. Many sectoral and industry-based programs and projects for the smallholder sector and the managed subsector, have failed or only partially succeeded because of poor leadership, abuse of funds, lack of monitoring, and policies which neglected to accommodate the effect of the indigenous economy. Also, the financiers of coffee industry programs and projects have failed to provide audits, monitoring, and evaluations to ensure investments achieved their intents. These problems have all contributed to the decline of the once thriving industry.

However, this thesis has identified some strategies that could be used to revitalise the coffee industry which can also be applicable to other agricultural sectors. This thesis found that leadership was an important factor that undergirds effective management and governance in cooperatives and group-owned businesses. Honest and transparent leadership enhanced group cohesion which resulted in more sustainable and successful cooperatives and group-owned businesses. Also, ‘hybrid’ transitional business leaders who were able to straddle both the indigenous and modern market systems tended to be more successful than either solely business-focused enterprises or ones that emphasised the indigenous economy and paid little consideration to market realities. Importantly, lead partners who provided institutional leadership to grower groups and business groups improved the successes of coffee enterprises.

This thesis illustrates that in the managed subsector, prudent management of company revenue and investment in appropriate areas of their operations are vital to their success. Also, business managers and owners must be skilled and knowledgeable about farm and asset management so that they can deploy resources efficiently which can, in turn, lead to higher productivity. Additionally, business leaders, owners and business managers must possess local knowledge and actively

participate in the local socio-economy so that amicable relationships are fostered with villagers for the business to operate successfully. In other words, businesses must become socially embedded in their host communities to be successful. Those plantations that have implemented the above strategies have proven resilient and are operating successfully.

There is enormous potential to increase the productivity and quality of coffee of smallholder farmers. Institutional arrangements that could facilitate increased productivity include: collective action; value chain partnerships; and agro-services. Cohesive farmer groups can arise from improved governance systems and institutional leadership leading to the establishment of sustainable grower groups. Providing extension services and industry incentive programs and projects through grower groups can elevate social capital which can lead to effective communication and information exchange among member farmers.

Finally, the public-private partnerships framework encourages partners to collaborate and pool their resources and expertise to pursue common goals. These public-private partnerships replicate to an extent the services provided by the plantations during the early heyday of the PNG coffee industry. It provides a systems approach in which value chain actors can work in concert to improve productivity and coffee quality. Partnerships have led to chain leaders in the coffee industry assisting in building the capacity of smallholders by providing agro-services. As a result, these smallholders have improved productivity and are now consistently delivering good quality cherry and parchment coffee to chain leaders. Through the supply chain linkages between coffee growers and chain leaders, the quality problem has been addressed. Moreover, the interventions of chain leaders were driven by market imperatives and their investments were targeted. Thus, chain leader-smallholder relationships through grower groups are sustainable, especially in market accessible areas. However, in low market access areas, lead partners need to maintain regular contact with farmers.

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List of Acronyms and Abbreviations

ADRA	Adventist Development & Relief Agency
ANGCO	Australia New Guinea Coffee and Cocoa
CBB	coffee berry borer
CCGS	Coffee Credit Guarantee Scheme
CDA	Coffee Development Agency
Chain leaders	coffee processors and exporters
CIB	Coffee Industry Board
CIC	Coffee Industry Corporation
CIE	Coffee industry expert
CIF	Coffee Industry Fund
CL	chain leader
CLR	coffee leaf rust
CMB	Coffee Marketing Board
CRAC	Coffee Research Advisory Committee
CRI	Coffee Research Institute
CSO	civil society organisation
DAL	Department of Agriculture & Livestock
EHP	Eastern Highlands Province
ENBP	East New Britain Province
ESD	Extension Services Division

FDDE	Farmer-demand driven extension
FOB	freight-on-board
gb	green bean
ha	Hectare
HFSA	Highlands Farmers and Settlers Association
ICA	International Coffee Agreements
ICO	International Coffee Organisation
kg	kilogram
Lead partners	CIC, civil society organisations and others
LLG	local level government
m asl	metres above sea level
MOA	Memorandum of Agreement
NADP	National Agriculture Development Plan
NASAA	National Association for Sustainable Agriculture, Australia
NCTS	Niugini Coffee Tea & Spice
NDB	National Development Bank
NGHCE	New Guinea Highlands Coffee Export
NPMA	National Plantation Management Agency
NPMP	National Plantation Management Program
PGK	Papua New Guinea Kina
PNG	Papua New Guinea
PNGSDP	PNG Sustainable Development Project

PPAP	Productive Partnership in Agriculture Projects
PRAP	Participatory Rural Appraisal Planning
PRS	Plantation Redistribution Scheme
PSC	premium smallholder coffee
RDB	Rural Development Bank
RGSD	Research & Grower Services Division
SAPs	structural adjustment programs
SH	smallholder
SHP	Southern Highlands Province
SPC	Secretariat of the Pacific Commission
SRPM	Smallholder Rural Project Management
THDS	Twenty Hectare Development Scheme
TMAS	Technical Management Advisory Services
UACC	Upper Asaro Coffee Community
WHP	Western Highlands Province
yr	year

When villagers become involved in commercial transactions [coffee production], they alter their interactions with the local environment, patterns of production, and social relationships.

--Lawrence S. Grossman, *Peasants, Subsistence Ecology and Development in the Highlands of Papua New Guinea*, 1984

Chapter 1

Introduction

Introduction

This thesis will convey the story of coffee in Papua New Guinea (PNG) from the impressive beginnings in the 1950s to its gradual and long-term decline since the late 1980s. It aims to establish why some parts of the coffee industry remain resilient while most of the industry went into decline. It does this by exploring the expectations and socio-cultural context of smallholder coffee production, the reasons for the slump in coffee production and identifies strategies that may return the industry to its former glory. Coffee production grew rapidly among smallholders in the 1950s and 1960s despite a lack of concerted government support. However, from the late 1980s, coffee production plateaued and went into a steady decline. Several studies have examined the issues in each of these periods, but gaps remain in our knowledge of farmers' expectations and the factors contributing to the decline of the coffee industry. This thesis addresses this knowledge gap.

This chapter commences with a description of the global context of coffee production and then highlights the economic importance of the PNG coffee industry and describes the key stakeholders in the industry. The research objectives and significance of the study and an outline of the thesis are then presented.

Global Coffee

In international commodity trade, coffee is second to crude oil. In some producing countries, and it applies in particular to countries that have attained their political independence in the 1960s and 1970s, coffee was and remains a primary export commodity and foreign exchange earner (Fitter and Kaplinski, 2001). The coffee industry worldwide engages 100 million people (Jaramillo *et al.* 2013; Bunn *et al.* 2015) that include coffee farmers, processors, exporters, traders, bankers, civil society organisations (CSOs) and a host of other value chain actors. Therefore, the

coffee industry impacts on the lives of many millions of farming families in developing countries and other value chain actors.

In global coffee production, Brazil leads and is followed by Vietnam and Colombia. The Asia/Oceania region has seen a surge in production in the last couple of years, mostly from Vietnam, which is the second highest producer accounting for 27.5 million bags in 2015. In 2012/13¹, coffee leaf rust (CLR) (*Hemileia vastatrix*) outbreak in Central America led to losses of 2.7 million bags (60 kg gb); US\$500 million was spent on addressing the problem (International Coffee Organisation [ICO], 2012/13). Central American countries are slowly recovering from the effects of CLR. Coffee production in Africa and South America has not fluctuated from previous years. In 2010/11, ICO composite prices peaked at US\$2.06/pound, the highest price was in 1976/77 at US\$2.30/pound (ICO, 2010/11). In PNG, the Y-grade (low-quality smallholder price) for green bean reached K15.49/kg on 25 April 2011, a record price for the local industry. The main reason for the increase was associated with the shrinking of physical stock (certified stock) of green bean to very low levels worldwide (Nicholas-Fulmer, 2011) as a result of the high demand in emerging markets like Russia, China, and India (Harrington, 2011). The shortage in stock was aggravated by the unpredictability in coffee supply to markets owing to extreme weather conditions, which affected global coffee production (Chapter 9). However, in 2012, Arabica coffee prices fell by 34% from 2011 prices reflecting price volatility in the coffee business. The decline also relates to the coffee biennial production cycle. After a bumper crop, the yield will be lower in the following year. Global coffee production continues to rise (Figure 1.1). Average annual production in the last ten years was 129.2 million bags of green bean with 2013/14 world production at 146.8 million bags (ICO, 2015a). A total of 55 countries, mainly in developing countries produce coffee.

Coffee consumption in importing and producing countries has increased at 2.1% per annum in recent years (ICO, 2015a). Importing countries like those in the European Union, the USA and Japan followed by Russia consume most of the global production. There is a stable growth in coffee consumption in emerging markets such as the former Soviet Union, China, and India. China and India, two very populous countries are beginning to adopt a coffee drinking culture. In the last ten years China

has experienced an annual growth of 16% in the consumption of coffee (ICO, 2015b). Also, there is an increasing rate of coffee consumption in coffee producing nations. Brazil leads the group followed by Indonesia, Ethiopia, Mexico, the Philippines and Vietnam (Figure 1.2). Although consumption of coffee in Europe is stagnant, there are increases in consumption in the USA, Russia and in South/East Asia. Moreover, markets in South/East Asia look promising with Indonesia, Vietnam and South Korea where there are significant increases in consumption (ICO, 2015a).

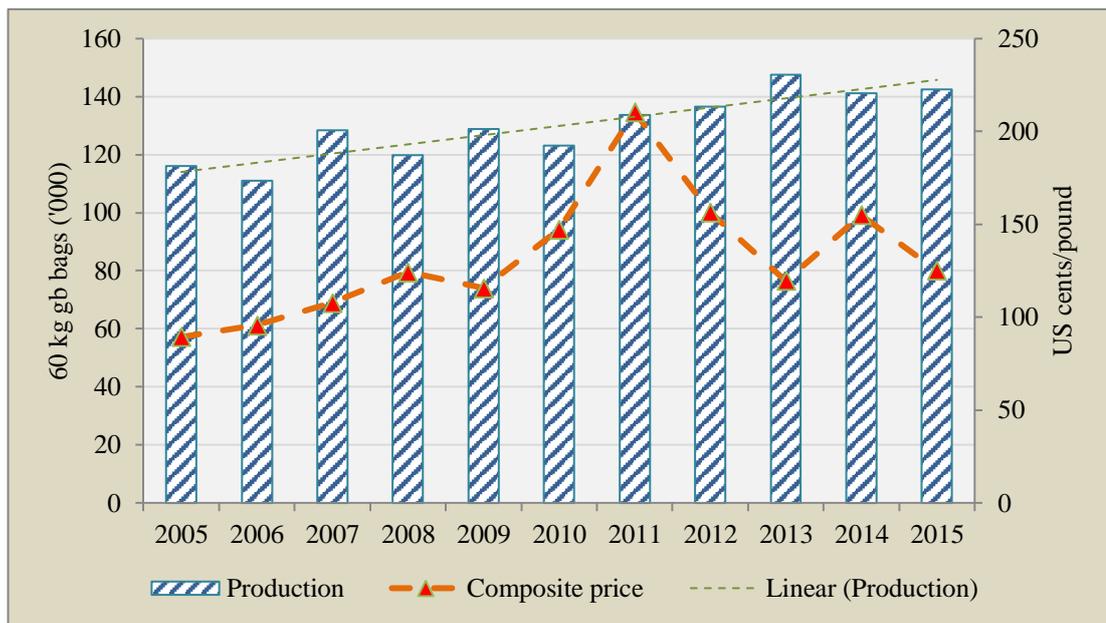


Figure 1.1: Global coffee production and composite prices (Source: ICO, 2015a).

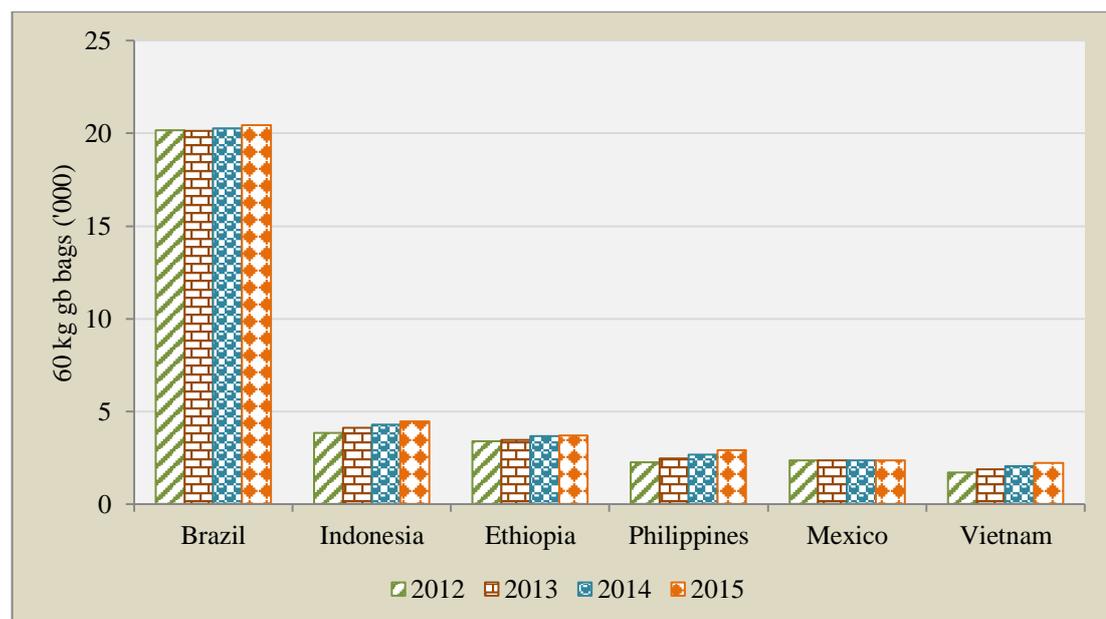


Figure 1.2: Top six coffee consumption countries that also produce coffee from 2012 to 2015 (Source: ICO, 2016).

Although coffee is a primary global commodity, only a fraction of the value of the coffee returns to the farmer. Approximately, only 7-10% of the final sale value in supermarkets or coffee shops reaches coffee growers in conventional supply chains (Rao, 2010; Borrella *et al.* 2015). However, Valkila and Nygren (2010) report that prior to the collapse of the International Coffee Agreements (ICA) in 1989, the final price received by growers was approximately 20% of the final sales value. Fitter and Kaplinski (2001) confirm that in the price transfers in mainstream coffee chains, the bulk of the returns accrue to processors, exporters, importers, traders, roasters, and retailers. However, in recent case studies of three ‘direct’ trade value chain analysis of differentiated coffee², roasters and retailers retained 77-86% of the income, while the balance was transmitted to coffee farmers (Borrella *et al.* 2015). Therefore, in a direct trade, coffee growers earn better returns of 14-23%.

The income received in producing countries is remitted in the form of foreign exchange earnings. Some countries with efficient systems of processing good quality coffee and marketing can add value to their coffee and make more gains on freight-on-board (FOB) prices. Coffee farmers in a few countries like Costa Rica and Uganda (Suruma, 2014) are receiving 80% of foreign exchange earnings. The high return on investment in Costa Rica is attributed to farmers supplying cherry coffee to central mills where high standards of processing are maintained to produce green bean (Adams and Ghaly, 2006). The Costa Rican farmers receive 40% of the coffee price on cherry delivery, and the balance is paid to them after export (Mosheim, 2002). As for Ugandan farmers, their success in attaining better prices originated from the deregulation of the market in the 1990s by allowing the private sector to participate in marketing (Suruma, 2014). In the past, the Ugandan state had a monopoly on the market.

Papua New Guinea’s Coffee Industry

PNG’s total population is 7.3 million (2011 National Census), and 80% of the people reside in rural areas (Banks, 2014). PNG accounts for 1% of total global coffee production (Coffee Industry Corporation [CIC], 2008a). Coffee is cultivated in 17 out of the 22 provinces covering the four regions of PNG: Highlands, Momase, Southern and the New Guinea Islands regions (Figure 1.3).

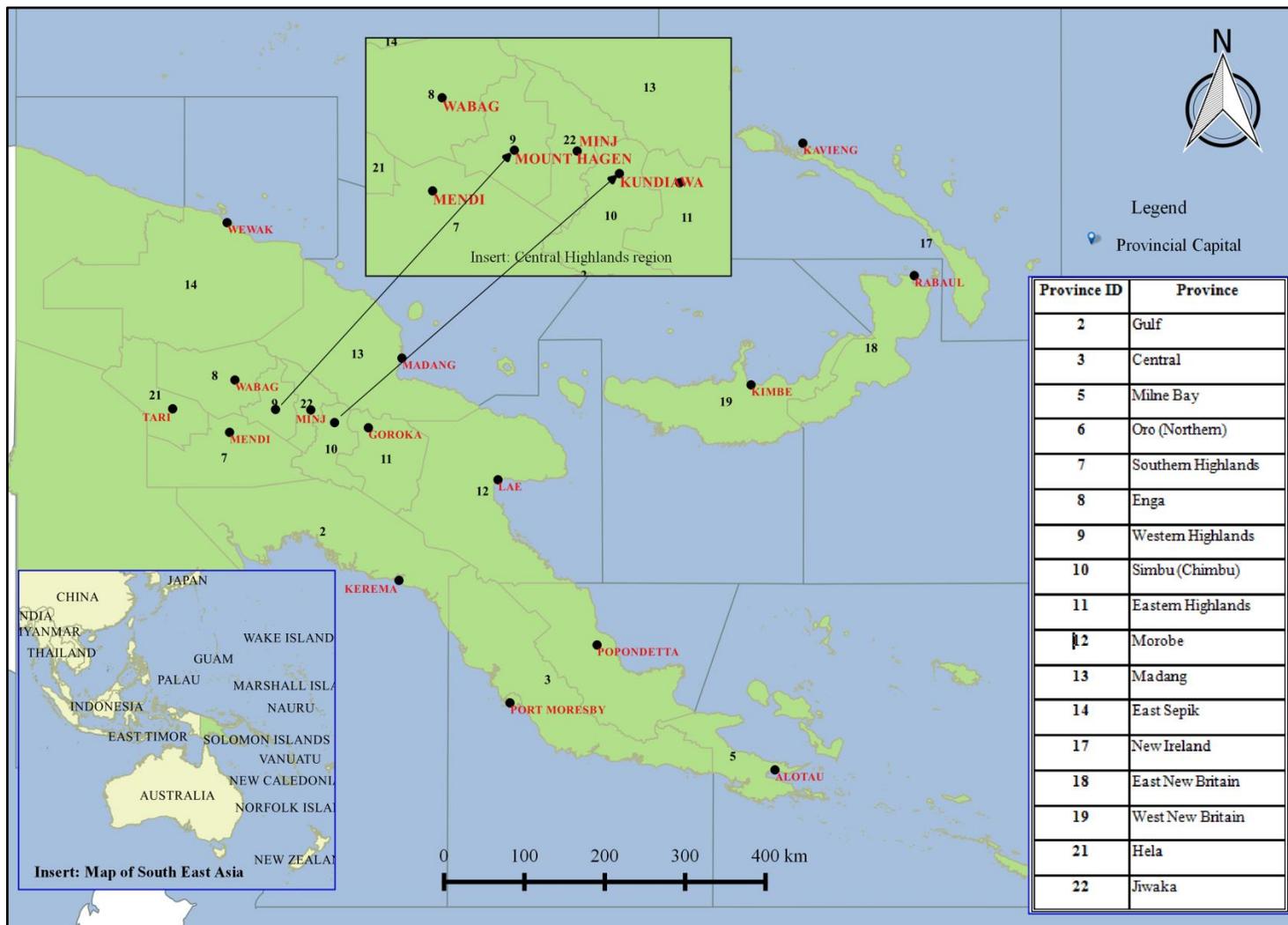


Figure 1.3: Map of coffee growing provinces in PNG (Source: Kingsten Okka).

The Central Highlands region accounts for 90% of national coffee production, which is predominantly Arabica coffee. Most of the Highlands coffee production is from the fertile Waghi Valley spanning Western Highlands Province (WHP) and Jiwaka Province. In 2015, the Eastern Highlands Province (EHP) was the major producer of coffee (Figure 1.4). The records for provincial production are collected at coffee mills located in each province. Coffee mills in Goroka, the provincial capital of EHP purchase coffee from Jiwaka, Simbu, Morobe and Madang and these mills pay more on coffee prices than mills in other provinces. Thus, the EHP data over-estimates the production from that province.

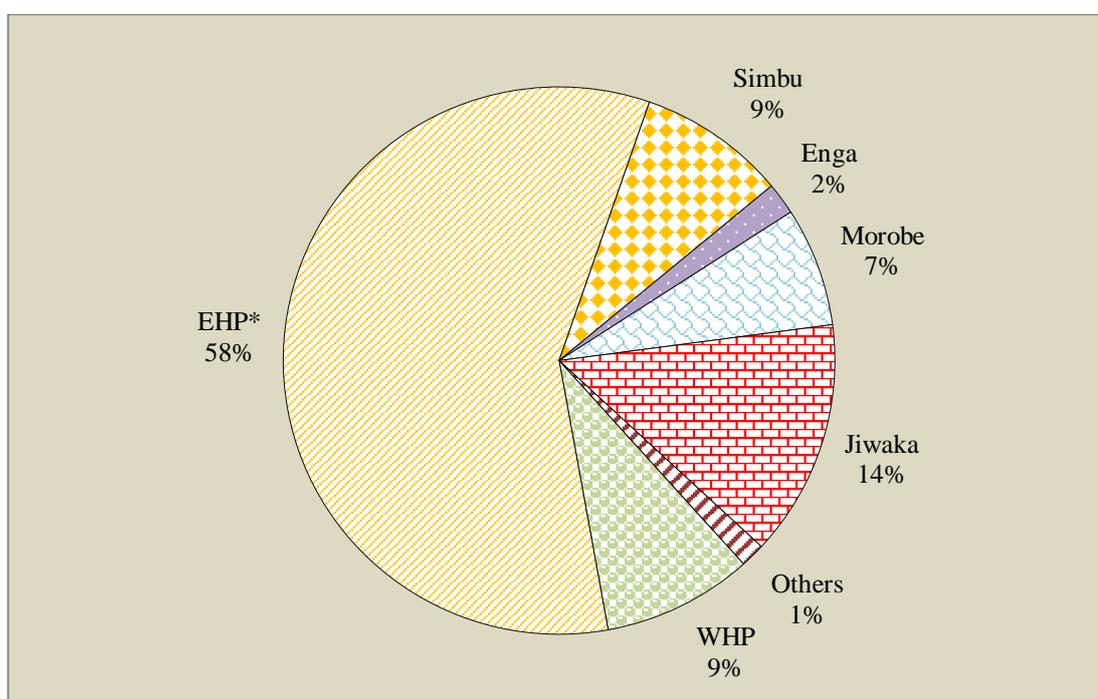


Figure 1.4: Coffee production by province in 2015 (Source: CIC data). *Some production recorded for EHP is coffee produced from other provinces.

According to 2011 National Census, the PNG coffee industry directly engages 524,400 households equating to almost 2.5 million people. Coffee earnings are spread among a substantial proportion of the rural population, especially in the PNG Highlands. With declining basic government services for the vast majority of rural farmers, coffee income ensures basic livelihood needs are met. From 2008 to 2015, the average annual foreign exchange earnings from coffee were K511 million (Bank of PNG, 2016). PNG coffee farmers attain 70% on FOB prices while other value chain actors account for the balance (CIC, 2008a; Batt *et al.* 2009). In market accessible areas, farmers have many sources of income that supplement coffee

income. However, for farmers in remote areas of PNG, coffee is their principal source of income.

Coffee income has a tremendous influence on the socio-economic and political activities of farmers. It is estimated that the average net income per year from coffee for smallholders in the Central Highlands is K4,900 followed by livestock at K1,219 and sweet potato at K246 (UniQuest, 2013). Coffee is embedded in the wider socio-economic and political landscape of rural areas.

Coffee is one of six agricultural commodities that farmers in PNG produce for export. From the 1960s until mid-2000, coffee was the leader in export volume and foreign exchange earnings in the agricultural sector. Coffee was one of the key economic indicators used to support PNG's efforts to attain political independence from Australia in 1975. In 2006, oil palm surpassed coffee to become PNG's top agricultural export crop (Figure 1.5). However, many more smallholders are involved in coffee production than in oil palm production. Smallholders account for approximately 85% of total coffee production (CIC, 2008a) while only 33% of oil palm production is produced by smallholders (Koczberski *et al.* 2001).

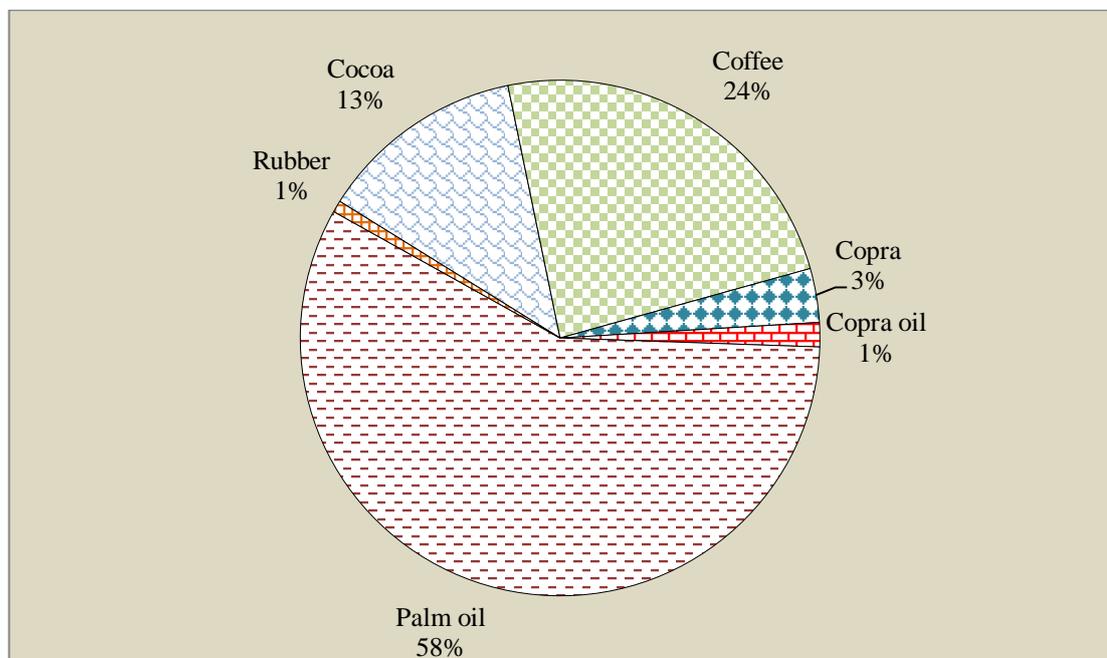


Figure 1.5: Composition of foreign exchange earnings in 2014 for key agricultural commodities (Source: Bank of PNG, 2016).

Farmers in PNG cultivate two commercial varieties of coffee: Arabica (*Coffea arabica*) and Robusta (*C. canephora*). Arabica is grown at higher altitudes at 1,200-1,800 m asl. This variety has a mild taste and aroma and can fetch higher prices. Robusta is grown at lower altitudes at 200-800 m asl and fetches lower prices than Arabica coffee. Robusta coffee is used as a mix in blends to develop soluble coffee (Wrigley, 1988). In world trade, Arabica coffee accounts for 70% of coffee exports and Robusta coffee makes up the balance. In PNG, 99% of coffee exports are Arabica (CIC, 2009).

Key Industry Stakeholders

The CIC regulates the coffee industry with powers vested by the national government through the CIC Act (1991). The CIC regulates and provides extension services to the coffee industry. Furthermore, it provides research into various aspects of coffee production, processing and marketing. The CIC has a board made up of stakeholders from the industry and relevant national government departments. The smallholders have six representatives on the CIC board while the blocks³ and plantations/processors have one each. Three smallholder representatives come from the main coffee-growing provinces (EHP, Simbu, and WHP) and one representing each of the other three regions: Momase (Morobe, Madang, East Sepik), New Guinea Islands (East New Britain, New Ireland and Enga) and Southern (Central, Oro, Milne Bay, Southern Highlands (SHP) and Hela). The exporters, the departments of Agriculture and Livestock (DAL), Trade, Industry and Commerce (DTCI), and Treasury have one board member each. However, with the creation of new provinces especially Jiwaka and the recent increase in coffee production from provinces like Morobe Province few changes at the board level may be necessary. The present DAL Minister is proposing changes to governance systems concerning the board of commodity organisations, and these may also influence the composition of boards.

The stakeholders in the PNG coffee industry comprise of key value chain actors, and they include growers, processors, and exporters. Other industry players include coffee buyers, transport companies, and the banking sector. The key stakeholders are outlined below.

Coffee growers

Currently, coffee production systems in PNG can be categorised into two broad systems: high input-high output and low input-low output production systems (Thompson, 1987). The former consists of the managed subsector and they are engaged in a capitalist mode of coffee production, which comprises the plantations and blocks. The low input-low output system involves smallholders who in addition to subsistence farming, also engage in simple commodity production by producing coffee (Thompson, 1987; Collett, 1992). The evolution of coffee production systems in PNG is associated with the changing socio-economic context of the society. Several authors have endeavoured to define coffee production systems in PNG (Goldthorpe, 1985; Irog, 1992; CIC, 2008a). In this study, I use three main production systems: smallholdings, blocks and plantations. The features of each of the systems are described in Table 1.1.

Table 1.1: Classification of the PNG coffee production systems.

Category of farmers	Production system	Total area (ha)	Definition and characteristics
Smallholder farmers	Smallholdings	0-<5	<ul style="list-style-type: none"> • Practise mixed cropping in coffee gardens • Rely mainly on family labour (little use of hired labour) • Apply low input-low output production • Little or no use of chemical inputs • One to four coffee gardens
Managed subsector	Blocks (mini plantation)	5-29	<ul style="list-style-type: none"> • Developed under the government sponsored Twenty Hectare Development Scheme (THDS) or through bank loans • Individually or group owned • Use of hired labour is common • Agrochemicals are used both inorganic fertiliser and herbicides • Some have wet processing mills
	Plantations	>30	<ul style="list-style-type: none"> • Majority were planted by European planters between 1948 and 1960s • Either have wet or dry coffee mills • Heavy reliance on wage labour • Farm machinery and agrochemicals are used • Inorganic fertilisers and herbicides are used

Smallholder farmers

Smallholder farmers dominate coffee production, and they typically plant coffee on customary land. Also, smallholders pursue a range of livelihoods in addition to coffee farming. This variety of livelihood strategies especially food production for household consumption and sale to local markets compete for their labour. Smallholders typically practice low input-low output production system, so their coffee productivity is very low. There is, therefore, considerable potential to improve total coffee production by raising smallholder productivity.

Blocks

Coffee blocks or ‘mini-plantations’ are high input-high output system of production. The blocks were developed as part of a government initiative to expand coffee plantation development in the early 1980s. The THDS was to enable families and clansmen who did not benefit from the Plantation Redistribution Scheme (PRS) to participate in the market economy by developing medium sized coffee plantations (Chapters 4 and 7). However, the unequal distribution of dividends often results in internal conflicts among block shareholders, which have led to a decline in their productivity. The majority of these blocks have wet coffee mills⁴, and a small number possess dry mills⁵.

Plantations

Plantations are also a high input-high output system of production. European planters initially developed the majority of the plantations and were sold to landowner business groups and nationally-owned corporations through the PRS in the 1970s. Some citizens also developed several coffee plantations through the THDS or by obtaining loans from commercial banks in the early 1980s. Previously, most plantations had an onsite management team and coffee mills. Sometimes permanent labourers and their family members were accommodated on plantation land. Most plantations were established on state agricultural leasehold land, with 99-year leases. After independence in 1975, many of the plantations failed and were abandoned or are currently struggling.

Coffee buyers

Coffee buyers with large sums of cash used to travel into rural villages to buy coffee for coffee processors. This service has ceased largely because of armed holdups. Coffee farmers must now transport their coffee into urban centres to sell to coffee buyers. The coffee buyers provide a vital link between growers and the processors and the exporters. However, this group of ‘stakeholders’ are unregulated. Sometimes, coffee buyers purchase stolen coffee to meet contractual requirements, and this encourages coffee theft in rural communities. Coffee buyers also often fail to comply with coffee quality standards when making payments to farmers and are careless in handling purchased coffee (Mitio, 2014). These unacceptable practices of coffee buyers undermine PNG’s reputation for quality coffee.

Processors

In 2016, there were 61 registered coffee processing factories, more than 65% process smallholder coffee while the remaining mills were plantation-based (Table 1.2). These factories purchase cherry or parchment from coffee growers which they process to exportable green bean. Some processors, especially those with wet coffee mills, sell their coffee to dry mill owners, or the dry mill owners hull the parchment at a cost. Some processors have both wet and dry coffee mills. A typical coffee processing mill can process 25,000 to 100,000 bags of green bean annually. Most coffee factories are operating below full capacity.

Table 1.2: Total number of coffee processors, exporters and manufacturers from 2011 to 2016.

Year	Processor		Exporter	Manufacturer
	Wet	Dry		
2011	38	56	17	8
2012	39	56	16	6
2013	30	44	17	6
2014	27	49	19	7
2015	29	55	22	10
2016	38	61	23	11

(Source: CIC data)

Exporters

Twenty-three exporters were exporting coffee in 2016. The number of exporters since 2013 has risen. Among this group, there are four categories of exporters: specialist exporters; partly-integrated exporters; plantation-based exporters; and, roast and ground exporters (CIC, 2008a). The bulk of exports are in green bean, but a small proportion comprises of roast and ground coffee.

- Specialist exporters engage as ‘middlemen’ by purchasing green bean coffee from local processors and export to overseas buyers. Many exporters are multinational companies, while several are nationally owned. They ensure that the green bean product meets PNG coffee quality standards before the consignments are exported. Importantly, specialist exporters have local processing facilities that are capable of regrading green bean so as to add value. Some exporters are agents of multinational companies, hence regrading can occur offshore.
- Partly-integrated exporters are partially involved in coffee production and marketing by producing their own coffee, processing to green bean and exporting to international markets. Moreover, these exporters also partner with surrounding smallholders, blocks and some plantations to source cherry or parchment coffee that is then processed at their mills to the green bean stage and then exported to overseas destinations.
- Plantation-based exporters have vertically integrated operations. These exporters have their own coffee plantations, processing facilities and export to international markets. However, some of them also purchase coffee from surrounding smallholders, blocks and other plantations to meet their market quota. Some of these exporters sell their coffee directly to differentiated coffee markets.
- Roast and ground exporters are primarily engaged in the exports of roast coffee. In 2011, there were eight roast and ground exporters which have increased to 11 in 2016. The roast and ground exporters form a small component of the total PNG coffee exports, and the number of manufacturers has risen over the last seven years.

Peripheral chain actors

Other peripheral value chain actors include transport companies, banks, and customs agents. Trucks cart coffee from sellers to coffee mills and after processing to green bean transported to Lae seaport for shipment to international markets. Banks provide financial services to the industry. During periods of high coffee prices, commercial banks in urban centres like Mt Hagen and Goroka sometimes run out of cash because coffee transactions are mainly cash transactions (“Coffee buyers out of cash”, 2016).

Research Objectives and Significance

The study aims to establish why some parts of the PNG coffee industry are resilient and remain successful under present conditions while the rest of the industry declines in production and importance. Thus, the main objectives of this thesis are to:

1. Assess the reasons for the decline of the coffee industry;
2. Establish why some smallholders, plantation and block owners are resilient and successful; and
3. Identify and recommend strategies to revitalise and advance the PNG coffee industry.

These objectives underpin some of the key research questions of the thesis which are discussed below:

- My main aim is to uncover what went wrong and identify pathways to revive the ailing coffee industry. Along this road of long-term decline, there are pockets of success and small islands of hope of successful farmers who are thriving under the current circumstances. What is it about this group of coffee farmers that has allowed them to be resilient? This thesis will examine why these farmers are productive and prosperous. We can learn lessons from their successes as innovative coffee farmers and identify the strategies they are using to mitigate the constraints and challenges so that they remain viable and even thrive. Also, we can learn from the experiences of those farmers who are struggling or have failed and find solutions for them. By identifying what these factors are, this thesis will develop potential strategies to revive the industry.
- A new model for the coffee industry is necessary to arrest the decline and revitalise the industry. The proposed model combines elements like the

European planter-landowner partnerships of the old industry structure from the days of thriving plantations of the 1960s and the 1970s with present successful factors such as collective action in cooperatives, to develop new strategies to avert the slump of the local coffee industry.

The thesis provides four main arguments relating to the decline of the coffee industry, and they are:

- Firstly, the decline of the plantation sector is linked directly to the current low productivity and production in the smallholder sector. In the past, the plantations provided planting materials (Sinclair, 1995), organised partnerships with customary landowners (Down, 1986; Sinclair, 1995), facilitated market access (Stewart, 1992) and assisted village ‘big men’⁶ to plant larger coffee gardens (Sinclair, 1995). The European-owned plantations operated factories as central mills and facilitated extension advice including enforcing quality standards. This assisted in maintaining good coffee quality and a consistent supply to overseas markets from the 1960s to the 1970s. As a result, there was a rapid rise in smallholder coffee production. These services collapsed with the decline of plantations and the subsequent relocation of rural coffee mills near to urban centres.
- Secondly, despite smallholders now dominating coffee production, partnerships between farmers and chain leaders remain poor. This constrains increases in smallholder coffee production. Smallholders’ productivity and production levels are low and much lower than those achieved from the 1960s to the 1970s. The chain actors include chain leaders (i.e. processors, exporters and successful plantations) (see Batt *et al.* 2009) and lead partners (i.e. state actors and CSOs) who collaborate to raise production; upgrade productivity and consistently supply coffee quality. Murray-Prior *et al.* (2008) argue that future studies should investigate factors constraining partnerships between coffee farmers and chain leaders so that the relationships can be improved and sustained for the mutual benefit of collaborators.

- Thirdly, the increasing costs of production render plantation and block operations unviable. This problem is exacerbated by lawlessness, lack of community engagement, poor knowledge of the influence of the indigenous economy upon modern market enterprises, rising costs of farm inputs, poor rural infrastructure and land disputes which have all constrained production and undermined the profitability of coffee plantations and blocks. Additionally, the limited knowledge of business managers and/or owners to prudently manage farm, finances and assets of plantations and blocks has led to abuse and misuse, further undermining their operations. Business managers or owners often lack the necessary business skills to manage plantations and blocks efficiently. In group-owned entities, internal conflicts resulted in shareholders reclaiming their land in coffee blocks while plantations have been subdivided. The National Agriculture Development Plan (NADP) proposed to conduct a national survey of plantations to establish the present status of the managed subsector and devise appropriate strategies to revive the subsector (DAL, 2007). This has not been undertaken. Although, previous research has focused on other aspects of the coffee industry such as coffee husbandry, very little is known about the problems associated with the practicalities of plantation operations and management (Orlegge, 2010).
- Fourthly, the problems faced by the industry have forced a few plantation business managers and owners to devise strategies to overcome these challenges. It is argued that these resilient plantation operators are applying innovative approaches, which has enabled them to mitigate the challenges arising from the communities surrounding their plantations and so improved their resilience to operate their businesses in rural areas.

Significance of research

This study is significant because it takes a holistic approach to investigate the PNG coffee industry including low productivity in various production systems, domestic value chains and extension services delivered by CIC and partners. The thesis contributes to the theoretical discourse on development theories by bringing to the fore the significance of social embeddedness where economic actions are socially embedded in transitional economies like PNG. However, as a result of the lack of knowledge of the effect of interactions of the indigenous and modern market systems

by the majority of smallholders, plantation and block owners, this has impeded their productivity and production. This study also provides insights into why some plantations and blocks are successful with their operations and management while others have failed or are struggling. Moreover, this study explains why some past and present partnerships among value chain actors improved productivity and coffee quality, and also highlights some of the key challenges. This research contributes to broadening our knowledge of the influences of traditional structures and practices on modern economic pursuits; such knowledge can inform policy decisions. The policy implications broadly cover institutional leadership, value chain partnerships and extension approaches in the coffee industry.

Transition of coffee industry

Coffee became an important industry when it made its journey into the hinterlands of the PNG mainland in the late 1920s. Coffee found a home in the densely settled fertile valleys that are surrounded by the majestic mountain ranges of the Highlands; a region where despotic 'big men' reigned over fragmented clans and tribes who engaged sporadically in tribal warfare (Sinclair, 1995).

The local population was initially cynical about coffee when it was first introduced. The crop was rebuffed as villagers thought it would bring bad omens to their prized pigs, gardens and their livelihoods. However, a few 'big men' like Kofikai Sabumei of Bena and Hero Paito of Goroka (EHP), convinced other villagers to plant coffee (Sinclair, 1995). As for Paito, he acquired a Land Rover from his coffee income, which illustrated that coffee had the potential to generate a new type of wealth (Finney, 1968; Donaldson and Good, 1981). Also, Bimai Noibano of Watabung in Daulo (EHP), with the experience and knowledge earned from working on a coconut plantation on Manus island and later at Aiyura experimental coffee plantation, developed an understanding of the monetary worth of coffee, and, thus cultivated coffee in his village (Finney, 1993). Later, Noibano solicited the support of his relatives and clansmen to venture into the trade store business and other enterprises.

The keen villagers observing and envying the lifestyles of European planters began to witness their kinsmen like Paito, Sabumei, and Noibano amassing wealth through coffee cultivation. The once sceptical villagers enthusiastically embraced coffee and thus the cultivation of coffee became widespread. It dawned on the villagers that coffee was valuable and not just any average crop. Villagers obtained seeds or seedlings and began planting coffee. The adoption and nurturing of this mysterious yet manageable crop was accomplished without much fuss as villagers incorporated the coffee tree into their agrarian farming practices. It is now the mainstay of the Highlands economy.

From the 1950s to the 1960s, the growth of the early stages of the coffee industry was spectacular. The major growth was concentrated in the smallholder sector. The rapid expansion of coffee growing is a testimony to the entrepreneurial attitude of the people of the Highlands region during those formative years. This dark greened-leaf shrub laid the foundations for Highlanders who practised swidden cultivation to make the switch to monoculture and incorporate a mono-crop into their agricultural system⁷. Concurrently, Arabica coffee plantations were developed in the Central Highlands region. Europeans converged to the region to participate in an industry that was flourishing. Some European planters and a few Asians who had commercial interests in the Coastal regions of PNG also made their way into the new frontier of promise. Optimistic entrepreneurs came aplenty to participate in the industry that promised so much hope for prosperity.

In the 1970s as independence approached, coffee plantations were sold to landowner business groups and local corporations through the PRS. The excitement heightened among the local population with the introduction of the THDS in the early 1980s. There was an air of exuberance as villagers began to enter the capitalist world of commercial business (Sinclair, 1995).

When locals made the entry into the modern market economy, it came with its challenges that began to subdue advances of some local entrepreneurs while resilient entrepreneurs succeeded in commercial activities. In the late 1980s, the excitement in the coffee industry from the 1960s to the early 1980s began to recede. From the 1990s to 2010s, it was evident that the once-thriving coffee industry was stagnant

and was in slow decline. However, along this slow road of long term decline, there is a small group of successful coffee farmers who are thriving in the midst of the broader decline of the industry.

Study Outline

This section provides the outline of the thesis. Chapter 2 provides the theoretical framework of the study by examining development theories that encompass Modernisation to Dependency/Neo-Marxist discourses, social embeddedness and hybridization. The literature review also investigates entrepreneurship in a transitional economy and the influence of leadership on business enterprises.

Chapter 3 outlines the various ontological and epistemological research methodological approaches relevant to the thesis. It discusses the methods and establishes the approaches that were adopted and applied during the fieldwork and in the processes of data analyses. The mixed methods approach was deemed most appropriate for this study.

The background information on the rapid expansion of the PNG coffee industry is presented in Chapter 4. The chapter outlines how the early plantation development in the Highlands paved the way for villagers to adopt coffee cultivation. It further discusses the governance systems and policies that were introduced to develop and safeguard the rapidly rising coffee industry. As the industry grew, it came with its own sets of problems, which are outlined in Chapter 5. This chapter discusses factors that have contributed to the decline of the coffee industry in PNG.

Chapter 6 outlines constraints in producing coffee among smallholders who participate in grower groups. The chapter presents in detail the constraints faced by smallholders and outline some of the strategies farmers deploy such as labour exchanges to counter labour shortages. Chapter 7 presents detailed case studies of selected plantations. The case studies reveal the obstacles, successes and opportunities that prevail in the managed subsector. The case studies are supported with information derived from interviews with coffee industry experts (CIEs).

Chapter 8 presents the opportunities and challenges in collective action of smallholders and value chain partnerships. The chapter discusses opportunities in group work to improve productivity and coffee quality. Similarly, it further outlines benefits of past and present partnerships which have raised productivity and improved the consistency of the supply of quality coffee. It also discusses some of the challenges of partnerships and collective action in coffee cooperatives.

Chapters 9 and 10 synthesises the constraints, challenges, and opportunities that have been discussed in Chapters 5 to 8. From the synthesis, Chapter 9 outlines the challenges that were undermining coffee production in PNG. Chapter 10 outlines the strategies to revive the PNG coffee industry. The final chapter provides the conclusions, recommendations and proposes areas for future research.

The next chapter provides the theoretical framework for the thesis. It discusses relevant development theories and the socially embedded economic actions in developing countries like PNG and their impact on entrepreneurial activities.

Notes

1. The overlapping years (e.g. 1972/73) indicates a coffee calendar year. In PNG, the coffee year begins in October and ends in September of the following year. This follows the flowering and harvesting cycle of coffee.
2. Differentiated markets provide alternatives to marketing based on the differentiation of coffee, and it is usually by quality or the method of coffee cultivation (Lewin *et al.* 2004).
3. Blocks are 'mini plantations' and they were mostly established in the early 1980s on customary land.
4. In the wet coffee mills, wet processing is carried out where harvested ripe cherries are pulped, beans are fermented and after 48 hours of fermentation, beans are washed to remove the mucilage.
5. In the dry coffee mills, washed fermented beans are dried. After drying to a standard of 10-11% moisture content, the dried parchment beans are hulled by removing the parchment and silver skin to obtain the green bean for exports.
6. 'Big men' refers to persons of high status in a community. In the past, 'big men' amassed wealth, which they redistributed through traditional exchange systems. Today's 'big men' also amass wealth but many do not redistribute their wealth. For a more detailed discussion on 'big men' in the Highlands societies, see Chapter 2.
7. Certain parts of the Central Highlands region were known for agricultural farming about 10,000 years ago when a few societies in other parts of the world were also involved in settled farming (Bourke, 2009).

Chapter 2

Theoretical Framework: Social Embeddedness and Entrepreneurship

Introduction

This chapter provides the theoretical framework for the thesis. It begins by outlining the key ideas on development from early modernisation to post-development approaches through to recent ideas on the social embeddedness of economies. The chapter also discusses the positive and negative attributes of indigenous economies and their influences on modern market systems. It argues that recent theories covering hybridisation, and entrepreneurship, which stress the social embeddedness of economic action, offer a suitable framework to analyse the present situation of coffee growers and the PNG coffee industry. The second half of the chapter discusses the influences of social action on entrepreneurship. The hybridity arising from the merging of indigenous and modern market economies provides a melange of economic opportunities. The chapter further discusses the transition from traditional to modern leadership in PNG and leaders' roles in development and entrepreneurial activities in transitional economies like PNG.

Development Since the 1950s

The economies of many developing countries grew uninterrupted after attaining political independence between the 1950s and 1970s (Porter *et al.* 1991; Rondinelli, 1993). However, in PNG, as occurred in many developing countries, growth faulted and began to decline in the 1990s, the second decade after independence. Consequently, many developing countries needed development funds and obtained loans from international financial institutions from western countries (Rondinelli, 1993; Saul and Leys, 2006). With this monetary assistance, these financiers promoted structural adjustment programs (SAPs), which in the late 1980s and 1990s focused on reforming macroeconomics. There were many incidences of SAPs undermining policies that were relevant to local institutions in recipient countries

(Stein, 2006; Simon, 2008). With limited acknowledgement of the social, economic and political context of recipient countries, these SAPs called for the privatisation of state enterprises, land registration and titling, market liberalisation and fiscal controls (Ellis, 2006; Hare, 2006; Simon, 2008). For instance, in PNG, the World Bank in the 1990s encouraged land reform, which was widely opposed, resulting in protests in which some university students were shot and killed (Koczberski *et al.* 2012).

The international and state institutions were often inflexible in their approach to development and did not accommodate local values in planning (Porter *et al.* 1991; Rondinelli, 1993). Gardner and Lewis (1996, p. 94-95) argue projects that are implemented using “pre-existing social structures” are more likely to succeed than those imposing top-down approaches, which gives minimal consideration of local structures. Participatory research and rural appraisal planning approaches that allow beneficiaries to be involved in planning and implementation are also considered more likely to succeed (Rondinelli, 1993; Gardner and Lewis, 1996; Takahashi *et al.* 2015). This process is often referred to as ‘bottom-up’ planning, and its implementation includes the involvement of project beneficiaries.

Development Theories

A range of theories has been put forward to explain the development process or the lack of development in the developing world. Poverty, inequality and human rights have long been significant to development studies (Hettne, 2008). Discourses and theories on how to address these challenges have evolved through time (Schuurman, 2008). Development theories became prominent from the 1950s to the 1970s when colonies were attaining political independence. The term economic development became a priority as former colonies sought to emulate the development of the west. It was thought initially that this would be a simple process of replicating western industrialisation. However, the development sequels in many developing countries did not meet targets as desired.

Modernisation theory

Post-war development thinking was heavily Eurocentric with development theories and models being based on western economic history and western experiences. Modernisation theory (1950s-1960s) encompassed contestations in dual economy

concepts and a top-down approach to development (see Kiely, 2006). Modernisation, according to many, involves a social change from a less developed society to one that characterises a developed society (Thompson, 1987; Curry, 1992; Sahlins, 1992; Gardner and Lewis, 1996; McWilliam, 2013; Nhema and Zinyama, 2016). Thus, development theorists argued that many developing countries should adopt western development models while local agencies and pre-capitalist economies were deemed inappropriate, backwards and a barrier to development (Kiely, 2006; Binns, 2008). Theorists argued that the experiences of European reconstruction would also work in developing countries, but in many cases, they failed to work (Figure 2.1).

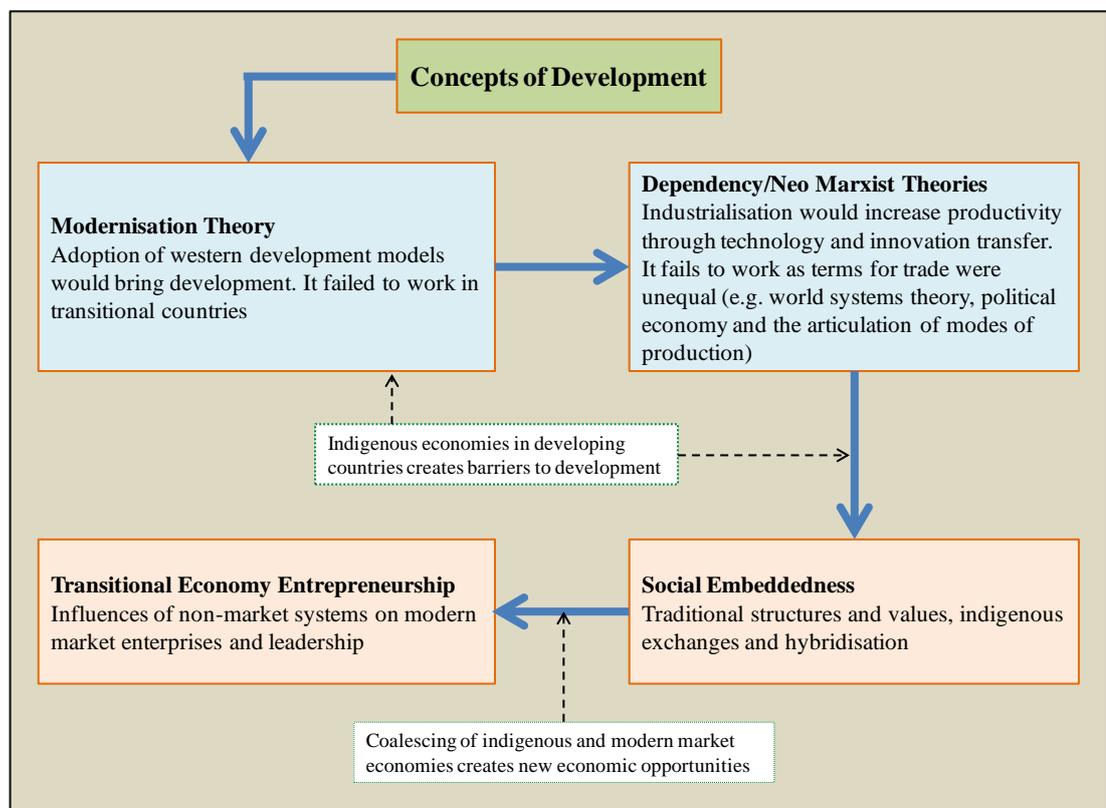


Figure 2.1: Concepts of development.

Modernisation discourses applauded the expansion of capitalism and the merits of markets, science and technological advances, and argued that these should be promoted in developing countries (see Escobar, 2006; Kiely, 2006; Saul and Leys, 2006). It was assumed that development paths in developing countries should follow closely the experiences of the western nations that have high productivity with solid industrial bases (Curry, 2003). For instance, modern entrepreneurship was promoted to facilitate economic expansion, but this was advocated with little consideration of

local agency in transitional economies. Development initiatives like large capital investments were concentrated in selected metropolises, and it was presumed that these investment benefits would eventually trickle out to rural areas. However, theorists like Gunnar Myrdal (1957) and Albert Hirschman (1958) recognised that forces were acting against the diffusion of development to the countryside. They believed that traditional structures and pre-capitalist economies were undermining the advances of western-style capitalism in developing countries (Binns, 2008; MacRae, 2016). Also, the large loans, capital and support from western countries did not translate into tangible improvements in developing countries. In many countries, this led to massive outstanding debts, inequalities, violence and failures in administration and civic life (Kiely, 2006). With the failure of modernisation, the advocates of the approach blamed development problems upon internal structures and barriers within developing countries.

Dependency/Neo-Marxist theories

Dependency theory or neo-Marxist theories (1960s-1970s) broadly cover discourses on world systems theory, political economy and the articulation of modes of production (see Saul and Leys, 2006; Conway and Heynen, 2008; Nhema and Zinyama, 2016). Like the ardent proponents of modernisation, neo-Marxist theorists also believe that the developed state would resemble western-style development (Binns, 2008). According to dependency theorists, the assumption that industrialisation would increase productivity considerably through technology and innovation transfers did not work because of structural barriers, like unequal terms of trade between developed and developing countries. Therefore, some development critics insist that the influences of western capitalists should be reduced in developing countries to allow development to occur and to assist these countries to choose their own destiny (Saul and Leys, 2006). This involves breaking economic and trading ties with the west. Furthermore, dependency theorists thought that western economic models applied in the Third World worked against development and caused underdevelopment (see Escobar, 2006; Kiely, 2006; Saul and Leys, 2006). For instance, in the early growth period of the coffee industry in PNG, the high input-high output system of production was promoted among smallholders, but it has failed to prosper. The low input-low output production system of smallholders

would be explained by Dependency/Neo-Marxists as an outcome of a lack of capital and technical skills caused by structural barriers.

In political economy arguments, two distinct world economic systems exist where the 'core' is the developed nations and the 'periphery' is developing countries (Hoogvelt, 2001). In terms of flows, capital, financial and technical assistance move from the core to the periphery. Furthermore, core countries are assumed to not only be the centre for development but are also perceived as exploiting the peripheries for resources, and thus explains the underdevelopment of the latter (Stewart, 1986). Moreover, this perspective fails to consider political instability or governance and corruption issues involving the misappropriation of public funds, which continue to hinder development in emerging economies.

Articulation theory (P P Rey, C Meillassoux and H Wolpe) argues that the pre-capitalist economy prevails in rural areas to subsidise the capitalist economy. There is interdependency between the subsistence mode of production and the capitalist mode of production (Thompson, 1987; Seok, 1998). For example, when local workers are born, they are raised by the subsistence economy and then their labour becomes available for the plantations. The plantation sector pays for their keep while they are working but does not bear the cost of raising the next generation of workers. Through this mechanism, cash crops destined for western markets are produced at a minimal cost in the peripheries. In many instances, capital from the core countries facilitated production of commodities such as coffee using available labour in the peripheries that was reproduced in the subsistence economy.

Marxists also argue that politics could determine the successes of a select group of people, while the majority are marginalised thus promoting inequality. Educated elites in developing countries accumulate wealth at the expense of the bulk of the population; their successes stem from the support that they receive from external sources, thus relegating many people to remain poor and in poverty (Gardner and Lewis, 1996; Hoogvelt, 2001). Also, local elites can promote underdevelopment when they engage in embezzlement and corruption that thwarts development initiatives in many developing countries (Saul and Leys, 2006). For instance, the PNG government allocated K528 million over a seven-year period (2007-2012) to

agriculture including coffee: unfortunately most of this money was stolen by politicians and bureaucrats (“Probe NADP scam”, 2013; “K528mil for Agro Misused”, 2013; see Chapter 5).

Post-development discourse

In the 1990s, ‘post-development’ discourse rose to prominence (see Escobar, 2006; Sidaway, 2008). Post-development theory criticises current development approaches and argues that westernisation leads to the homogenisation of economies and societies (Curry, 2003; Sidaway, 2008). It further claims that development ideas and thinking have their own approaches, and it depends on one’s perception of what development is. Moreover, post-development theory takes a broad view of development although sometimes overlooks poverty and entrepreneurship at the local level. A further failing of post-development is the limited acknowledgement of local social, economic and political systems in traditional societies and the social embeddedness of economic action in many transitional societies.

Social Embeddedness

Studies have recognised that the economic and political systems in traditional societies are strongly socially embedded. The social embeddedness of economic systems challenges some of the core assumptions of modern capitalist markets and Marxist discourses (Block and Polanyi, 2003; Curry, 2003; 2005; Peredo and McLean, 2010; Curry and Koczberski, 2012; 2013; MacRae, 2016). Orthodox economic theory cannot fully explain the intricacies of non-market economic systems that are found in transitional societies (Thompson, 1987). Thus, the influence of social embeddedness as a concept of enquiry is gaining prominence in the research field of sociology and related disciplines. Karl Polanyi (1944) pioneered the work on social embeddedness in the 1940s. However, the approach did not gain attention then. It was not until the 2000s that there was a resurgence of academic interest in Polanyi’s work, following the decline in structuralist approaches. Recently others (e.g. Block and Polanyi, 2003; Curry, 2003; Maucourant and Plociniczak, 2013) have further expounded this discourse, which is of particular relevance to transitional economies like PNG.

One of Polanyi's primary premises that deviates from pure economics is his claim that land, labour and money are 'fictitious commodities' which are always embedded in the economy, and therefore, they are not true commodities (Polanyi, 1944; Curry, 2003; Maucourant and Plociniczak, 2013). He says that real commodities are goods that are destined for markets. Polanyi further explains that fictitious commodities remain embedded in society. However, when they are subjected to the impulse of capitalist markets, they could undermine the market system and thus be detrimental to people's livelihood (Curry, 2003).

Institutional perspectives enshrined in Polanyian concepts also digress from New Institutional Economics (see Richter, 2015). Polanyi argues that state institutions regulate and redistribute fictitious commodities for economic purposes while keeping them sustainable. The embeddedness of land, labour and money in the regulatory and distributive actions of the state through law, politics and morality facilitates the functioning of the economy. In terms of land and labour, regulatory frameworks are instituted to keep people on the land, while in the case of money the state regulates the money supply and credit (Polanyi, 1944).

Within non-market societies, as is the case in PNG, local communities have their own institutionalised systems of rules enshrined in *kastom*¹ (custom), which encompass social, cultural, economic and political aspects that influence people's livelihood activities. Polanyi (1944; 1977) argues that in tribal societies, no formal institutionalised economic system exists, although production and distribution of goods indicates some form of economic system. He claims that these economic systems are embedded in socio-cultural relations: in what is now referred to as the relational economy. Polanyi (p. 55) further stresses that it is impossible to impose an economic system upon a society that is composed of many tribal groups with numerous socio-economic and political structures, of which PNG is a case in point. Polanyi's assertions have relevance in the PNG context, where the pursuit of modernity has been greatly influenced by the tenacity of indigenous socio-economic practices, values, norms and beliefs, which are forceful in rural communities (Polanyi, 1977). However, in urban centres, the influence of traditional values and practices are slowly diminishing as modern capitalist values and concepts assert their dominance.

Traditional structures, practices and values

Traditional or indigenous exchange activities can consist of acts of reciprocity where the exchange of gifts, goods and labour occur. It can also involve participation in distribution which confers prestige or status symbolism on the giver, traditional ceremonies to meet obligations, and barter exchange. These activities and their associated indigenous structures, beliefs and values can influence livelihood decisions and practices such as coffee production in rural communities. In transitional societies, people's involvement in these events is motivated by the need to maintain or construct social relationships and identities (Peredo and McLean, 2010). These traditional structures and values which are expressions of local agency sometimes override and undermine modern market values (Curry, 2003; Peredo and McLean, 2010; MacRae, 2016). By understanding the transitional socio-economic and political contexts in which commodity production is entwined, better insights can be gained into the constraints on development (Porter *et al.* 1991; Gardner and Lewis, 1996; Curry, 1999).

Many studies also argue that development policies and initiatives must be considerate of local agency (Curry, 1999; 2005; Lummani, 2006; Fukuyama, 2007; Curry and Koczberski, 2012; 2013). Sillitoe (2016) argues that grasping and appreciating indigenous values and forms of knowledge can shed light on different understandings of development and influence development outcomes at the local and national levels. For example, this is reflected in low production and productivity in commodity crops such as coffee in PNG (Allen, 2009; UniQuest, 2013) because farmers often have other priorities for labour and capital investment.

Indigenous exchange and development

The socio-cultural context influences the societal behaviour of a population. In commenting on national identity and governance problems, Fukuyama (2007) and Feeny *et al.* (2012) highlight that traditional socio-cultural practices and values impact highly on development initiatives because Papua New Guineans view ethnicity and customary obligations as critical agendas for their personhood. For example, in government machinery, politicians and senior bureaucrats practise nepotism in allocating public goods and services which can be detrimental to

national goals and aspirations and also undermine development (de Renzio, 2003; Reilly, 2008).

The march of capitalism and modern markets can encroach on fundamental traditional socio-cultural values. Often people in transitional societies negotiate these influences to suit their needs and aspirations. Thompson (1991) argues that the arrival of capitalism led to changing socio-cultural values and norms. Martin (2006) illustrates an excellent example of non-capitalist values conflicting with modernity in his study on the *Tolais*² of Gazelle Peninsula in East New Britain Province (ENBP), PNG. He describes the transformations in the lives of the *Tolais* where they attempt to manage the advances of capitalism and Christianity which are colliding with their long-held traditional *kastoms* and belief systems. Martin shows how through the process of modernisation, some members of the community thought that the ‘big men’ were using customary practices and ceremonies to gain more personal wealth and influence than ordinary villagers, thus marginalising the latter. As a result, some young men refused to contribute money to host traditional ceremonies because they believed that ‘big men’ receive more accolades than them for staging the event. Also, some of the young men believed that some forms of customary activities are a waste of money and resources, and thus, they refrained from participating in them (Martin, 2006). These findings explain the growing complexity of how people value and perceive traditional socio-cultural activities in contemporary PNG.

Several writers have shown how the socio-cultural embeddedness of economic actions influence the transition from subsistence to capitalist production (Polanyi, 1977; Curry, 2005; Rigg, 2007). Porter *et al.* (1991) and Sahlins (1992) caution that western economic concepts including capitalism are initially often eagerly embraced but over time, interest diminishes as people find that capitalism and market-based production often conflicts with indigenous socio-economic practices and values. This can be seen in the coffee industry in PNG. For example, the PNG coffee industry grew rapidly in the 1960s and 1970s as villagers enthusiastically embraced capitalism and coffee production. However, coffee production began to stagnate in the late 1980s and has been on a decline since the late 1990s. This I argue is partly attributable to the conflict between indigenous economic values and modern market practices and values (see Chapter 5).

Positive aspects of indigenous exchanges

Traditional socio-economic and political structures possess some useful values and virtues which can be utilised in the modern context of the market. Studies in PNG have shown that certain traditional forms of status symbolism and labour exchange have merits, which can be adopted in the cash economy (e.g. Finney, 1973; Lummani, 2006). In particular, Finney (1968; 1973; 1987 and 1993) in his studies on entrepreneurship in PNG argues that Gorokan's applied pre-capitalist structures and values, which enabled them to engage successfully in capitalist enterprises. Thus, traditional practices and values that are beneficial for modern economic development can be harnessed and applied in development policies and strategies.

Also, indigenous exchange has broadened to include cash as an exchange valuable, and this has driven people's engagement in the modern market economy (Lederman 2015). Polanyi (1977) confirms that social relationships in non-economic systems can bring forth economic activities. For instance, Sharp (2013) argues that the eagerness of Mt Hagen people to venture into betel nut (*Areca catechu*) trading is due to the wealth and prestige it brings to those who participated, which is an important facet of the indigenous economy.

People's obligation to meet traditional socio-cultural and economic undertakings in their communities can directly influence resource allocation. Studies in PNG have shown that income from commodity production can be invested in reciprocal and gift exchange systems, which can facilitate the sourcing of labour for commodity production (Strathern, 1982a; Grossman, 1984; Thompson, 1987; Curry *et al.* 2007a). However, the advent of modernity is modifying socio-economic and political structures and values in transitional societies. Consequently, social differentiation at the micro-level and new forms of economic development at the macro-level have flourished. In many emerging economies, there is a tension between market incentives and practices on the one hand and indigenous economic values and practices on the other (Martin, 2006). However, when these market and non-market economies fuse, they generate new forms of identities and economic logics (Curry, 2003; Pieterse, 2004; 2013), which brings me to the concept of hybridisation.

Hybridisation

In globalisation discourse, proponents argue that capitalism will subsume indigenous economies, politics and cultures in transitional societies, which will lead to the homogeneity of cultures and economies. This Eurocentric view originates from modernisation's concepts of the hegemonic influences of capitalism and westernisation (see above), which acts to undermine and even obliterate other cultures and forms of economies. It is argued that globalisation, modernisation or westernisation processes would integrate all cultures and economies into a single global system: capitalism, polity, and culture (Pieterse, 1994; Curry, 2003; Sklair, 2006; Potter, 2008). Rowe and Schilling see globalisation differently, they define it as "the ways in which forms become separated from existing practices and recombined with new forms in new practices" (1991, p. 231 in Pieterse, 1994). In their view, rather than globalisation homogenising economies and cultures, local institutions seem to have mechanisms and structures that integrate influences of globalisation to manifest a melange of new forms of hybrid economies, new economic logics, diverse political networks and multiple identities (Curry, 2003; van der Grijp, 2004; Pieterse, 2004; 2013). Hybridisation is a global phenomenon and its manifestations are expressed at the local level, regionally, and internationally (Brown, 1972; Sahlins, 1992; 1993; Stewart and Strathern, 1998; Curry, 2003; van der Grijp, 2004; Pieterse, 2013; Sharp, 2013). Thus, globalisation encompasses multi-faceted hybridisation and dimensions.

While 'globalisation-from-above' is associated with homogeneity and oneness, 'globalisation-from-below' tends to be associated with plurality and heterogeneity (Falk, 1997). The most common form of globalisation taking effect in developing countries is 'globalisation-from-below' (van der Grijp, 2004). This approach empowers local people to find satisfying spaces in their own communities and sometimes resistance arises to counter the advance of globalisation. During the colonial period, national movement efforts were directed at colonisers. However, in the postcolonial era, people within the nation states are trying to establish their unique identities by blending pre-capitalist values with modernity.

The hybridisation process is not new. The resiliency of humans to the vagaries of their changing cultural, socio-economic and environment contexts during the pre-capitalist period has enabled them to survive for thousands of years (Pieterse, 2013). Thus, an historical view of globalisation offers insights by distinguishing various stages in which the globalisation process unfolds. Pieterse (p. 51) elaborates further that history provides insights into “how certain junctures witness downturn, upswings of hybridization, slowdowns or speedups.” Before contact with capitalism in PNG, the structures in traditional societies had also evolved through the processes of migration, tribal alliances, exchanges and redistributions. This gave rise to new relationships in exchange and redistribution, and the forming of alliances for political purposes like tribal conflicts and in more recent times, political elections.

Hybridisation in PNG context

PNG’s encounter with globalisation arose through colonisation, and in particular with capitalism and Christianity, which gave rise to new identities, interconnections, and networks. The intrusion of capitalism into PNG’s indigenous economies has led to a process of assimilation and efflorescence of hybrid forms of economies (Curry 2003; Pieterse, 2004). Thus, there is a continuous process of interaction between pre-capitalistic and modern economies (Curry, 1992). Thompson (1987) and Seok (1998) argue that both capitalist and indigenous economies rely on each other and, therefore, are interdependent. In a study on the socio-economic transformation of local agencies in the PNG Highlands, Stewart and Strathern (1998) argue that people are conscious of modernity affecting their cultural domains and that it also impacts on their relationships with other people where they have very little control over these influences. This explains the theoretical constructs in globalisation about capitalism being powerful as it influences local practices and values including the identities of people in transitional societies (Gardner and Lewis, 1996; Thompson, 1991).

Hybridisation or a range of organisational options are also signs of boundary crossing in which state’s roles are reduced thereby creating opportunities for new players. Although the state has a strategic role to play in development, hybridity opens up diverse opportunities for public and private sector participation in the economy (Chapter 8). Pieterse (1994) argues that hybridisation leads to collaboration between the state, international agencies and civil society organisations (CSOs) to

provide a much wider impact globally. For example, in the PNG coffee industry, institutional arrangements such as value chain partnerships among private and public sector actors and CSOs have been renegotiated, and the blurring of functions appear in their operations thus creating new forms of hybridity. Some of the outcomes have led to innovative forms of cooperation such as the public-private partnerships (PPP). The PPP concept is the latest 'catchcry' that the state and international institutions, like the World Bank, have been promulgating with the involvement of CSOs (Loftus, 2008). In PPP arrangements, the state dispenses its regulatory role while the private sector entity does most of the implementation (Chapter 8). Although PPP has its faults, it has the potential to open up communal resource ownership for development such as collective action in coffee cooperatives, which would have wider implications for sustainable community development (Loftus, 2008).

In the above section, the broader theories on development such as modernisation, dependency and post-development were discussed. Many of the development initiatives based on western development models when they are implemented in developing countries have either failed or achieved little. The social and economic actions are inseparable in transitional economies like PNG. These non-market systems seem to stifle pursuits in modern market systems. However, within the indigenous economies, there are also positive attributes, which can be adopted when pursuing modern market enterprises. The themes and concepts discussed in this chapter will assist in contextualising discussions in subsequent chapters.

Transitional Economy Entrepreneurship

The coalescing of the indigenous economy and modern market economy can generate a diverse range of hybrid economies and create opportunities for economic action and entrepreneurial activities. This section outlines the challenges for smallholder coffee farmers, plantation and block owners as they manoeuvre between non-market and modern market systems to engage in business activities. The section then discusses the categories of leadership and deliberates on each class of leader's involvement in commerce and polity.

Entrepreneurship is a modern market concept where innovative ideas are developed and organised to create a business in a marketplace (Peredo and McLean, 2010). The intensification of globalisation with expanded market opportunities is creating more spaces for business activities (Tanas and Audretsch, 2011; Pieterse, 2004; 2013). In transitional economies, entrepreneurial progress has not been as successful as in modern market societies. Modern forms of economics and business imperatives are sometimes not well understood or considered too challenging and unfamiliar for many indigenous business managers and entrepreneurs.

As illustrated above, in many transitional economy countries, social and economic relations are conditioned by customs and traditional activities. Often economic actions are for the communal good and not based purely on individualistic motives (Polanyi, 1977). Hoogvelt (2001) concurs that in tribal societies, the economy is not formally regulated and households sustain their livelihoods through communal sharing of resources like capital, labour and land. However, modern market systems promote self-interest so that individuals accumulate wealth, which at times undermines local customary obligations (Hoogvelt, 2001; Cahn, 2008; Purcell, 2013).

The standard notion of entrepreneurship in transitional economies like PNG needs to be modified to accommodate communitarian enterprises that involves relatives and community members (Peredo and McLean, 2010). Similarly, Sautet (2013, p. 399) affirms that enterprises in transitional economies benefit more from “local productive entrepreneurship” than from “systematic entrepreneurship.” Sautet defines local productive entrepreneurship as businesses that exploit local opportunities and have simple operating structures with local orientation, while systematic entrepreneurship has wider networks and more complex structures with an outward orientation. Enterprises with a simple structure and with a local orientation are suitable for emerging economies as their structures often accommodates indigenous practices and values, thus ensuring sustainable enterprises. In this section, I outline constraining or positively influencing factors on entrepreneurship in PNG.

Challenges of entrepreneurship

In transitional economies like PNG, where traditional forms of social relations, status symbolism and gift exchange are still strong, their influences can sometimes erode entrepreneurial activities, which are based largely on modern market concepts. Non-market forms of values and structures remain an enduring influence, and, as stated above, they can permeate modern business activities (Banks, 1999; Cahn, 2008; Gray *et al.* 2014; MacRae, 2016). Entrepreneurs must therefore be aware of this when they manage modern enterprises in rural PNG. Curry (2005) argues that a capitalist view of business success in a transitional economy omits indigenous socio-economic values which are embedded in everyday practice. When non-market systems like social obligations are not managed effectively, businesses are likely to be undermined and even collapse. For instance, Curry (1999) gives examples of trade stores in the Sepik region, PNG, being closed because stock and recurrent income from the enterprise was diverted to the traditional socio-economy affecting restocking. Similar poor business practices have been observed in other parts of the Pacific and elsewhere (e.g. van der Grijp, 2004; Peredo and McLean, 2010; Purcell, 2013).

Moreover, the success of an entrepreneur in a community in PNG can lead to reprisals because of jealousies from rivals (Sillitoe, 2000). In PNG, skirmishes in rural communities sometimes stem from the success of their tribal enemies and, thus, resemble conflicts of the pre-capitalist era (Strathern, 1982a). For instance, before colonisation, tribes had long-term enemies often spanning multiple generations especially in the Highlands. At the onset of colonisation, the rule of law came into effect but various tribal groups' animosities lingered. Thus, when a minor scuffle among members of rival tribal groups now occurs, it can lead to full-scale tribal warfare. Strathern (1993) argues that in the competitive modern market economy where people are competing to accumulate wealth, envy and subsequent reprisal from rivals can occur. Donaldson and Good (1988) reveals that in Simbu, 'big men' deployed youths to destroy the property and business assets of enemy tribesmen through warfare. Sometimes, pure resentment of another's business success can trigger tribal wars, with the intention merely to destroy the assets of a successful entrepreneur so everyone can remain equal (Strathern, 1982a).

Wealth accumulation and distribution has long been part of PNG culture. Traditional leaders in the pre-capitalist era amassed wealth and redistributed the wealth through kin and social networks to maintain social and kinship relationships and to reinforce their status. Traditional leaders shared the wealth through gift exchange and assisted kin when they had traditional social obligations to meet or ceremonies to host. In this way, traditional leaders earned the respect of villagers who honoured their traditional leaders. In contrast, western capitalism promotes individualism where an entrepreneur can amass wealth for their own personal benefit and use. Wealthy villagers who choose not to be involved in traditional exchange systems may encounter reprisals or resistance from sections of their own community (Strathern, 1993). There is an expectation from relatives and villagers that wealthy villagers should invest some of their wealth in indigenous exchange. For example, villagers acquiring wealth through coffee production and other business activities who do not act appropriately may sometimes be targeted by poorer members of the communities through cherry theft or the uprooting of newly planted coffee seedlings (Donaldson and Good, 1988; Chapter 7). Sometimes disgruntled kin and other villagers may initiate moves to reclaim clan land on which the entrepreneur has coffee gardens, blocks or plantations. This lack of community engagement through participation in community socio-cultural activities and obligations can undermine business success.

Positive influences on entrepreneurship

On the other hand, certain forms of non-market values and practices have the potential to facilitate modern entrepreneurship in rural areas. For instance, the demand for cash for use in indigenous exchange stimulated villagers to earn cash from coffee (Sexton, 1988), thereby increasing coffee production. Moreover, some coffee farmers mobilise reciprocal labour exchange to recruit labour for developing new coffee gardens, harvesting cherry and weeding (Collett, 1992; Stewart, 1992). Sourcing of labour through indigenous exchange to address household labour shortages has also been reported in the cocoa and oil palm industries (e.g. Koczberski, 2007; Curry and Koczberski, 2012). Thus, non-market systems can positively influence market-based activities such as cash crop production in PNG.

Rural socio-cultural structures and values have also facilitated local people's engagement as entrepreneurs in commodity production. The socio-cultural behaviour of locals played a major role in influencing the early adoption of coffee in PNG. For example, Finney (1973; 1987) observes that traditional concepts of status and prestige made villagers enthusiastic to plant coffee and prompted others to venture into businesses. The colonial administrators noted that when neighbouring clansmen started planting coffee, rival clansmen from nearby villages also wanted to cultivate coffee so they could be seen to be of equal status (Finney, 1968; 1973). The colonial administration in recognising this phenomenon established more nurseries and distributed seedlings to villagers to plant. Thus, locally defined concepts of prestige have influenced entrepreneurial activities like coffee farming, raising poultry, managing trade stores, citrus farming, and running transport businesses (Grossman, 1984; Finney, 1973; 1987).

Entrepreneurs in rural areas who maintain good relationships with villagers in socio-economic and political undertakings can facilitate the sustainability of their enterprises. In PNG, some European planters and local entrepreneurs are successful because they are able to mix indigenous and capitalist values of managing their businesses by pursuing a balanced approach that maintained both traditional and modern market systems (Finney, 1973; Donaldson and Good, 1988). Early European planters who had better relationships with villagers by fostering effective community engagement found that it facilitated the smooth running of their coffee plantations: often the plantation would have fewer disputes, minimal coffee theft and farm labourers were not harassed. In another example, Zimmer-Tamakoshi (1997) argues that a female entrepreneur from Bundi in Madang Province, PNG, had a successful business because of her generous relationship to her kinsfolk. By gaining the support of her clan, it means that she could operate her business without fear of becoming a target for robbery. Cahn (2008) in a study of Samoan entrepreneurs shows how their participation in local socio-cultural practices raised the number of regular business clients, and also assisted them in maintaining their motivation. Thus, successful entrepreneurs often know how to manage their operations profitably and to participate in the relational economy to strengthen kinship relationships.

In another study in Samoa, Purcell (2013) affirms that when the external mentor's advice to the entrepreneur conflicts with local cultural values, the entrepreneur would either disregard or alter the advice to meet his or her own requirements. For instance, Samoan entrepreneurs go to great lengths to fund social obligations such as weddings and mortuary ceremonies. They can even close their businesses to attend the event or allow their employees to attend which may take several days. Purcell notes that while some local cultural practices are harmful and could undermine the efficient management of businesses, other aspects relating to traditional social relations facilitates the resiliency of the enterprise by way of social function.

The opportunities originating from socio-economic and political dimensions necessitate entrepreneurs to adapt and to take advantage of opportunities to advance their businesses (van der Grijp, 2003; Gray *et al.* 2014). According to van der Grijp (2003), Penisio Tialetagi, a successful entrepreneur from Wallis Futuna gained access to land through traditional kin networks to expand his business interest. Penisio was allowed to build his stores on his extended family's land and in return, the children of his kin after completing their education would work in his businesses. Penisio was fulfilling family obligations, which in turn facilitated his access to land to grow his business. These examples provide insights into how engaging in non-market activities can positively influence modern businesses to be successful.

Business success depends on suitable managerial skills of business leaders. Business leaders make pertinent decisions and possess knowledge and expertise to mobilise and deploy personnel, social networks, and capital resources (Poon *et al.* 2009; Thorpe *et al.* 2009). Business leaders must also have the ability to inspire and connect with others to enhance social capital and group cohesion within a business group (Thorpe *et al.* 2009). Gray *et al.* (2014) argue that leadership is especially critical in community businesses in which the enterprise caters for the collective interests of the wider community. Community-based enterprises embody a cooperative approach that encapsulates the social, political, economic and cultural dynamics of a community (Peredo and Chrisman, 2006). Thus, either in community or individual-owned business pursuits, success hinges on the savvy of business leaders to harness both non-market and modern market economies. In sum, successful entrepreneurs' have blended market ideals with non-market values to

forge hybrid forms of enterprises (Curry, 1999; 2005; Schaper, 2002; Morrison, 2008). The next section discusses the evolving leadership in PNG.

Leadership in development

Leaders perform important roles in non-market and modern market systems in PNG. The types of leadership in PNG that are evolving with the shift from non-market to market societies can be placed into three categories. Leaders or ‘big men’ are, in essence, ‘traditional’, ‘transitional’ and ‘modern’ leaders (Figure 2.2). The onset of capitalism in PNG brought major changes in socio-cultural identities and leadership (Thompson, 1987; Gardner and Lewis, 1996); leaders’ successes depend on how effective they are able to manage socio-economic and political relationships to their advantage and that of their communities. As discussed below, certain traditional forms of prestige, social relationships and indigenous exchange have been adapted to modern capitalist activities (Finney, 1973; 1987; Zimmer-Tamakoshi, 1997; Sillitoe, 2000; Joseph, 2015; Lederman, 2015).

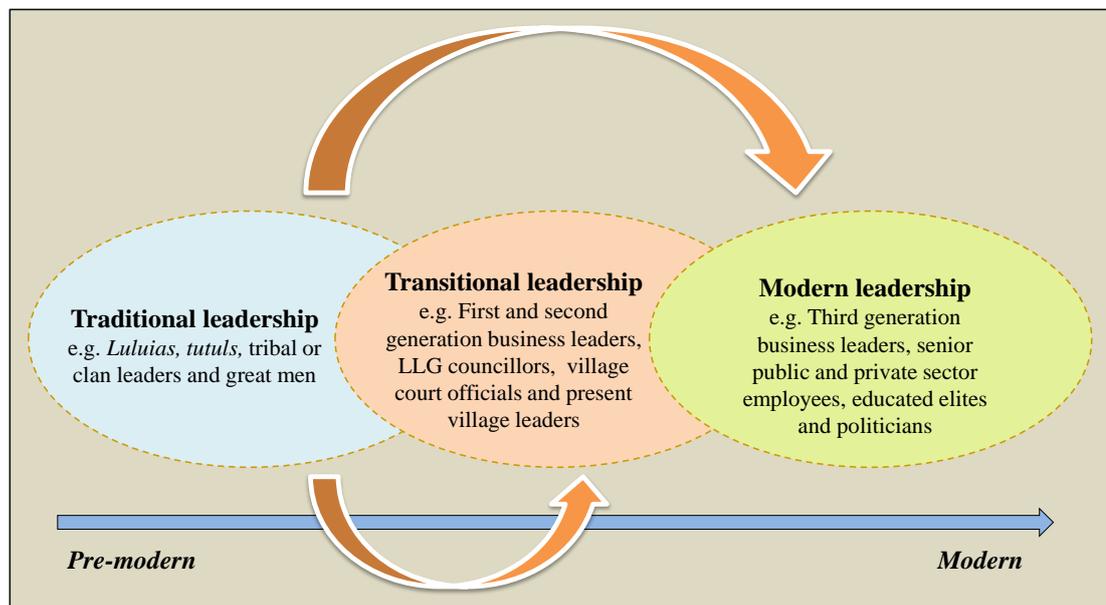


Figure 2.2: Transition of leadership in politics and business activities.

Traditional leader

Prior to European contact, pre-capitalist traditional ‘big men’, sometimes referred to as ‘great men’, were traditional leaders of their clans or tribes (Table 2.1). In Melanesian society, leadership is achieved, unlike most other places where it is inherited (Sillitoe, 2000). The traditional leaders were at the forefront of the

transition to the modern market economy in their areas (Lindstrom and White, 1997; Lederman, 2015). Typically, they had superb oratory skills, were reputable fighters, forceful, and wealthy with several wives to manage their pig herds and had many food gardens (see Sahlins, 1963; Brown, 1995; Finney, 1993; Lederman, 2015). Today's traditional leaders are village court officials and village chiefs in rural areas. Traditional leaders make speeches at rituals and lead in intertribal relations and ceremonial distributions and exchanges.

Table 2.1: Types of leadership and their characteristics.

Types of leaders	Leadership period	Characteristics of leaders
Traditional	Pre-1930s to the late 1950s	<ul style="list-style-type: none"> • Renowned warriors and splendid orators • Wealthy with several wives • Illiterate
Transitional	From the late 1950s to the mid-1970s	<ul style="list-style-type: none"> • Limited education • Have engaged in modern cash economy as farm workers, proletarians or entrepreneurs • Some were either first or second generation business leaders
Modern	From the 1980s to present	<ul style="list-style-type: none"> • Possess basic to higher level of education • Have extensive social networks and contacts • Some are third generation business leaders

(Sources: Finney, 1968; 1973; 1987; 1993; Martin, 2006)

In the colonial era, traditional 'big men' became intermediaries between the colonial administration and their people (Brown, 1972; 1995; Howard and Rensel, 1997). Their engagement was critical in the newly colonised territories when colonial administrators sought to apply the rule of law. Traditional leaders were respected and had control over their people so they became the obvious choice for official government duties as *'luluais* and *tutuls*³ to represent their people in the 1940s and 1950s. They assisted in administering their own people (Brown, 1972; 1995).

When innovations like coffee were introduced, traditional leaders became the mediums for technology transfer, and were also the early adopters. Traditional leaders have sometimes been alluded to in the literature as 'big men' farmers (Finney, 1968; Donaldson and Good, 1981; Thompson, 1991), business leaders (Finney, 1968), large holders (Finch, 1991), big peasants (Collett, 1992) or *petit bourgeoisie* (Stewart, 1992). Thompson (1991) characterises the multiple identities of the 'big men' as entrepreneurs, accumulators, appropriators of surpluses and power

brokers. European planters and colonial administration officers supported traditional leaders to engage in commercial activities such as coffee cultivation (Finney, 1970; 1993; Finch, 1991; Brown, 1995; Chapter 8). Therefore, traditional leaders were instrumental in the early growth and expansion of the coffee industry.

A few traditional leaders later used their socio-cultural networks for their own political and economic gain. Some traditional leaders in PNG and Oceania used their authority as leaders to embezzle public funds, request gifts or services from the people for whom they were responsible (Sahlins, 1963; Finney, 1968; Brown, 1995; Howard and Rensel, 1997; Adams, 1997). For example, these traditional leaders were appointed to oversee some of the first central coffee nurseries, where most of the coffee seedlings intended for distribution were planted in their own gardens (Donaldson and Good, 1981).

Transitional leader

The second group of leaders can be categorised as ‘transitional’ leaders: they are either political or business leaders, who originate from pre-capitalist settings. Some have been exposed to modern market systems, and thus have their sights on entrepreneurial activities. Transitional leaders are ‘hybrid’ leaders that possess leadership values that personify indigenous and modern market values. In the past, some transitional leaders pursued political aspirations and eventually replaced the pioneer *luluais* and *tutuls*. According to Brown (1995), the traditional leaders were ageing so the colonial administration sought to replace them with younger leaders who had been former village police or court officials. They were fluent in Melanesian Pidgin (*lingua franca*) and had attended formal schools. These transitional leaders were to become councillors in the Local Level Governments (LLGs) in the early 1950s. The councillors took most of the powers away from the *luluais* and *tutuls* (Donaldson and Good, 1988).

Some transitional leaders are entrepreneurs; Finney (1987; 1993) classifies them as first and second generation business leaders. These business leaders are some of the pioneer Papua New Guineans to engage in capitalist entrepreneurship. The first generation business leaders are sometimes involved in both politics and business activities, although only a few concentrate solely on business activities. The second

generation business leaders mostly focus on business and a few pursue individualistic approaches to business. Many of the first and second generation business leaders appropriate traditional social networks to solicit cash contributions from relatives to acquire capital assets or to engage in commercial enterprises (Finney, 1973; 1987; Curry, 1999; Sillitoe, 2000). Finney (1968; 1973) explains that the act of cash contributions resembles ‘wealth-pooling’ which is a traditional means of communal activity. A few of them progressed to represent their people in national politics while some became successful businesspeople.

Sillitoe (2000) discounts the perception that ‘big men’ easily transit into business activities because they are leaders. He argues that many business leaders are not necessarily ‘big men’, but rather their success in business enterprises was facilitated because of their prior interaction with the capitalist market economy, early education or work experience. Zimmer-Tamakoshi (1997) also concurs that being a traditional leader does not necessarily mean an automatic transition into successful entrepreneurship.

Modern leader

The present ‘modern’ leaders or younger generation leaders are sometimes referred to negatively as ‘big shots’⁴ (Martin, 2009) or third generation business person for those involved in businesses (Finney, 1993). Modern leaders are educated and have responsible positions in the public or private sector, politics and business and are very individualistic in their business pursuits. Many of the attributes and approaches modern leaders employ are similar to the concepts and values promulgated in ‘personal viability training.’ Personal viability training has been gaining prominence in the wider community (Haro, 2010). Multinational companies, CSOs and state institutions from Oceania have engaged the Entrepreneurial Development Training Centre, part of Grassroots University for Life, to provide personal viability training (Teare, 2013). Bainton (2010) argues that the personal viability concept envisions that rural people should break free from the grips of traditional customs and values inherent in PNG traditional societies to prosper through modern individual entrepreneurial engagement. While personal viability training considers customary activities, in reality, personal viability training places little emphasis on traditional

activities and values. This notion of ‘breaking free’ of customs evades the realities of the indigenous economy.

Many villagers in PNG perceive modern leaders as being selfish opportunists who use traditional structures to advance their own business opportunities and personal wealth over their traditional social obligations (Sykes, 2007; Martin, 2009). In group businesses, Sillitoe (2000) argues that modern leaders also use traditional social structures like the transitional leaders to mobilise their people to contribute cash to acquire business assets as mentioned above. However, over time modern leaders pay out shareholders and so end up individually owning the enterprises. Shareholders in this instance are villagers who have contributed cash, sweat equity and land to either purchase plantations or develop blocks. Furthermore, some of the modern leaders have intentionally excluded shareholders who are either clan members or traditional rivals in group-owned businesses and pursue their own interests unhindered in the hope that they would take over the business (Quinn, 1981; Grossman, 1984; Finch, 1997; Bainton and Macintyre, 2013).

Some senior civil servants or modern leaders have harnessed indigenous exchange networks to advance their own private ambitions in the modern market economy. The recruitment of relatives and friends is part of the *wantok* system⁵, a traditional cultural phenomenon widespread in Melanesian societies (Nanau, 2011; McGavin, 2016). The *wantok* system facilitates reciprocity and exchange and forms part of the relational economy, but can also be used to misappropriate assets and public/private sector funds. For instance, based on kinship relations, some PNG bureaucrats appoint *wantoks*⁶ to positions within the government and use them as conduits to defraud public funds, thus undermining economic progress (Reilly, 2008).

To sum, traditional leadership styles continue to persist and influence transitional and modern leaderships. The advent of modern economic and political systems has provided new forms of engagement in business and politics. For instance, when relatives or *wantoks* are recruited, it is deemed nepotism in western societies. Conversely, Papua New Guineans view recruiting relatives as strengthening traditional relational networks. The transitional leadership style incorporates attributes from traditional and modern leadership, which is a hybrid form of

leadership. Transitional leaders effectively apply indigenous and modern market values to their advantage. Therefore, transitional leaders are likely to be effective in business and political activities in PNG.

Indigenous enterprise management

Indigenous entrepreneurs employ business-friendly indigenous practices and values which have assisted them to be resilient in operating modern businesses. Purcell (2013) argues that indigenous entrepreneurship is different, which means that locals operate these types of ventures, and their values, goals and style of business management would be very different from non-indigenous entrepreneurs. Non-indigenous entrepreneurs operate their businesses according to modern market imperatives. A few coffee plantations and blocks in PNG that operate as indigenous enterprises do so with some success. This section discusses the challenges of PNG entrepreneurs' participation in modern market enterprises.

Many local business managers and entrepreneurs in PNG lack a proper understanding of the fundamentals of managing commercial businesses, although, it can be noted, that some have succeeded in these endeavours. Many entrepreneurs including coffee growers fail to see their coffee farms as enterprises, which require investments to generate profits that would subsequently increase the wealth of their households or shareholders. In the managed subsector, poor management is evident when coffee income is diverted in the relational economy such as social obligation and gift exchange rather than in farm inputs (Afflick, 1981; Paliau, 1981; Finney, 1987; Taru, 1995; Hunt and Eko, 2001). Moreover, Turner (1986) and Donaldson and Good (1988) argue that coffee plantations are a business, but local business managers and owners manage them as vehicles to attain prestige.

In the market economy, time means productivity and eventual profits so successful entrepreneurs are conscious of how they use their time. Crocombe *et al.* (1967) contends that successful entrepreneurs in PNG devote minimal time to social obligations and more time to their businesses. Successful entrepreneurs are aware that their businesses contribute to wealth accumulation and help them gain prestige so they spend more time on managing their businesses rather than on activities that draws on valuable business time. However, these entrepreneurs do not ignore their

social obligations and continue to participate in activities that maintain their social networks.

The harmonisation of market-enhancing traditional values and modern market values and practices can be useful to ensure business success. Sharp (2012) argues that when close relatives of a betel nut seller request financial assistance, the seller is unlikely to ignore the request because the betel nut seller knows that his relatives render social security for his business activities. Also, coffee entrepreneurs have appropriated communal labour assistance from kinsfolk to develop their plantations and blocks (Stewart, 1992). These entrepreneurs at times are in return obliged to assist in socio-cultural demands of kinsmen (Finch, 1991; Merlan and Rumsey, 1991). Further, Weiner (2013) argues that entrepreneurs have deployed traditional relations to mobilise labour to engage in commercial activities.

Conclusion

During the colonial era, development theorists espoused the view that capitalism and westernisation would modernise indigenous societies and bring about economic development in transitional economies. However, successes are very minimal. The most recent critique of development theory, post development discourse also argues that there are numerous perspectives to development thinking. Post-development theory takes a broader view than earlier development theories but overlooks poverty and social embeddedness. Much of the failings in development arise from theorists giving little attention to indigenous social, economic and political processes in traditional societies. These non-market systems are socially embedded, which means that social, economic and political processes are interwoven. It is for this reason that traditional structures, practices and values have an enduring influence on the transaction of economic resources like capital, land and labour, which continue to influence modern market systems.

Entrepreneurial activities are based on capitalist market systems and in developing countries one must be conscious of traditional socio-economic logics. Moreover, the influence of the market economy is forceful and may lead the indigenous economy to weaken over time. However, the hybridity emerging from the merging of indigenous economy and modern market systems is generating a diversity of economic

opportunities for people to engage in entrepreneurial activities. Hence, entrepreneurial engagement in rural areas requires business leaders to be conscious of conflicting economic and social values and to find a balance between them.

Leadership is critical to the success of entrepreneurial pursuits. Traditional leadership is fading, and transitional and modern leadership are at the forefront of transition. Some leaders concentrate on business activities while others manage both business and leadership. However, modern leaders are associated with increasing levels of abuse and corruption. Therefore, hybrid transitional leaders are likely to be successful candidates for business and politics in the transitional economy.

In the next chapter, I will present the research methodology that was used in this study to collect data and explain processes used in analysing the data.

Notes

1. *Kastom* is a Melanesian Pidgin term that refers to a set of traditional rules, values, norms, ceremonies and behaviours that regulate a particular society in a particular space in time. It is not static as relationships can bring forth new forms of *kastom*. It may differ from one society to another in PNG (Martin, 2013).
2. *Tolais* are an ethnic group from the Gazelle Peninsula, ENBP, PNG.
3. *Luluias* and *tutuls* were traditional leaders who represented tribal and clan groups respectively. They were appointed by Australian colonial administrators to assist in the governance activities of the state.
4. 'Big shots' are negatively perceived as individualistic in their pursuit of wealth and prestige at the expense of their kin and community members (Martin, 2013).
5. *Wantok* system is a complex network of indigenous exchange, which is based on kinship and ethnic relationships (Nanau, 2011; McGavin, 2016; Walton, 2016).
6. *Wantok* is Melanesian Pidgin word and means one who speaks the same language or a person from the same area, region or even a country depending on where the subject is located. It has connotations of bias or favouritism towards one's own relatives as in the allocation of jobs and contracts.

Chapter 3

Research Methodology

Introduction

The preceding chapter reviewed the literature on development theories with particular emphasis on social embeddedness and its influence on entrepreneurial development in the context of transitional economies like PNG. This chapter described the field sites and the research and methodological framework applied in this study. Data collection focused on gathering information to assess the reasons for the decline in coffee productivity, production and quality, and to establish why some smallholder coffee farmers and plantation owners were resilient and efficient in farming coffee while most others had collapsed or were in long-term decline. This chapter also examines the legal, ethical and moral considerations of the research, and assesses the advantages and disadvantages of different research approaches used in this study.

Study Sites

Fieldwork was undertaken in the coffee-growing provinces of Morobe, Eastern Highlands (EHP), Western Highlands (WHP) and Jiwaka. The four provinces were selected because they are the main coffee producing provinces in PNG and host many smallholdings, blocks and plantations. Two study sites were chosen to undertake data collection among smallholder coffee farmers. These smallholder study sites were the Wain area in the Wain/Erap local level government (LLG), Morobe Province (Figure 3.1) and the Korofeigu area in the Lower Bena LLG, EHP (Figure 3.2). Coffee plantation related data were collected at four plantations in EHP and Jiwaka Province (Figure 3.3). Chain leaders, coffee industry experts (CIEs) and other informants were interviewed across all four provinces, and two respondents were surveyed in Port Moresby, National Capital District (NCD) and one in Brisbane, Australia.

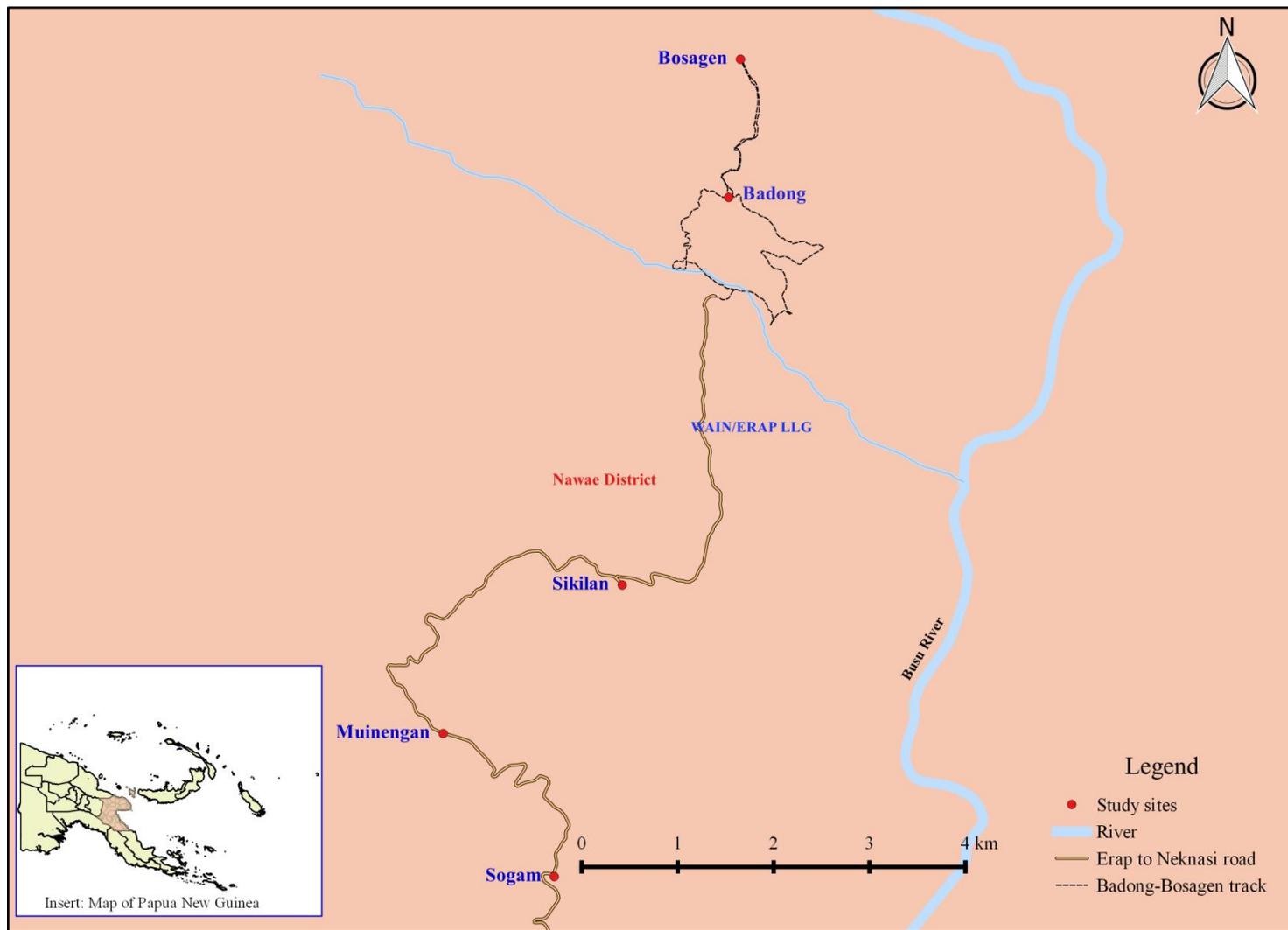


Figure 3.1: Smallholder village study sites in the Wain area, Morobe Province (Source: Kingsten Okka).

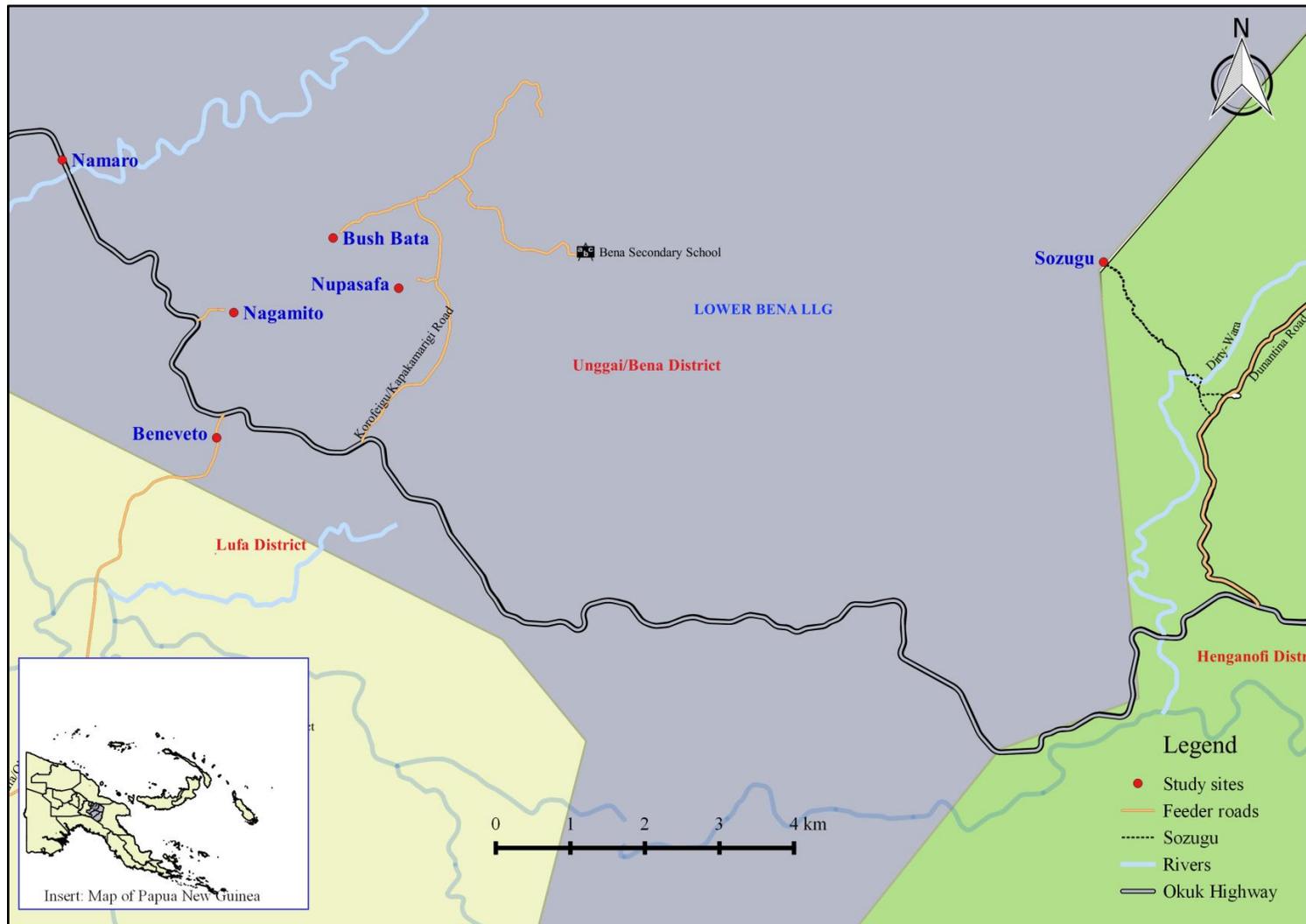


Figure 3.2: Smallholder village study locations in the Korofeigu area, EHP (Source: Kingsten Okka).

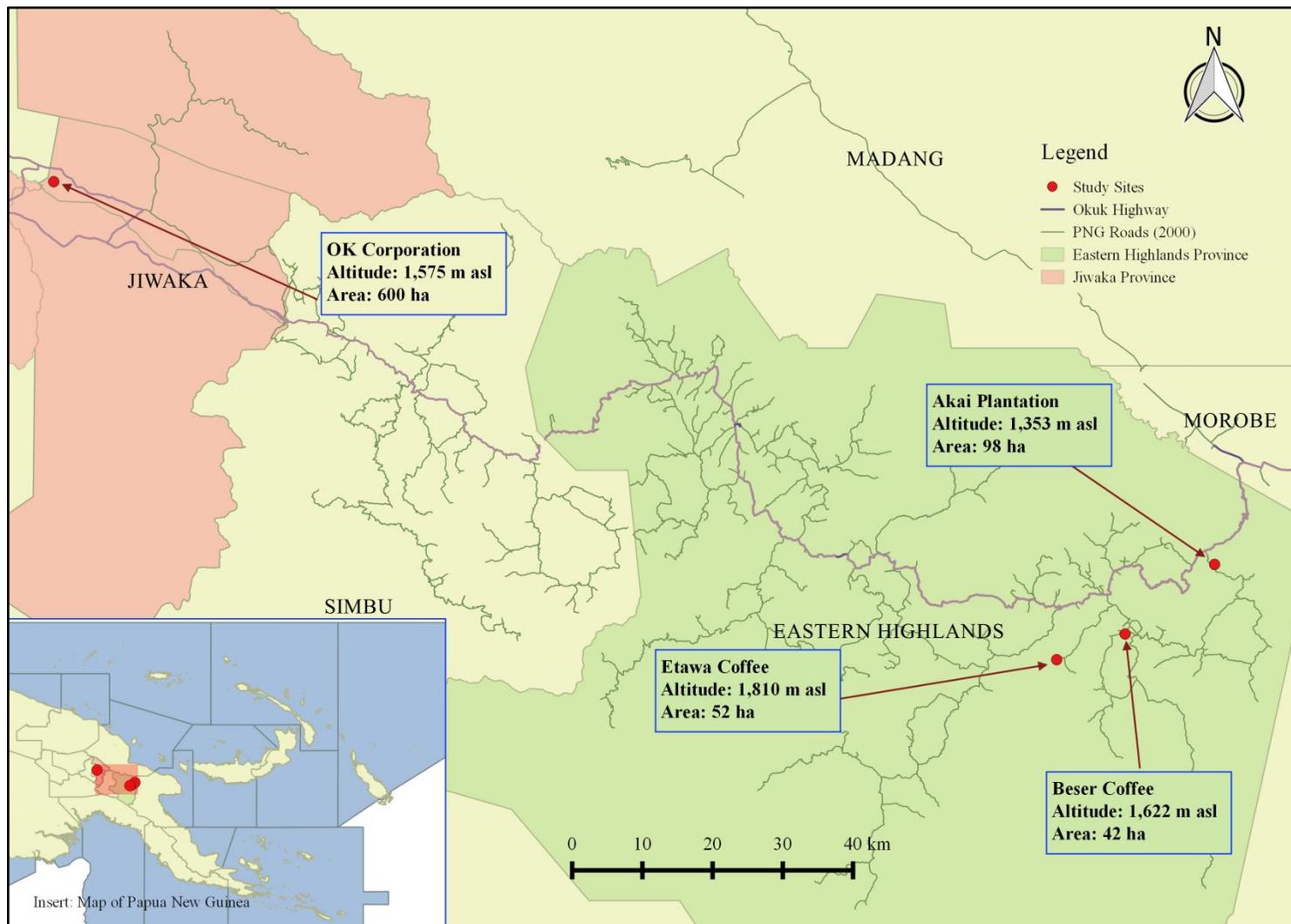


Figure 3.3: The map of coffee plantation study sites (Source: Kingsten Okka).

Three phases of fieldwork in PNG were undertaken. The main data collection phase was from December 2013 to April 2014, with additional short field trips made in March 2015 and January 2016. The latter two field trips were conducted to fill information gaps identified while analysing the data and writing up of the thesis. When I returned to Perth, Australia, I occasionally communicated with PNG informants by phone and email to obtain recent production data, and insights into certain trends on analyses and to gather further historical information.

Smallholder farmer interviewees

Smallholders in the study sites in Morobe Province and EHP were coffee farmers. Farmer holdings of coffee ranged from several hundred coffee trees to just less than 5 ha. In the recommended triangular spacing, a standard density would be 2,667 coffee trees/ha. Smallholders cultivate coffee as one of several livelihood strategies. For some farmers, coffee remains the principal source of household income that finances their livelihood needs such as school fees, medical costs, household expenses and socio-cultural commitments, the latter being particularly common in their communities. The average household size for the Neknasi and Korofeigu groups was 4.5 members, less than the national average household size of five.

Other respondents

Another group of respondents were current coffee business owners, shareholders of coffee blocks and plantations, representatives from civil society organisations (CSOs), and former employees in the coffee industry such as plantation business managers, bank employees, extension advisors and CIC employees. For the chain leader interviews, they were current coffee processors or exporters.

Research Approaches/Framework

The changing social world poses a complex dilemma for researchers as to how to identify suitable data collection techniques (Letherby, 2013). Two common broad approaches underlie research in the social sciences: quantitative and qualitative methods. The quantitative approach is informed by objectivism and the positivist paradigm which entails deductive reasoning, while the qualitative method is more informed by subjectivism and encompasses inductive reasoning and focuses on processes and meanings (Dunne *et al.* 2005; Table 3.1). Many have argued that

quantitative and qualitative are from different schools of thought (see Letherby, 2013 for a discussion). However, this argument no longer holds; there is a process of assimilation where two or more research approaches can be integrated and applied simultaneously (Letherby, 2013), in what is often referred to as a mixed method approach (see below).

Table 3.1: Quantitative and qualitative approaches to research in social science.

Quantitative	Qualitative
Realism: independent of reality	Nominalism: dependent on researcher's perspectives
Positivism: seeking the truth	Anti-positivism (constructivism): there are multiple ways of arriving at a truth
Determinism: already regulated with values and beliefs	Voluntarism: acting according to free will
Nomothetic: using given laws to explain events, scenes and others	Idiographic: seeking to understand individual cases

(Source: Adapted from Dunne *et al.* 2005)

Quantitative and qualitative methods have their own paradigms, which at times used on their own fail to show the complete picture of a particular phenomenon (O'Leary, 2014). Quantitative and qualitative research approaches are further explained below.

Quantitative and qualitative research

Quantitative approaches attempt to seek the 'truth' by using defined hypotheses, variables and statistics (O'Leary, 2014). They tend to apply deductive logic to verify or falsify a hypothesis or theory. The quantitative research approach entails numbers, measurements and assesses the distribution and extent of a phenomenon (Berg and Lune, 2012). In quantitative methods, structured questionnaires can be used to interview respondents to generate numeric data; statistical tools are then used to analyse the collected data (Creswell, 2014). The statistically analysed data can then be used to reveal frequencies and/or occurrences from which interpretations can be made (Creswell, 2009).

On the other hand, qualitative research endeavours to answer the questions of how, when, what and why of a phenomenon. Qualitative approaches seek to investigate and understand the meanings and values of people and accept there are multiple realities. Inductive logic is applied in which theories are derived from the data collected (O'Leary, 2014). Qualitative data also offers in-depth information and

helps better explain quantitative data. For example, trends and changes regarding coffee production measured using quantitative methods can be more comprehensively explained by drawing on the experience/knowledge of the respondents through interviews. Qualitative methods can also generate sufficient data from which trends can be established, but the approach is typically specific and cannot usually be generalised and applied to other situations (Winchester and Rofe, 2010; Mertens and Hesse-Biber, 2012). In essence, the qualitative research approach focuses on studying the personal experiences or structures within a particular society (Winchester and Rofe, 2010; Creswell, 2014). These structures and experiences may include aspects of an interviewee's identity and viewpoints. Qualitative approaches not only identify attitudes and opinions but also assist in classifying logics among various responses and how they relate to everyday life (Hay, 2010).

Mixed methods

Historically, cultural anthropologists, applied psychologists and sociologists were said to have used mixed research approaches in their work before the term mixed methods was created (Warner and Lunt, 1941; Gans, 1962). Many research methodologists credit Campbell and Fiske (1959) for conceptualising the use of several methods of measurement, and further introducing the idea of triangulation in which quantitative and qualitative methods were used as part of validating research findings. Later, others drew on Campbell and Fiske's work to popularise triangulation (e.g. Webb *et al.* 1966; Denzin, 1978). In the 1970s, there were long-standing theoretical debates about the boundaries of quantitative and qualitative perspectives in research. However, the thesis of Howe (1988) introduced a new level of thinking in which the two research paradigms were seen to complement each other when used simultaneously. From the 1990s to the present, many social scientists have accepted the 'third research paradigm' - the mixed methods approach (Tashakkori and Teddlie, 2003). Hesse-Biber (2015) posits that the mixed methods approach generates synergy and strength in which one research approach lends credence to the other and vice versa. The mixed methods approach also recognises the limits of the various research methods (Brannen and Moss, 2012; Greene, 2012).

Triangulation of data is an integral component of mixed methods as it can illuminate complex problems (see Elwood, 2010; Mertens and Hesse-Biber, 2012). Triangulation aims to validate data or a phenomenon using a number of research theories, methods and data sources and, thus reduces uncertainty in data interpretation. For instance, triangulating can be applied on quantitative and qualitative data to cross-check and validate certain data and thus generate new insights (Elwood, 2010; Mertens and Hesse-Biber, 2012). The complementary application of quantitative and qualitative research approaches can lead to making intelligent and practical synthesis (Johnson *et al.* 2007; Creswell, 2014).

Mixed method approaches are widely used in the social sciences. Some examples of studies in PNG that have used mixed methods to investigate problems confronting smallholder farming communities include Koczberski *et al.* (2001), Lummani (2006), Curry *et al.* (2007a) and Inu (2015). The mixed methods used in these smallholder studies have proven to be suitable because they provide flexibility and permit the use of multiple research approaches to solicit data and validate data through triangulation. For instance, Inu (2015) deployed a number of research methods such as focus group discussions, questionnaire surveys, and semi-structured interviews to elicit information from smallholder coffee farmers in Bena, EHP. Similarly, Lummani (2006) employed weekly monitoring surveys in which six cocoa farming households in the Buin area in the Autonomous Region of Bougainville were initially interviewed. Over a three-month period, Lummani collected data on the amount of cocoa sold by the households and also made observations on socio-cultural activities during the monitoring period. Thus, mixed methods have proven to be a relevant research method for conducting socio-economic studies among smallholder farmers in PNG.

The mixed methods approach was employed in my study and included interviews, focus groups, case studies, observations and secondary data. The multiple research approaches enabled respondents from various sectors of the coffee industry to contribute and provide insights into opportunities and problems in the PNG coffee industry. Other data sources included proposals developed by plantations and cooperatives, company profiles, website pages, government reports, and relevant literature about the industry. When applying the mixed methods approach in my data

collection, I was conscious of the advantages and disadvantages of mixed methods outlined in Table 3.2 (see also Johnson *et al.* 2007; Driscoll *et al.* 2007).

Table 3.2: Advantages and disadvantages of mixed methods.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Offers multiple ways of investigating a situation. • Multiple methods in which observations, secondary data, and questionnaire surveys and pictures can be used. • Preliminary and in-depth data analyses can generate new theories or hypotheses, which can lead to new areas for further studies. • The combined approach allows the researcher to be aware of practical limitations that can be faced in the course of conducting the survey and thus changes can be incorporated. • The use of several research methods permits the researcher to comb a wider area of research interest than would have been possible using a single approach. 	<ul style="list-style-type: none"> • Conducting research can be costly. • Researchers with poor statistical skills can be a limitation in analysing quantitative data. • After data collection, quantifying qualitative data can be time-consuming. • An enormous amount of data can be collected and in many cases, not all data will/can be used.

The mixed methods approach was considered the most suitable method for my research for the following reasons.

- The coffee industry comprises of various actors who do not operate harmoniously. Distrust and suspicion are pervasive among key value chain actors. For example, smallholders believe that processors and exporters do not pay the full value of their coffee when they sell to them (see Murray-Prior *et al.* 2008; Batt *et al.* 2009). Thus, there was a need to compare responses among farmer groups and other chain actors.
- The study assessed the whole performance of the industry, and therefore it was important to gather views from a wide cross-section of the industry using a range of data sources and methods.
- The coffee industry is dynamic as the socio-economic and political environment continues to evolve. In this evolving environment, the use of a single research method to solicit data and subsequent extrapolation of data would not have captured the diverse array of problems that constrain coffee productivity or the strategies chain actors were using to counter problems and advance their coffee enterprises. Thus, a holistic approach that employed several research methods to gather data was necessary (Figure 3.4).

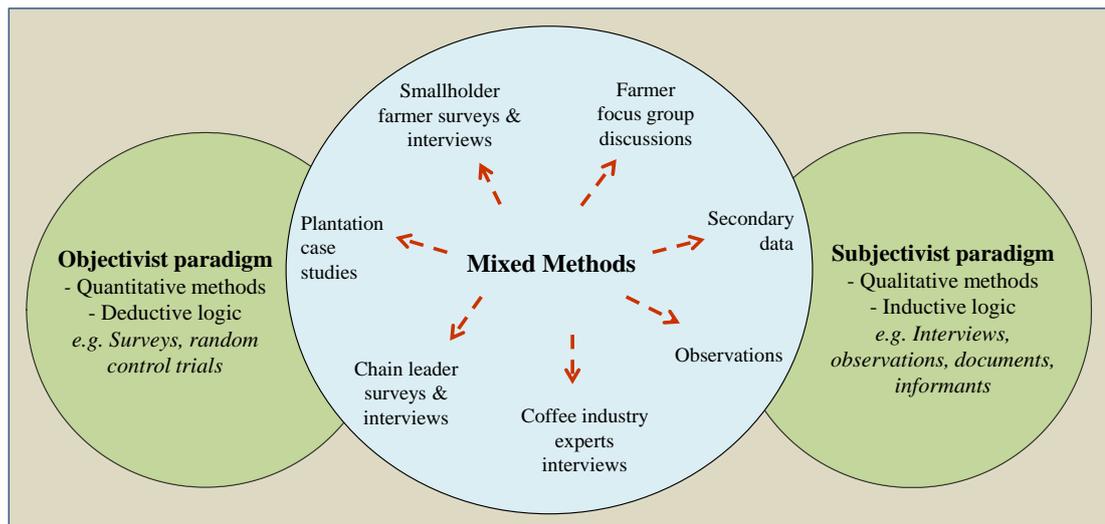


Figure 3.4: Schematic representation of research methodologies and methods that are used in mixed methods approach (Source: Adapted from O'Leary, 2014; Dunne *et al.* 2005).

Data Collection

The main respondent groups and data collection methods employed for each group are outlined in Table 3.3. Data sourced from interviews, focus group discussions and documents about the PNG coffee industry were verified through triangulation. For example, in the smallholder questionnaire survey, quantitative data collected on coffee production constraints were restated in qualitative interviews to elicit detailed information from the same respondents. The farmers who participated in the interviews and focus group discussions were members of cooperatives. The data sourced were recorded on the questionnaire sheets while many of the qualitative interviews were audio recorded. This section also outlines secondary data and data analyses.

Smallholder farmers

The smallholder farmers selected were members of coffee cooperatives of the Neknasi and Korofeigu groups. The Neknasi group has been in existence for seven years while the Korofeigu group has operated for five years. This was unusual because most cooperatives fail in much shorter periods. Also, a Coastal group (Wain area) and a Highlands group (Korofeigu area) were selected.

Table 3.3: The categories of respondents, data collection methods, topics covered and purposes of the research methods used.

Respondents	Methods	Topics covered	Purpose
Smallholder farmers (n=91)	Interviews	Family labour, production constraints, land access, coffee production experiences, cherry theft, lawlessness, managing social obligations, low prices, market access and entrepreneurship.	Identify constraints on smallholder coffee production and how some farmers overcome constraints.
	Quantitative surveys	Household demographic data, farm size, income sources, coffee yields, household activities and time allocated to coffee production.	
	Focus groups with grower groups	Group profile, group cohesiveness, member farmers' expectations of partners, leadership problems, accountability, relationship problems and coffee production.	Identify factors influencing relationships with chain leaders and smallholders.
	Case studies (grower groups)	Multiple case study approach. Information gathered from focus group discussions was used to develop case studies.	Two case studies were developed on grower groups that have relationships with chain leaders and lead partners.
Plantation owners and business managers (n=4)	Quantitative surveys	Estate history, ownership, plantation size, annual yields, management strategies, labour needs, time allocated to farm activities and processing facilities.	Establish factors why certain plantations are resilient and successful. Establish factors why certain plantations have failed or poorly managed.
	Qualitative interviews	Land tenure, lawlessness, production and processing problems, cherry theft, labour constraints, managing social obligations and credit access.	
	Case studies	Multiple case study approach. Data gathered from qualitative interviews and questionnaire surveys.	Four case studies were developed for various ownership types and the current status of each case.
Coffee industry experts (n=32)	Qualitative interviews	Views of CIEs on the managed subsector: land ownership, prospects of reviving the coffee industry and socio-economic expectations.	Perspectives of CIEs on the future of the coffee industry particularly on the status of the managed subsector.
Chain leaders and lead partners (e.g. processors, CIC, others) (n=13)	Quantitative surveys	Extension services, the quantity of coffee transacted, grower payments, prices offered, and period of relationships.	Identify factors in the relationship with farmers and groups which were assisting in farm productivity and improved incomes.
	Qualitative interviews	Relationship problems with growers, coffee quality, cash advances offered, chain leaders' expectations of growers and if partners have agreements in place.	

In the first phase of fieldwork in 2014, group leaders provided a list of farmers of their respective groups, from which farmers were selected for interviewing using the cluster sampling technique (see O’Leary, 2014). However, during fieldwork, some farmers were unavailable for interviews, so other farmers who were present were interviewed. Ninety-one households were selected from the two study groups: 47 coffee farmers from the Neknasi group and 44 from the Korofeigu group.

The unavailability of farmers for interviews can be a challenge while conducting fieldwork in PNG. Some farmers who were selected from the group list had travelled out of the village for several reasons including visiting relatives in towns or other villages, or attending socio-cultural events or attending to household needs away from the home. To avoid this problem, I took the following steps to ensure there were adequate number of farmers for interviewing:

- Several villages at each study site were selected to ensure there were many farmers available from which farmers could be identified and interviewed. The farmers interviewed were members of cooperatives.
- A broad range of different age groups (18 years and above) of coffee farmers participated in the interviews.
- Varying household sizes did not limit me when choosing farmers for the interview.

The above considerations enabled me to ensure there were sufficient numbers of farmers present in each village for interviews.

In total, four weeks were spent on conducting the surveys and questionnaire interviews with the 91 selected smallholder households. The members of the Neknasi group who were interviewed came from Sogam, Muniengan, Sikilan, Babong and Bosagen villages (Plate 3.1). My assistant and I resided at Sikilan Village for two weeks with a night spent at Bosagen Village. Since Babong and Bosagen villages were inaccessible by road in April 2014, my assistant and I walked 4 km to conduct the surveys with farmers from the two villages. As for the Korofeigu group, the respondents came from Bush Bata, Beneveto, Sozugu, Namaro, Nagamito and Nupasafa villages (Plate 3.2). In the Korofeigu area, my assistant and I resided in Beneveto Village.



Plate 3.1: A family from Sikilan Village (Neknasi group) is preparing for an interview.



Plate 3.2: A husband and wife from Bush Bata Village (Korofeigu group) being interviewed.

My research assistant carried out the majority of the 91 questionnaire surveys. He was an experienced interviewer and had conducted surveys for other researchers from the CIC. Before his recruitment, I explained the purpose of the study to him and how the survey instrument was to be completed. I also ensured my assistant trialled some questionnaire surveys to gain hands-on experience before collecting the data for the study. I conducted the informal interviews so that I could also ask additional questions when interesting themes or topics were raised from the semi-structured interviews.

The household questionnaires sought household demographic data, and data on coffee garden size, income sources, coffee yields, other livelihood activities apart from coffee, and labour allocated to coffee production. Further information was solicited through semi-structured interviews on problems ranging from labour shortages, other production constraints such as poor land access, knowledge of coffee farming, cherry theft, lawlessness, social problems, volatile prices, market access problems, and entrepreneurial activities. Constraints on coffee production that were covered in questionnaire surveys were again probed in qualitative interviews to understand the issues in more detail. When I left the field, occasional telephone calls were made to clarify information on particular issues I gathered from respondents.

Sometimes it was difficult finding a suitable time to interview farmers. In the Wain area, fieldwork was made easier by the Neknasi group leaders who announced our arrival to those who were selected to be interviewed. Farmers waited patiently through the day to be interviewed. In the Korofeigu area, interviews with Korofeigu farmers were conducted in the early mornings and evenings. The evening interviews were held at the house where I resided.

Some farmers in the Korofeigu area enquired what benefits they would gain from the surveys and questionnaire interviews that I conducted. A few were confident that some tangible benefits had to come to them for participating in the interviews, although, they did not specifically indicate monetary benefits the intent was obvious. The query about the benefits came from young village leaders who were either village court officials or aspiring councillors. I made it clear that there would be no monetary gain and again explained the purpose and nature of the research. Also,

when I encountered problems in executing my surveys in the field, I was able to consult my supervisors for guidance.

Focus groups

I conducted two focus group discussions with smallholder farmers: one at Sikilan Village for the Neknasi group and the other at Beneveto Village for the Korofeigu group. Both male and female coffee farmers participated in the focus groups. Thirteen farmers belonging to the Neknasi group were chosen randomly to participate in the discussions at Sikilan Village while ten farmers at Beneveto Village participated. The discussion environment was informal, which enabled group members to contribute ideas and their points of views. Focus group discussions were used to triangulate and explain in more detail certain constraints farmers encountered in coffee production. This included the strategies farmers applied to alleviate their production problems that had been elicited from the smallholder surveys and questionnaire interviews. This type of triangulation is commonly termed as ‘between-methods’ triangulation, which involves both quantitative and qualitative approaches (Johnson *et al.* 2007). The focus group discussions also explored: reasons why farmers formed groups to farm coffee and engage in collective marketing; and, the efforts of chain leaders and lead partners to develop the production capacities of farmers and leadership in farmer groups. Information was also gathered on group profiles, group cohesiveness, leadership problems, members’ expectations of partners, accountability of leaders in farmer groups and relationship problems with partners. The focus group discussions also assisted in establishing the commonalities in the expectations of farmers for their partners. Case studies on the cooperatives were developed from information gathered from the focus group discussions (Chapter 6).

Supplementary information was later also sought from participants in the focus group discussions. Also, informants from CIC, government or CSOs who have had contact with the Neknasi and Korofeigu groups also provided additional information.

Focus group discussions can reveal the factors that motivate farmers and the types of decisions and priorities a certain group of people make in their lives (Berg and Lune, 2012). In focus groups, a comment from one of the members can trigger additional

contributions causing a synergistic effect in the discussions. After a topic was introduced, participants discussed it among themselves and a few of them would then speak on behalf of the group. Since some were either shy or could not articulate their contribution clearly in Melanesian Pidgin, they allowed spokespersons to translate and air their contributions to me. The spokespersons summarised and translated what other members contributed and in the process they may have omitted pertinent points and possibly misrepresented others. Members of the focus group discussions revealed some of the failures of their group leaders' performances. The leadership subject was deliberated in group discussions with farmers from the Neknasi group but in individual conversations, farmers hardly talked about the inadequacies of their leaders especially about abuse of group assets (Box 8.1). Korofeigu group farmers did not talk about leadership problems; nor did they single out their leaders' problems. However, communication seems to be an issue among members of the Korofeigu group, and a farmer raised this problem in the focus group discussions, but others did not elaborate.

Plantations

Four plantations were selected from the Obura/Wonenara District in EHP and North Waghi District in Jiwaka Province. The plantations were Akai Plantation, Etawa Coffee, Beser Coffee and the OK Corporation. The selection of the plantations was defined by the characteristics of the institutions and in this instance the ownership type, size of holdings and plantation location. The plantations were investigated to establish the problems they had experienced, which had led to some of them being abandoned or struggling to survive. I was also interested in identifying the strategies successful plantations were employing to remain viable¹.

The four plantations selected were nationally owned and included (Figure 3.5):

- a) A group-owned plantation operating successfully with its management problems under control.
- b) A group-owned plantation and poorly managed, struggling and almost abandoned.
- c) An individually-owned plantation operating successfully without any management problems.

- d) An individually-owned plantation, poorly managed and struggling to remain in business.

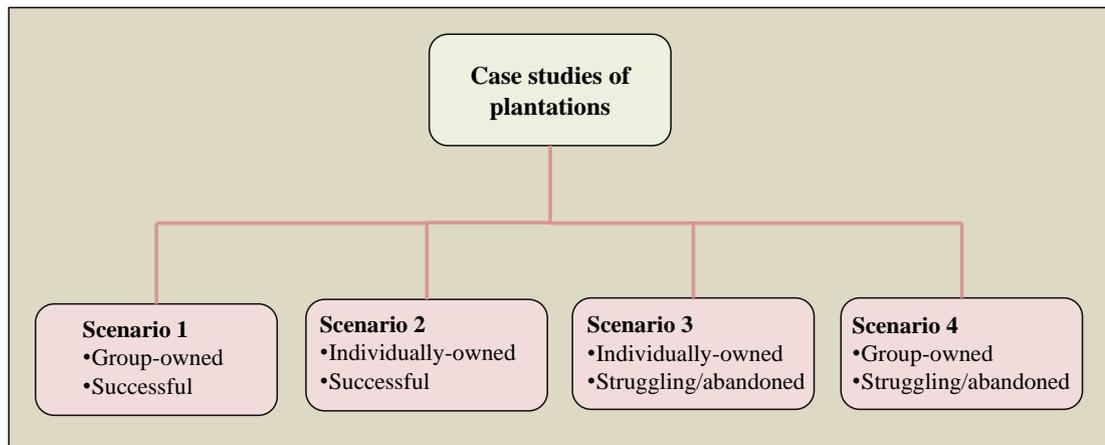


Figure 3.5: Case studies of plantations representing four scenarios.

For the plantations, three main data collection methods were used: informal interviews; questionnaire surveys; and, plantation records and documents. A structured questionnaire was conducted with business managers and owners to solicit information on estate history, ownership, farm size, annual yield, community engagement, labour requirements, business manager’s time spent on the farm, and the types of processing facilities.

Some problems were confronted during the execution of the questionnaire survey. The Akai plantation had no records on coffee production. After the departure of the chain leader in 2001, records of the farm that were kept at the nearby central coffee mill were either destroyed or removed during frequent changes of coffee entrepreneurs who rented the factory (Box 7.1). Thus, information was sourced from shareholder group leaders, former business managers and informants. The OK Corporation, a group-owned company was reluctant to supply information that was related to production and finances of its plantations, but provided other information on the history and farm management (Box 7.3). In the case of Beser Coffee, the plantation was abandoned for more than 15 years, and records were lost (Box 7.4). The new owner was revitalising the farm and processing facilities and only had records of the farm since 2007.

Semi-structured interviews were used to solicit data on land tenure, lawlessness, production, processing, cherry theft, labour, management, community engagement, partnerships, waste management and credit difficulties. Informal discussions followed the questionnaire surveys to source additional information from business managers and owners. Further information was sought through casual conversations with informants who formerly had worked for the plantations or were the customary landowners, elites from the community or community leaders. Supplementary data were collected from relevant industry reports and company profiles of plantations.

A CIC officer assisted me with gathering further information from three of the plantations located in EHP. In August 2014, the officer collected information on the following: fortnightly wages paid to farm workers, management fees and other details of plantation owners. In my second and third fieldwork phases, I revisited the four plantations and gathered more information from the owners, business managers and informants to fill gaps in my data. Following each field trip, I also made telephone calls to business managers and informants to solicit information on topics where gaps were evident in my analyses and write-up.

From the information generated, four case studies were developed. The use of case studies for my examination of plantations was considered an appropriate method for my study for the following reasons:

- a) The approach provided historical information on a plantation, especially on factors contributing to their successes in the early growth of the industry.
- b) Provided detailed insights into the reasons for the current successes of some plantations and what factors were undermining operations of some plantations that have led to failures.
- c) Provided information, which could be applied to developing suitable recommendations to rectify problems that were undermining plantation operations.

Case study research is an approach, which involves the detailed study of a specific case. It can be described as an intense examination of a single unit or several instances of a particular occurrence or experience to investigate in-depth a phenomenon and its contextual influences. A detailed case study can help explain the

phenomenon so as to understand similar or larger phenomena at the broader level (Hancock and Algozzine, 2006; Berg and Lune, 2012). The case study research design adopted in this study was historical, intrinsic, pragmatic and purposeful in nature (Table 3.4).

Table 3.4: Case study designs, characteristics and methods of soliciting data.

Designs	Characteristics	Methods
Historical	Historical case studies describe programs, events, or organisations that have changed over time (e.g. after acquisition or development of plantations and what has happened over the years of ownership).	Documents, observations, interviews
Intrinsic	Cases that are unique, misunderstood or misrepresented thus require confirmation of the facts. Intrinsic case studies attempt to understand more about a group, individual, event, or organisation and extrapolate the findings to broader populations (e.g. focus the study on each situation of a plantation so that its case is extrapolated to the larger conditions of the managed subsector. Also, case studies on grower groups can be inferred to other grower groups).	Interviews, observations
Pragmatic	It entails being practical and being able to investigate a phenomenon, which is of interest at a point in time. Cases that involve current events such as why some plantations were successful under the present socio-economic context (e.g. cases of successful plantations and grower groups).	Documents, observations, interviews
Purposiveness	Researcher's focus on a particular event that will help to affirm an argument, disprove or generate a new theory (e.g. cases that involve struggling or abandoned plantations).	Documents, observations, interviews

(Sources: Hancock and Algozzine, 2006; O'Leary, 2014)

The type of approach to my case studies was descriptive and furnished detailed narratives of the phenomenon within their contexts. According to O'Leary (2014) case studies can offer a unique perspective, debunk a theory where an example shows that a commonly held view is disputed. Case studies can reveal new trends, contribute supportive evidence for a theory, and accord new insights into a phenomenon. Furthermore, the worth of a case study approach is that it can be used to discover solutions to real-life difficulties. My plantation case studies aim to provide detailed insights into the varying socio-cultural factors influencing the operations of plantations and to identify possible solutions to address some of the problems affecting the managed subsector.

Coffee industry experts

The CIE interviews were conducted among former plantation business managers, factory managers, CIC officers, management agency advisors; and present plantation owners, exporters, and processors. Because of the wealth of experiences they have of the coffee industry, I refer to them as CIEs. In total, 32 interviews were recorded. The purpose of the CIEs' interviews was to expand further on data gathered in the in-depth plantation case studies and to obtain a broader perspective of the performance of the managed subsector and the overall coffee industry. It provided an avenue to triangulate the data, which also enriched the data collected for the plantation case studies. Interviews focused on gathering information on the future of the managed subsector and the associated influences of socio-economic and political factors. Although semi-structured interviews were used to solicit data, CIEs were also encouraged to supply supporting information that was essential to this study. Moreover, informal conversations including telephone calls and emails were exchanged with some respondents to seek further clarification on information gained in interviews.

Interviews with CIEs were conducted in several places that included plantations, coffee factories, residential areas, offices, vehicle repair shops, smallholder coffee gardens, restaurants, town parks, CIC offices, in vehicles and even on roadsides. The interview sites for CIEs included Mt Hagen, Waghi Valley (Banz, Minj, Kigabah Estate), Goroka, Kainantu, Lae and Port Moresby. Respondents from Mt Hagen and Jiwaka were interviewed in locations where the interviewees felt either comfortable or it was convenient for them. Most of the respondents in EHP came from rural districts like Lufa, Bena, and Daulo and were interviewed in Goroka town. The majority of the respondents from Kainantu and Obura/Wonenara districts were interviewed in urban Kainantu. Two CIEs with plantations in the Central Highlands were interviewed in Port Moresby: they were residents of Port Moresby during the period of the first phase of fieldwork in 2014. A retired CIE was interviewed at his home in Brisbane, Australia. Some of the CIEs were still involved in the coffee industry while some had moved on to other vocations, retired, or retired to their home villages.

The initial selection of CIEs was based on my knowledge of who were the prominent industry players in PNG. Those who were interviewed in the early stages of fieldwork passed me contacts of their former colleagues to interview. Follow-up contacts were made, and subsequent appointments were made for interviews. This way of recruiting respondents is called snowball sampling (Handcock and Gile, 2011). It is a process where existing respondents assist in recruiting additional interviewees. CIC officers also helped in identifying several CIEs. The mobile phone was crucial in making contact with this group of respondents.

A few problems were encountered during the survey of CIEs. Some of the CIEs were busy and wanted the interviews to be completed quickly, and this affected the amount of information I was able to gather.

Chain leaders and lead partners

Both quantitative and qualitative data were collected from chain leaders and lead partners. This group of respondents were chain actors or lead partners who were currently engaged in the coffee industry. Some CIEs, who were initially interviewed and involved in the coffee industry as chain leaders, were interviewed a second time. Interviews and questionnaire surveys were used to collect information on the extension services offered to farmers, the quantity and quality of coffee transacted, payments on coffee delivered, prices offered to growers, and partnerships with farmer groups, plantations or blocks. Semi-structured interviews were employed to collect information on relationship problems between partners and growers, coffee quality, cash or farm input advances offered to farmers, their expectations of growers, and the types of agreements chain leaders have with farmers. The chain leaders' interviews also helped to identify commonalities and divergences between the focus group discussions with farmers, particularly on the relationship difficulties and expectations.

Most of the chain leaders were located in urban centres while a few were located in rural areas. Letters were sent to known processors, exporters and CSOs explaining the purpose of my study. Thereafter, phone calls or personal visits were made to make appointments for interviews. Some chain leaders declined to be interviewed. A total of 13 interviews were accomplished: eight exporters, four processors and a CSO

representative were interviewed. The chain leaders who were approached were known companies in the local coffee industry that had links with certain farmer groups or farmers who sold their coffee directly to their mills. In other cases, farmers were receiving interest-free cash loans or farm inputs as advances from chain leaders. Lead partners are those who had training or extension programs on coffee development and were working with farmer groups.

Some problems were encountered when collecting data from chain leaders and lead partners. One employee of an exporting company declined to participate. Also, many of the chain leaders interviewed were reluctant to provide quantitative data such as the coffee prices offered and the quantity of coffee they purchased from partner farmers. A few respondents did supply this information. Those who offered information gave guesstimates as it was evident they were not keen to reveal commercial information relating to their company. The data sought included the coffee prices chain leaders offered and the quantities of coffee they purchased from farmers, especially those from farmer groups.

Secondary data

Prior to and following fieldwork, relevant literature was reviewed to gain information on the early growth of the coffee industry in PNG and the factors that were contributing to its decline in recent decades (Chapters 4 and 5). The literature review provided insights into the industry and brought to the fore challenges that were curtailing the growth of the coffee industry. The synthesis of past information served as the basis for which new knowledge could be generated from my research and, as a consequence, strategies could be developed to revitalise the PNG coffee industry.

Data analyses

Upon returning to Curtin University from my first period of fieldwork, audio recorded interviews and notes were revised and transcribed thoroughly. After my second phase of fieldwork, I was able to fill in the missing data identified from the first phase of fieldwork. In the third field trip, I obtained smallholder production data for the case studies of the cooperatives and the plantations.

Qualitative data were coded and checked, cleaned and entered into the computer. Qualitative interviews recorded on audio were replayed, and hand-written notes taken during formal and informal interviews were typed and edited.

The hand-written responses in qualitative interviews were diligently reconciled with records on the audio to confirm the accuracy of note taking. The reconciling of notes added to the written feedback of interviews and formed part of my quality checks on the data. Most of the interviews were conducted in Melanesian Pidgin.

Qualitative data analyses included the content analysis of the interview transcripts to identify important commonalities and divergences. The data were analysed by reviewing, synthesising, interpreting and categorising the information obtained from the interviews, focus groups and informal conversations. The rigorous analysis generated a variety of themes under which the responses were categorised and coded. In some cases, cross-case analyses were conducted to check on a phenomenon, which could be similar to other cases, in particular for the plantations. Important subjects that arose from the qualitative data were explored further in subsequent interviews and monitoring surveys. Some unexpected trends from analyses were also pursued from follow-up interviews. This approach formed an essential component of the study.

The quantitative data were entered into MS Excel spreadsheets and were summarised using Pivot Tables and Pivot Chart Reports.

During data analyses, the productivity calculations seemed very high for smallholder farmers in the Wain and Korofeigu areas. The high productivity did not align with recent findings (e.g. UniQuest, 2013). One explanation for the problem was that the area of coffee was calculated using the tree population in the coffee garden. The actual area of coffee was probably larger because of wider spacing and the non-replacement of dead coffee trees when I used the standard triangular plantation density of 2,667 trees/ha. A CIC officer travelling to Wain and Goroka areas in July 2015 measured a defined area (30 m x 30 m) and counted the number of coffee trees in it. He measured four gardens for each site, so an average was calculated for the sites. The calculations revealed that in the Wain area it was 2,600 trees/ha, while in

Goroka area (Asaro, Kabuifa and Nagamiza), which is adjacent to Korofeigu area was 2,537 trees/ha. Thus, the average tree population for the smallholder garden for the two study sites was 2,569 trees/ha, which was applied in recalculating coffee productivities for the two study sites.

Ethical Consideration

The legal, moral and ethical dimensions of my research were considered so that there was ethical integrity in the findings of this study (see O’Leary, 2014 for details). I ensured for example:

- Respect for the societal norms and values of the communities I worked in by ensuring that the purpose of the study was initially explained to group leaders (village leaders), CIEs, chain leaders and lead partners and they approved the conduct of the interviews. Before conducting the interviews with respondents, the purpose of the study was also explained to them.
- Respondents provided their consent for interviews and confidentiality of respondents was a must. Before the interviews, respondents signed a consent form. I ensured that respondents did not feel obligated to participate in the interview because I am an employee of CIC. This study ensured that ethical considerations were paramount and appropriate approvals were sought from approving agents at Curtin University in Australia and the CIC in PNG.

Advantages and Disadvantages of the Research

One of the advantages I had in conducting this study is that I have a good knowledge of the coffee industry. This enabled me to make contact with relevant companies, organisations and individuals to make arrangements for the interviews, case studies and focus group discussions. Moreover, I understood the socio-cultural context of the respondents, which facilitated a smooth interview process and data analysis. However, I was also mindful at times of the knowledge that I have of the industry, and that the socio-cultural environment may overshadow or bias my interpretations of the data collected.

The other advantage is that the bulk of the respondents were willing to participate in the interviews. Since I come from the CIC, interviewees generously offered information and also ventured into discussing other problems that affected them in the coffee industry.

The disadvantage was that the interviews were conducted in Melanesian Pidgin and during the translation from Melanesian Pidgin into English, some of the meanings could have been misrepresented, or taken out of context or lost. Therefore, every time translations were made, I ensured that the translations were consistent with the intent of the questions that were used to solicit the data, so the questions guided me during the translation phase of my data. Also, being fluent in both Melanesian Pidgin and English helped ensure the accuracy of the translation.

In summary, this chapter presented the research methodological framework, the origin of mixed methods and its merits for use in the social sciences. The chapter discussed in detail the survey methods and the types of data that were collected from respondents: coffee growers; CIEs, chain leaders; and lead partners in the PNG coffee industry. It further outlined the sources of secondary data and how the data were analysed. The chapter provides the legal, moral and ethical dimensions that underpin this study. Finally, the advantages and disadvantages in conducting this research were also discussed.

The next chapter outlines the period when the coffee industry in PNG rapidly grew to become a major cash crop for growers and the state. As a result, public institutions and policies were also developed to guide and enhance the burgeoning industry.

Note

1. Abandoned or struggling blocks were plentiful; however, in the selection of successful businesses, some plantations met this criterion while I could not identify a single block that was performing well. I therefore selected only the plantations to ensure consistency.

Chapter 4

Green Gold: The Growth of the Coffee Industry

Introduction

Chapter 3 presented the research and methodological approaches employed in this study to investigate the development of the coffee industry in PNG. This chapter begins by describing the growth of the PNG coffee industry. It provides insights into coffee cultivation in pre- and post-independence PNG. The discussion in this chapter is in three sections corresponding to the main phases of development of the industry: the first phase of coffee development from the 1930s to 1960; the second phase of expansion was from the early 1960s to 1990; and the third phase of decline from the 1990s to the present.

Coffee in the Territories

Coffee from the provenance of Ethiopia was first cultivated in New Guinea in the 19th century. In 1884, Britain annexed eastern New Guinea as British New Guinea while Germany administered the northern coastline as German New Guinea (Sinclair, 1995). In 1907, British New Guinea was transferred to Australian administrative control with a subsequent renaming to Papua. Australia assumed control of German New Guinea in 1919, after World War 1. The Highlands region of mainland New Guinea remained unexplored by Europeans until the late 1920s. Both territories were administered by Australia until PNG became an independent state on the 16th of September 1975.

The introduction of coffee in PNG is sketchy as the coastlines of mainland New Guinea, and its islands had contact with many European explorers, seafarers, traders, missionaries, entrepreneurs and colonial government officials. They may have been conduits for ushering in coffee seeds or seedlings into mainland New Guinea or to some of its many islands. However, it is believed that because of the commercial interests of the Germans in New Guinea, it is likely they could be the first to have

introduced coffee (Sinclair, 1995). Commercial production of coffee in the then British New Guinea and German New Guinea protectorates began in the lowlands in the late 1880s (Elworthy, 1967). Some of these plantations were in the Finschhafen area of Morobe Province, and later in the New Guinea Islands. A few years later, coffee plantations of Robusta were flourishing in New Britain and Bougainville in the first wave of coffee plantation development.

In British New Guinea, several Robusta plantations were established as well as an Arabica plantation in the Sogeri Plateau, in the Central Province (Cartledge, 1978; Sinclair, 1995). Severe fungal disease, namely coffee leaf rust (CLR), first appeared in 1903, but officials did not confirm it was CLR as limited knowledge was available about the disease. Villagers involvement in Robusta and Arabica coffee production in the territory was minimal during this period. A few village community groups, cooperatives, individuals, companies and business partnerships owned coffee plantations (Crocombe, 1965). Moreover, the first reported case of villagers earning cash income from coffee was in 1928 in Oro Province when farmers received 229 pounds (Sinclair, 1995). Thus, in the lowlands, Papua New Guineans had owned and operated coffee plantations with a small number of villagers planting coffee in their gardens during the formative years of coffee introduction. During World War I and II many of the agricultural plantations including Robusta coffee plantations were destroyed (Dwyer, 1954).

In 1928, the colonial Department of Agriculture, Stock and Fisheries developed the first experimental Arabica coffee plantation at Wau, Morobe Province (Sinclair, 1995; West, 2012). The Wau coffee plantation had only one coffee variety named Typica; its seeds were sourced from Jamaica in the Caribbean (Cartledge, 1978). A German planter who previously had a coconut plantation on Emirau Island, New Ireland Province later bought the experimental plantation (Sinclair, 1995). Other Arabica coffee seeds of 'commercial varieties' like Arusha, Bourbon, Mundo Novo, Caturra, and Catimor were then introduced. Lutheran missionaries were believed to have introduced the Bourbon variety to PNG in the late 1800s (Cartledge, 1978).

The date of entry of coffee into the Central Highlands is unknown. The first Europeans to make contact with the people of the eastern parts of the Central Highlands were Christian missionaries in the late 1920s ahead of gold prospectors and colonial patrol officers (Brown, 1995). Therefore, coffee is likely to have been introduced by missionaries into the region (Finney, 1970) where it was to become a valuable commodity in the 'last frontier' - the Central Highlands. Coffee plantings on mission stations were established as early as 1935 at Raipinka and Asaroka mission stations in EHP, and Ogelbeng and Korn Farm in WHP. Several more mission stations in the region had coffee trees which were planted for personal consumption only, although missionaries were cognizant of its commercial value. They focused instead on spreading God's Word and converting Papua New Guineans to Christianity.

First Phase of Coffee Expansion, 1930s to 1960

As mentioned earlier, the first phase of coffee expansion began during the 1930s to 1960. The development of the coffee industry essentially occurred once coffee made entry into the populous Central Highlands where it spread very rapidly. Coffee quickly became associated with the region's social, economic and political development.

An experimental coffee plantation was established at the Highlands Agricultural Experimental Station in Aiyura, EHP, in 1937. In the 1940s, colonial government officials began to encourage villagers to plant coffee (McWilliam, 2013). Plantation workers, early European settlers and government officials were responsible for disseminating coffee among villagers. Villagers living near mission stations would have known about the value of coffee from the missionaries or local church layman, and this made it easier in subsequent years for the distribution of seeds and eventual adoption of coffee among villagers. In the 1950s and 1960s, coffee plantations were established and rapidly expanded, largely in EHP.

Early coffee diffusion among villagers

The colonial officials under the Australian New Guinea Administrative Unit earnestly promoted coffee as a cash crop between 1944 and 1945 in the region east of Goroka (Donaldson and Good, 1981; Bourke, 1986). By the late 1940s, some form of

coffee exchange for cash and store goods occurred indicating the beginnings of the 'infant' industry. Finney's (1973) earlier assertion that the coffee industry began in the late 1940s and early 1950s is misleading. In correcting this claim, Bourke (1986) argues that an early start had commenced in the mid-1940s that laid the groundwork for villagers to engage in the cash economy.

Regional expansion

The colonial administrative centre for the entire Highlands region was Goroka. It was also the site of the commencement of the coffee industry and to this day, Goroka remains the coffee hub of PNG. Coffee production started in Goroka and quickly spread to Kainantu to the east and the provinces to the west including Simbu, WHP, Enga and Southern Highlands Province (SHP).

The colonial administration believed that coffee would facilitate economic development in the Highlands of PNG as coffee was already thriving on experimental and observational plots. Diana Howlett (1962), in her work conducted in the Goroka area, confirms that coffee appealed to colonial administrators and early settlers as a cash crop because it could generate high returns per unit area of planted coffee.

Highlands plantation development

The coffee plantations laid the early infrastructure in the 1950s and 1960s for the smallholder sector to grow in the Highlands. Finch (1991) claims that plantation development boosted marketing opportunities, hence, enthusiasm for coffee cultivation among villagers gained in momentum. He gives further examples of villagers in the Tairora area, EHP, having small coffee plots in the 1950s. During the plantation development phase, many rural areas were opened up with access roads, making government services in urban centres accessible to villagers. Also, the bulk of the plantations acted as mini-economic hubs in rural areas. For example, during pay-days, villagers and women would sell garden produce and trade store goods to plantation workers. Some plantations also developed wet and dry coffee mills that processed smallholder as well as plantation coffee (Plate 4.1).



Plate 4.1: A coffee factory complex at Nomba Coffee Plantation, Upper Asaro, EHP in 1979 (Source: John Fowke).

Leahy's Erinvale

The establishment of Erinvale Coffee Estate near Goroka in 1948 was the start of the second wave of coffee plantation development in PNG, and this was the first for the Central Highlands. Jim Leahy¹, in a logistics role for his brothers' business interests and adventures, developed Erinvale plantation (Donaldson and Good, 1988; Sinclair, 1995). Jim Leahy also opened the first commercial store in Goroka and the region to serve the European community and the local people (Finney, 1973). The exchange of cash for goods began in earnest for villagers who had been receiving wages as casual workers or cash payments for road construction or proceeds from land sales to Europeans for coffee or livestock production. Interestingly, the first exchange of village coffee in the Central Highlands in the late 1940s was not paid in cash but with store goods which took place at government stations (Bourke, 1986).

The Highlands Farmers and Settlers Association (HFSA) was a political association which was instrumental in shaping the early development of the coffee industry. The HFSA's main objective was to protect the interest of members in relation to coffee industry development in PNG. It was established in 1953, and Jim Leahy became the first president. HFSA had branches throughout the Highlands region including an

office in Wau, Morobe Province. The organisation's membership comprised of European planters and prominent local coffee entrepreneurs like Sir Sinake Giregire, Sir Dupre Dumun, Bono Azanifa and Kofikai Sabumei. Some of these 'big men' used their association with HFSA to launch political careers at the national level by entering the then House of Assembly, now the National Parliament.

In the early 1950s, Dan Leahy Senior, Jim Leahy's sibling, developed a coffee block at Kuta, WHP. However, Dan Senior discovered that coffee struggled to grow at Kuta where it was cooler, and thus he identified a location at a lower altitude in the Nebilya Valley where it was warm and more conducive to growing coffee. There he established the Korgua Coffee Plantation (Sinclair, 1995). At around this time, Bobby Gibbes, an aviator, had begun developing Kimel (Box 7.3) and Tremearne plantations in the Waghi Valley. These were some of the pioneer European planters who established commercial coffee plantations. The arrival of many more European planters in the 1950s and 1960s resulted in plantation development in EHP and WHP expanding rapidly. The early European planters were from diverse backgrounds: drivers, clerks, alluvial miners, patrol officers and pilots among them. The EHP and WHP continue to host the bulk of the plantations in PNG today. A small number of plantations are also found in Wau, and SHP.

'Green Gold' excitement

In 1952, Jim Leahy received an excellent return on his investments in coffee, and his coffee sale was heralded as Green Gold in the mass media in Australia (Sinclair, 1995). The excitement began with a shipment of coffee from Erinvale Estate to Sydney where Jim Leahy received a high price that was beyond his expectations. A reporter from Melbourne picked up this intriguing story, and it received extensive media coverage in Australia (Sinclair, 1995). The story prompted an influx of new European investors to PNG, who were keen to cultivate coffee (McWilliam, 2013). The newspaper reporter soon made a fact-finding trip to the Central Highlands to confirm these developments and more publicity ensued. Some European planters were gold prospectors who turned to coffee production, so the Green Gold connotation resonated. Prior to coffee's emergence as a high return investment, New Guinea had earlier been famous for the 1920-1930 Gold Rush in Wau and other parts of the territories. Coffee became the new Gold Rush.

Land acquisition for plantations

Many Europeans came to the Central Highlands and purchased land to develop coffee plantations. The European settlers acquired customary land through the colonial administration from local villagers. In some cases, villagers invited Europeans to come to their area and establish plantations on their land (Finney, 1970). The reason for the invitation was to show rival tribes that the plantation, a wealth generating enterprise, existed on their land, thus having prestige significance.

From 1952 to 1955, a vast area of fertile customary land for agricultural development was alienated for coffee plantation development in the EHP (Finney, 1973). Much of the alienated land was of significance in the communities where these plantations were established. Some portions of land were former battlefields, unused land, disputed land, or swampy marshland. The colonial administration's intentions were for enemy tribesmen to work together on these plantations so that peace efforts were achieved through these interventions (Sinclair, 1995; McWilliam, 2013). The warring warriors mutually benefited from the commercial development by receiving income from the land which was once a battlefield or disputed land and also by working on the plantations and earning wages.

The very first land alienated for agricultural development in the Central Highlands was in 1947 (Howlett, 1962). The early European settlers paid in cash and other items to the landowners for the land. The *luluais*, *tutuls* and 'big men' facilitated negotiations between colonial administrators, European settlers and customary landowners to acquire the land (Brown and Ploeg, 1997). These traditional leaders were also responsible for distributing the land payments to customary landowners (Donaldson and Good, 1981; Brown and Ploeg, 1997; see also Chapter 5). Before the First World War, tobacco, axes, knives, and salt were used to purchase land use rights (Crocombe, 1964). The majority of coffee plantations established at the time were on alienated state land that had 99-year state agricultural leases.

The influx of European settlers became a concern for the colonial administration. Thus, a moratorium was issued to restrain further land alienation so that sufficient land would be available for villagers and future generations to plant coffee and food crops. These restrictions were initiated in 1953 and became active in 1954 (Finney,

1973; McWilliam, 2013). Stringent criteria were introduced to ensure proper procedures were employed in alienating customary land from the landowners. This policy, at least, reduced the rate of land alienation which had become rapid.

Smallholder development

In the early phase of coffee development, the eagerness of villagers to cultivate coffee was evident. Seedlings and seeds were transacted by unlikely means, such as stealing from plantations or obtaining them through networks of contacts who knew the potential of the crop. For instance, Bimai Noibano from Watabung area, EHP, carried seeds from Aiyura, EHP, to his village, approximately 160 km, in the hope of establishing a nursery. However, his first attempt failed (Finney, 1987). Later with the assistance of the administration, Noibano established a nursery and a coffee garden in his village and helped other villagers to cultivate coffee. The keenness of villagers to plant coffee was then gaining momentum. Finney (1973; 1987) reveals that some European planters also assisted villagers to plant their coffee gardens. For example, Jim Taylor, a former district commissioner for the Central Highlands supported Hero Paito, a villager from Gahuku area near Goroka to plant his coffee garden.

The colonial administration's efforts to promote coffee among villagers sometimes lacked proper planning. One of the many colonial agricultural officers, Robert Cottle, who had earlier worked at the Highlands Agricultural Experimental Station in Aiyura was appointed in 1952 and had a significant influence on coffee development. He sometimes acted contrary to his superiors' instructions. He was charged with promoting passionfruit (*Passiflora edulis*) but instead was instrumental in kindling the interests of villagers to plant coffee (Finney, 1973; McWilliam, 2013). Cottle saw that the villagers would benefit from coffee cultivation and, thus, decided to focus on promoting coffee which had a better economic return than passionfruit (Finney, 1973). Although Howlett (1962) and McWilliam (1996; 2013) assert that colonial administrators promoted coffee, their efforts were sporadic. Many more examples of the colonial administration's poorly planned initiatives were part and parcel of the early growth of the coffee industry (Cartledge, 1978). For example, the colonial administration established several demonstration coffee gardens and nurseries (Brown, 1972). However, the demand for coffee seedlings from villagers far

exceeded the expectations of the colonial administration. Finney (1973) argues that status symbolism, an indigenous value, was apparent in the rapid spread of coffee planting. The competition among villagers to outpace each other in growing coffee accelerated its diffusion and establishment. Thus, it was the sheer enthusiasm of villagers to plant coffee, rather than well developed and coordinated planning by the colonial administration that better explains the swift uptake of coffee by villagers. Land area devoted to coffee planting jumped from 957 ha in 1954/55 to almost 30,000 ha by 1972/73 (Table 4.1).

Table 4.1: Area of coffee planted for selected years from 1954/55 to 1972/73.

Year	Area (ha)		
	Smallholder	Plantation	Total
1954/55	227	7,30	957
1959/60	4,364	2,769	7,133
1964/65	14,179	4,949	19,128
1969/70	23,937	6,082	30,019
1972/73	22,901	7,050	29,951

(Source: Adapted from Cartledge, 1987:316)

The enormous demand for seedlings was of concern to early European planters in two ways (Stewart, 1992). First, European planters feared that if more coffee were planted, there would be over-production, which would be above the coffee quota and thus affect exports. From the 1950s to 1960s, Australian, and PNG coffee was sold together under Australia's quota (Cartledge, 1978). Second, European planters were worried that labour for their plantations could dwindle if villagers had their own coffee trees to look after.

By the end of the 1960s, efforts to promote and expand coffee planting were curtailed, and the colonial administration's focus shifted to encouraging villagers to diversify into raising livestock and producing alternative cash crops such as chilli (*Capsicum frutescens* L.) and cardamom (*Elettaria cardamomum*). The European planters influenced the decisions of the colonial administration to limit coffee extension among the villagers (Stewart, 1992). The reduction in efforts to promote coffee resulted in a decrease in coffee production from the smallholder sector in 1967/68 (Munnul and Densley, 1977). However, the smallholders were determined, and coffee production picked up again the following year. Thus, the early establishment of the coffee industry was turbulent with some sectors of the 'infant'

coffee industry not wanting the involvement of villagers in coffee production. Despite these obstacles, the coffee industry went from strength-to-strength and grew rapidly in the 1960s and 1970s.

Second Phase Expansion, 1960s to 1990

Village coffee production intensified through the 1960s (Figure 4.1). The massive surge in smallholder production led to rural coffee mills purchasing coffee from villagers. During this second phase of expansion, European plantations on leasehold land were sold to landowner business groups in the 1970s; coffee blocks were developed on customary land in a lease-lease back arrangement. Relevant state institutions were also established to support the overall growth of the industry. However, in the late 1980s, the growth of the coffee industry began to slow.

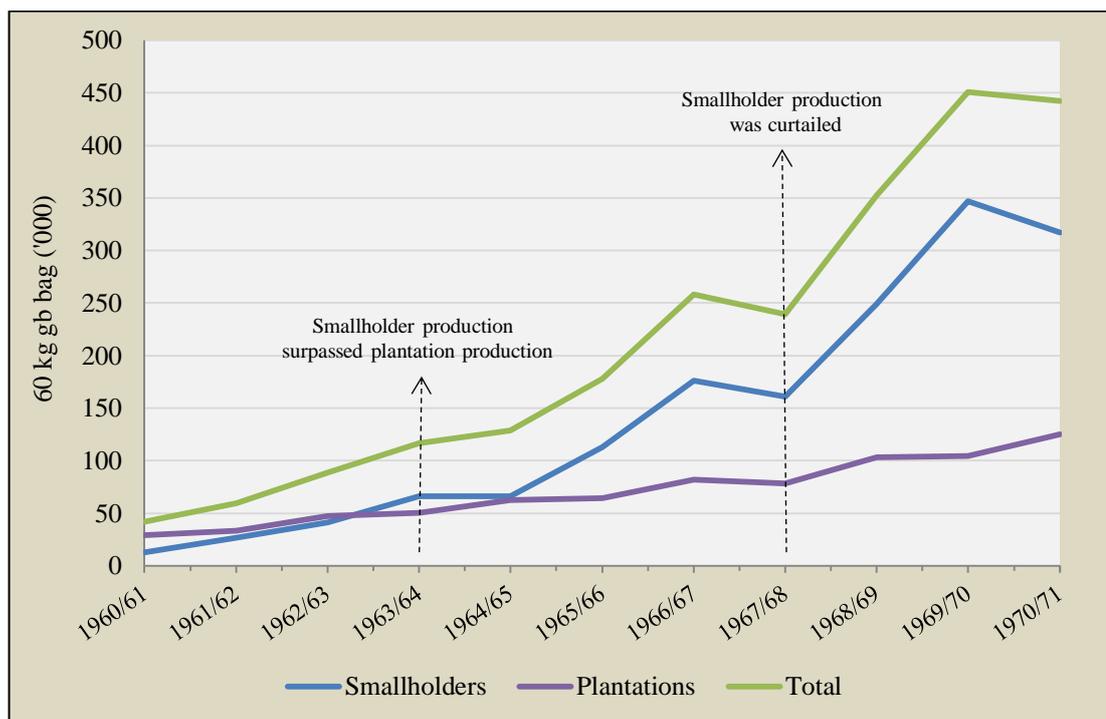


Figure 4.1: Coffee production by smallholders, blocks and plantations from 1960/61 to 1970/71 (Source: CIC data).

Expansion in smallholdings

By 1964, the production from smallholders surpassed plantation production. In 1965, the Highlands Highway was opened, and this accelerated expansion of the coffee industry. The highway opening illustrated the importance of road access to transport coffee to the marketplace as the improved infrastructure had a major impact on

increasing coffee production. Alongside improved infrastructure, coffee mills situated in rural areas provided the market access for villagers in the communities to sell their coffee.

Indigenous plantation ownership and management

In the 1970s, two important agricultural policies were executed to encourage Papua New Guineans to engage in large-scale commercial agriculture which was until then dominated by European planters especially for plantation production, coffee processing and exporting (Brown and Ploeg, 1997). These policies were the Plantation Redistribution Scheme (PRS), which operated from 1974 to 1980, and the Twenty Hectare Development Scheme (THDS), which ran from 1979 to 1985. In the booming industry, the PRS and THDS policies facilitated citizens' acquisitions of European-owned plantations and the development of new coffee blocks respectively. These policies were intended to involve landowner groups and local corporations, although some individuals also benefited from the schemes. As a result, the schemes boosted coffee production (Figure 4.2).

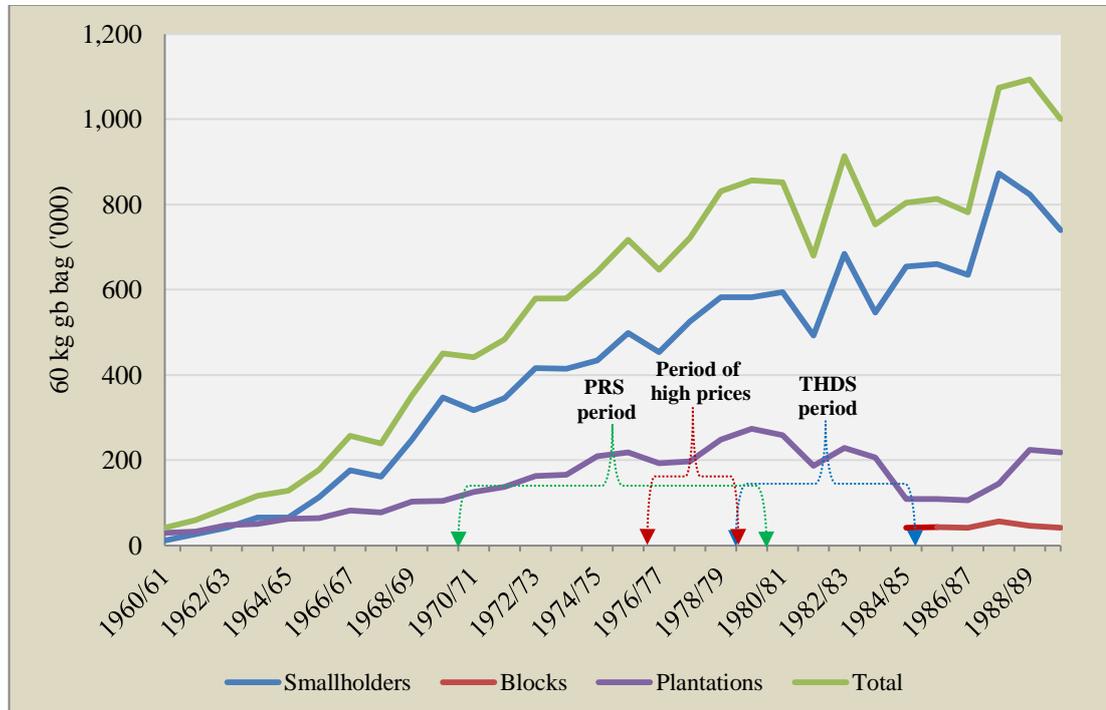


Figure 4.2: Coffee production by smallholders, blocks and plantations from 1960/61 to 1988/89 (Source: CIC data).

Locals acquiring of plantations

The PRS implemented under the Land Acquisition Act was conceived primarily to dispel uprisings in certain Coastal regions particularly on the Gazelle Peninsula, ENBP where locals were short of land because vast areas of agricultural land had been alienated for plantations during the colonial period (Sinclair, 1995). Moreover, secessionist movements were gaining momentum in the Gazelle Peninsula and Bougainville, and thus, the new government had to allay some of these fears by responding to their demands (Turner, 1986). Sinclair (1995) confirms that the PRS initiative was largely in response to political demands rather than economic factors. According to an Australian Centre for International Agricultural Research [ACIAR] (1987a, b) report, the PRS policy had two main goals: to return the customary land to traditional landowners and to engage Papua New Guineans in commercial enterprises. Consequently, priority was given to traditional landowners to acquire the plantations through their business groups (Ketan, 2004). Ketan further claims that expatriate owners were paid reasonably good prices for the plantations through the scheme. The government met the selling price and guaranteed the equity share of purchasing by landowner groups. The landowner groups were required to provide a minimum equity (10-15%) to buy the plantations. Munnul (1981) reports that landowners were unable to meet the equity requirements, although the executing agencies still accepted whatever amount they contributed. By 1979, 61 coffee plantations were acquired through PRS while some coffee plantations were transacted outside of the Land Acquisition Act. In total 68 plantations were sold to landowner groups and local corporations (Table 4.2).

Table 4.2: Total number of coffee plantations which were sold under the PRS from 1971 to 1979.

Province	No. of plantations	Sold under PRS	Period of sales
EHP	70	30	1971-1979
WHP	40	24	1974-1979
Morobe	14	7	1974-1979
SHP*	16	-	-
Total	140	61	

*In SHP, 14 coffee plantations were owned and operated by the provincial government who managed them on behalf of landowners (Source: Mitio, 1981).

The purchased plantations had expatriate managers employed through the management agencies as part of the acquisition arrangements under the PRS (Gimbol, 1988). In some cases, former expatriate plantation business managers and planters were engaged to manage the recent acquisitions for landowner groups. The acquired plantations operated successfully for a few years, and then many began to encounter management problems (see Chapters 5 and 7). These problems became overwhelming when management agencies pulled out from providing advisory services. However, in the first couple of years of ownership, some plantations had begun to repay their loans. The repayment of loans was against a backdrop of exceptionally high coffee prices in the late 1970s.

Development of mini-plantations

The THDS policy came into operation about the time when the PRS was ending. Villagers who had not participated in the PRS because there were no nearby plantations wanted comparable developments in their areas (Gimbol, 1988). The government, with optimism in the air for economic development, wanted to involve as many villagers as it could in the market economy, and therefore embraced the THDS concept and funded the project. From 1979 to mid-1985, 3,500 ha of coffee blocks were developed with loans totalling about K11 million (Gimbol, 1988).

The beneficiaries of the THDS used their customary land to develop mini coffee plantations. The name of the scheme is misleading as the development of the block depended on land availability and size of land. Blocks developed through the THDS ranged from 5-29 ha. Under the THDS, the customary land was converted to a leasehold title for a term of 15-25 years. By converting customary land to leasehold title, farmers could access bank loans (McWilliam, 1988). Large areas of contiguous land to develop coffee plantations were dwindling in EHP, although WHP and SHP still had land to expand coffee plantations and blocks. Smallholders were encouraged to form groups along family or clan lines and collectively make customary land available to register it as leasehold (Gimbol, 1988). Thus, family or clan customary land formerly of a communal nature was registered and leased to the state who in turn leased it back to owners to develop the land in a lease-leaseback arrangement.

In the SHP, the approach for implementing the THDS was unique. The provincial government took control and developed blocks of 30-40 ha in each of the districts (Mitio, 1981). It had a management agency, the Southern Highlands Management Agency, which handled the management of the blocks. Local landowners became shareholders by making land available while the respective LLGs were the major shareholders.

The THDS had an integrated approach in which land, finance, and management came together as a package. The agreements were tripartite in nature where it involved the bank, project owner, and the management agency. The Agriculture Bank (now the National Development Bank)², provided 95% of the loans for the scheme, and other commercial banks provided the balance. Loans ranged from K20,000-200,000 depending on the size and physical status of the site (Gimbol, 1988). The scheme stipulated that block shareholders should contribute sweat equity as part of their contribution to the development of the block (see Chapter 5). The government and the World Bank made funds available through the banks.

Soon after the introduction of the PRS and the THDS, the government recognised the lack of competency among Papua New Guineans to manage plantations and blocks. To address this, the state created institutions to help build management skills and knowledge of novice managements. In the mid-1970s, the National Plantation Management Program (NPMP-1976) and the National Plantation Management Agency (NPMA-1977) were established (Turner, 1986). The NPMP was to provide training and equip novice business managers with the relevant knowledge and skills required to manage the plantations (Pondikou, 1981). The training courses were initially offered in Rabaul for New Guinea Islands, and later, in 1979, a unit opened in Mt Hagen for the Highlands region. In 1980, another unit opened in Port Moresby for the Southern region. Since the training conducted through NPMP would take time before trainees could work, NPMA filled the void by immediately providing practical advice, training and mentoring for local plantation managers (Paliau, 1981). New management agencies were established to participate in the lucrative business of advisory services to the managed subsector. Among the management agencies, the Smallholder Rural Project Management (SRPM) performed better than many management agencies. The SRPM was a subsidiary of the Agriculture Bank and

operated out of Goroka, with offices in other centres in PNG. During its existence, many of the bank loans given for coffee development were repaid.

Consolidating industry governance

The rapid growth of the PNG coffee industry in the first phase and the second phase required proper governance systems. In the 1960s, the Department of Agriculture, Stock and Fisheries performed regulatory, research and extension functions for the coffee sector before the establishment of coffee institutions. However, with the expansion of the coffee industry, it became apparent that an agency to regulate and oversee the development of the coffee industry was required. Thus, the Coffee Marketing Board (CMB) was established. Several other service organisations also began during this phase (Table 4.3).

Table 4.3: Coffee industry-based service agencies established from 1964 to 1991.

Year established	Organisation	Purpose
1964	CMB	<ul style="list-style-type: none"> • Established at the behest of HFSA • To regulate and promote marketing • Participated at International Coffee Organisation (ICO) and International Coffee Agreements (ICA) meetings
1976	Coffee Industry Board (CIB)	<ul style="list-style-type: none"> • It subsumed the responsibilities of CMB • Enforced parchment and cherry standards • ‘Objective criteria’ for quotas were enforced
1986	Coffee Research Institute (CRI)	<ul style="list-style-type: none"> • To carry out scientific research and develop innovative approaches to coffee farming
1987	Coffee Development Agency (CDA)	<ul style="list-style-type: none"> • Established to counter the CLR epidemic • Later assumed extension functions to support the growth of the coffee industry
1991	Coffee Industry Corporation	<ul style="list-style-type: none"> • The CIB, CRI, and CDA merged to form the CIC. It assumed responsibilities for research, extension and regulation of the industry

Coffee Marketing Board

The CMB was mandated with statutory powers and functions in 1963 and became operational in 1964 to buy and sell coffee, including the promotion of PNG coffee (Fleming and Antony, 1993). The CMB regulated the coffee industry by registering exporters, coffee agents, processing facilities and inspecting mills for compliance (Cartledge, 1978). In 1971, with minor changes made to the 1963 ordinance, the CMB introduced ‘coffee dealer plates’. This policy restricted foreigners to certain

areas of the coffee business. A remarkable achievement for the CMB was the role it played in ensuring the industry was localised. Importantly, from 1964 to 1976, the CMB adequately represented PNG in ICA discussions on coffee quotas for PNG. The quota system, which the ICA imposed, was to control exports from producing countries and to ensure reasonable coffee prices reached producers. The CMB managed quota requirements, and excesses were kept in stock for future exports. Funding to enable the execution of the CMB's regulatory functions came from a levy of 0.5 cents/lb on coffee exports (Fleming and Antony, 1993).

Coffee Industry Board

In 1976, the CMB statutes were revised to establish the CIB Act (1976) with wider powers than its predecessor. The CIB took on more responsibilities, which included setting new standards for cherry and parchment buying so that the quality of the coffee was upgraded and high-value coffee was traded. The former coffee quality control mechanisms were initiated using the CIB Act (Fleming and Antony, 1993). Also, in 1978, guidelines for the use of the Coffee Industry Fund (CIF) were established. The CIB removed restrictions on Coffee Dealing (the Act of 1974) as it reduced competition in the sector. The CIB continued participating in ICA negotiations for quotas. Furthermore, the CIB with other coffee producing countries were able to convince the ICO to adopt the 'objective criteria' for quotas in which it allowed for producing countries to state their potential production as its quota for the following year (Fleming and Antony, 1993). The adoption of objective criteria was a significant achievement for the PNG coffee industry as it was already producing more coffee than its quota.

Coffee Research Institute

As the industry developed, prominent people in the industry and the government desired to establish a coffee research team, and, therefore, in 1986 appropriate legislation was passed in Parliament to establish the PNG CRI. Since the establishment of the CRI, and up to the early 1990s, the CRI was known for its quality research outputs and its international collaborations. The CRI also made direct representations to the government for its research and development funds, ensuring its programs were well-funded. In the early life of the institute, the bulk of its research activities were focused on plantation management practices. However,

over time, its research focus shifted to smallholders as it increasingly became apparent that smallholders dominated coffee production in the country.

Coffee Development Agency

In 1987, a year after the CRI was established the CDA was created in response to the outbreak of CLR. The primary intention for CDA creation was to contain the spread of CLR and ensure PNG continued to produce coffee without the disease reducing its exports. Thus, a massive coffee rehabilitation program took place with financial support from the government and donor agencies. These efforts included farmer training, field days and awareness on the radio. Many smallholders directly benefited from this assistance. The CDA's regular presence and contact with farmers are a testimony that remains to this day and farmers revere the CDA's interventions. Farmers' appreciation of the CDA's effort was because of the ongoing contact CDA staff had with coffee growers.

At the time, there was a void in extension services so when the CDA was formed it filled the vacuum (Fleming and Antony, 1993). An essential function lacking in the coffee industry was farmer training in extension programs, so the CDA began to roll out training activities. During that period, extension officers were present in all coffee growing districts in PNG.

Coffee Industry Fund

The CIF, or reserve fund, had its beginnings in 1966 as the Coffee Industry Stabilisation Fund during the reign of the pioneer CMB. The supply and demand in the world markets drove price fluctuations, which were beyond the control of the coffee farmers. Thus, the purpose of the fund was to minimise these effects (Kiele, 1987). Also, oversupply in the market led the board to initiate the Price Stabilisation Scheme in 1968 to assist growers to stockpile their coffee. Stockholding assisted in moderating price fluctuations. During the life of the CIF, necessary policy changes were effected to accommodate changes of the times (see Munnul and Densely, 1977; Bodman and Jolly, 1987; Kagim Consultants Ltd, 2002). Levy collections on coffee from exporters financed the operations of coffee entities (McWilliam, 1996). In the late-1980s, different coffee institutions such as the CIB, CRI, and CDA, which served the industry, existed as independent agencies and collected separate levies to

fund their operations. In 1986, the CIF reached K120 million (Fleming and Antony, 1993). The last bounties were paid out in 1997 (Ricky Mitio pers. comm., 19/05/15).

Third Phase Expansion, 1990s to 2015

In this final phase of expansion from 1990 onwards, coffee production increased and then plateaued. Coffee production in the 1990s and mid-2000s averaged 1 million bags (60 kg gb). Since then production seems to be on a downward trend (Table 4.4). The coffee production record from 2011 was a record high for the industry.

Table 4.4: Exports and Kina value from 2010 to 2015.

Year	Exports (60 gb bags)	Value (PGK)
2010	883,567	520,932,672
2011	1,488,752	926,462,961
2012	808,456	478,494,162
2013	911,598	336,680,345
2014	755,702	450,289,461
2015	711,483	393,545,950

(Source: CIC records)

The CIB, CRI, and CDA were merged in 1991 to form the CIC. The purpose of the merger of the separate coffee agencies was to bring forth efficiency and effectiveness to service delivery within the coffee industry. After the creation of the CIC, four divisions were established: the CIB became the Industry Affairs Division (IAD); the CDA was renamed the Extension Services Division (ESD); the CRI maintained its identity; and, the Corporate Services Division (CSD), a new division to support the technical divisions of the CIC. The ESD's primary extension focus was on the smallholders, thus in 1994 the Technical Management Advisory Services (TMAS) was created to support the managed subsector. In a restructure of CIC in 2002, IAD and CSD were amalgamated to form Industry Operations Division while ESD and CRI were merged to create the Research & Grower Services Division (RGSD). Despite the expansion and consolidation of regulatory and governance systems, signs of a slowdown in coffee production began to appear in the late 1980s (Figure 4.3). Since then, the overall performance of the PNG coffee industry has been regression. To address these initial signs of decline many impact projects and institutional reforms were initiated in the 1990s and 2000s by the coffee industry and the government. One of the major institutional reforms was the establishment of the CIC.

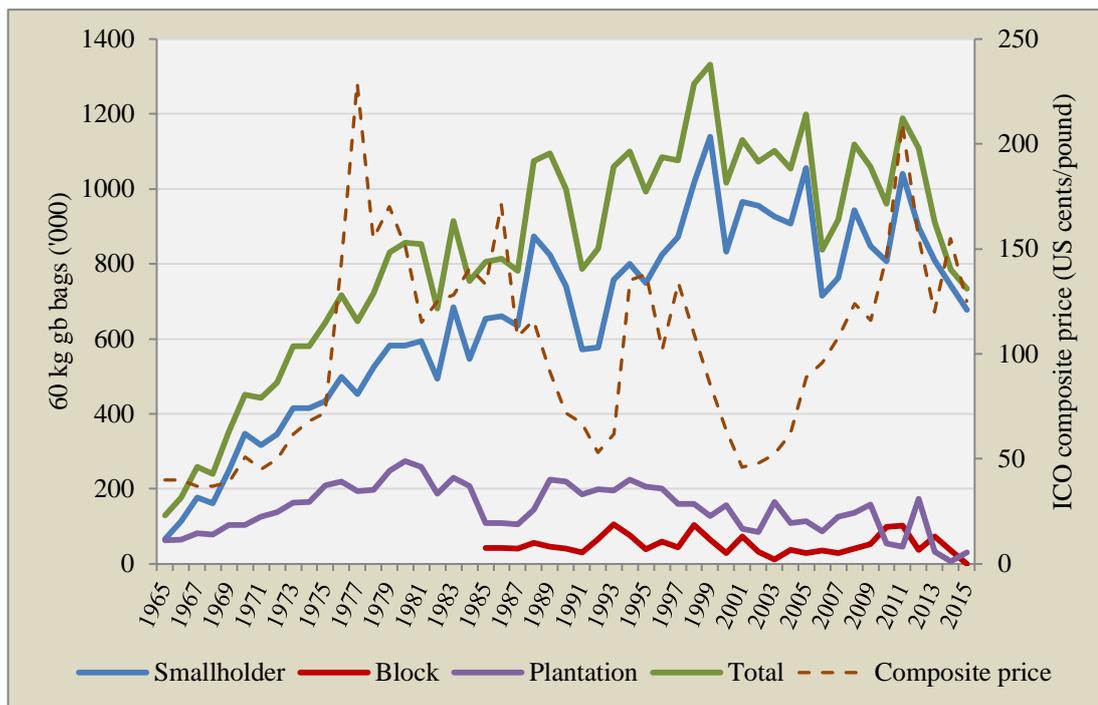


Figure 4.3: Coffee production and ICO indicator prices from 1965 to 2015 (Sources: CIC and ICO data).

National and institutional policies

Since the 1990s, two sectoral policies have been conceived and implemented to consolidate the agriculture sector and the coffee industry. These include the NADP (2007-2016) and the PNG Coffee Industry Strategic Plan (2008-2018; 2013-2018). These plans are cognizant of higher national visions and goals enshrined in the National Development Strategic Plan 2030, and the Vision 2050³.

The coffee industry recognised the stagnation of the industry, especially the low productivity of the smallholder sector. Since the 1990s, several policies and programs were implemented to stimulate coffee production in PNG. Also, some of the past and ongoing coffee industry programs and projects aimed at improving production include: partnership arrangements with provincial governments, districts and resource companies; nursery projects; credit scheme; freight scheme; cherry ban; school coffee curriculum; grower group mobilisation; village coffee rehabilitation and Productive Partnership for Agriculture Project (PPAP) which are discussed in detail below.

The agriculture plan

The NADP attempted to coordinate agricultural development in which coffee was one of its main agendas. In 2007, the NADP was launched with much fanfare for the agriculture sector (Figure 4.4). This plan was to ensure a sector-wide approach to agricultural development, and it was initiated with good intentions (DAL, 2007). It required coordination, monitoring, and evaluation at the national level. Because of the resource boom in non-renewal resources, it was envisioned that some of the proceeds would be invested in the agriculture sector (Mbabu and Hall, 2012).

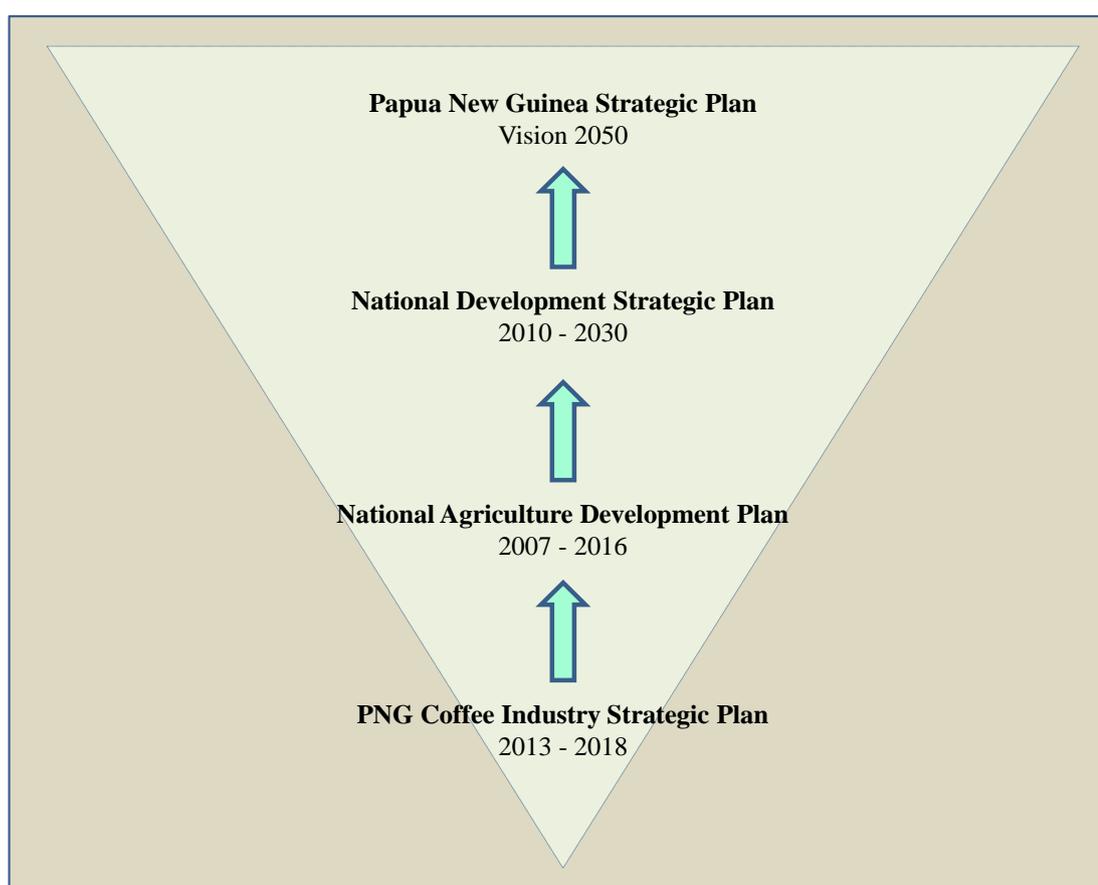


Figure 4.4: The different levels of development goals in which the coffee industry strategic plan is embedded.

One of the NADP's development objectives was to reduce production costs and enhance the quality of agricultural produce for domestic and overseas markets. The NADP funds were originally administered by the DAL and then handed over to the National Planning Department for management, allegedly because there were anomalies in the screening and disbursement of funds by the DAL. At the start, funds

were expended by the two departments when proposals submitted were approved. In later years, it was channelled directly to all districts for agricultural development.

Coffee industry strategy

The PNG Coffee Industry Strategic Plan (2008-2018) was created to promote further development of the coffee industry. The plan stipulates that the CIC become a facilitator rather than the leader of the industry so that value chain actors can develop the coffee industry through productive partnerships. The industry plan is partially being implemented. The approach used in framing this plan was participatory and involved the majority of stakeholders in the coffee industry in its conception and development. The plan was put together over a seven-year period (Mbabu and Hall, 2012). The PNG Prime Minister launched the revised coffee plan (2013-2018) in March 2015. Other corporate plans were developed for the coffee industry for the periods 1993-1997 and 1998-2002, with little information about how they would support and further boost the expansion of the coffee industry.

Collaborations for coffee development

Many coffee-producing provinces in PNG had memorandum of agreements with the CIC to continue development of the coffee industry in their provinces. Likewise, provinces that did not produce coffee planned to engage its people in coffee production also became partners with the CIC, these included New Ireland, Milne Bay, East New Britain, and the Autonomous Region of Bougainville.

Since 2010, the state has shifted financial resources towards the districts (Walton 2016); thus there was a need for the CIC to foster partnerships with districts. In response, the CIC has shifted to partnering with those districts that are willing to invest in coffee development. Since 2014, the CIC has publicly published an open tender for coffee growing districts to apply for funds and partner with the CIC in coffee development. To apply, a district must be able to contribute counter funding (K1 on K1 basis) for coffee rehabilitation in their districts. The issuance of export licences was also tied to the partnership with districts. The CIC also partnered with resource companies (mining) and civil society organisations (CSOs) to advance coffee development.

Nursery projects

The nursery projects have always been part of many coffee industry interventions which began during the CDA era. After the formation of the CIC, nursery projects continued as part of its extension programs (Plate 4.2). In 2000, a CRAC meeting stated that there were 650 nurseries spread across 13 coffee-growing provinces, producing 364,050 seedlings.



Plate 4.2: A CIC managed coffee nursery at Kimel, in Banz, Jiwaka Province.

In the recent past, nursery activities were part of village coffee rehabilitation and coffee curriculum projects. Recently, two large nurseries were established in Jiwaka and Simbu provinces, and the CIC is managing them with landowner groups. Mitio (2014), in reviewing the coffee price support given by the state to the sector recommended that part of the funding should be used in developing nurseries. However, past nursery efforts by the CIC have been unsustainable and produced mixed results. Although significant amounts of seedlings have been raised in nurseries, distribution remains a problem (CIC, 2010).

Smallholder credit facility

The Coffee Credit Guarantee Scheme (CCGS) was initiated in 1996 by the state as part of the Smallholder Agricultural Credit Scheme in 1997 to support smallholder farmers with credit provision (CIC, 2005a; 2006). The implementation of the Smallholder Agricultural Credit Scheme was a tripartite agreement between the DAL, the Rural Development Bank (RDB) and the CIC. The scheme was managed by the CIC while the RDB was the fund manager. In 1996, the government allocated K2.8 million to the coffee subsector and since then 1,285 coffee farmers received loans totalling K1.2 million. By 2000, the CCGS covered 11 coffee-growing provinces (CIC, 2000). The scheme was a noble initiative to assist smallholders who lacked the capital to invest in their coffee farms. Although loan disbursement and repayments ceased in 2002, the CCGS office remained until 2012. A group marketing project funded by AusAID was piloted with CCGS farmers in 2005. It was designed to ensure farmers collectively trade their coffee and bargain for better prices. Farmers who participated in the scheme as a group earned between K0.50-1.00/kg of parchment sold collectively, which was about 20-30% more than if the coffee was sold at the roadside (CIC, 2008b). The CCGS farmers are now independent of CIC and are operating as a cooperative group.

Freighting coffee from inaccessible areas

The Freight Surety Scheme was another incentive program designed to assist smallholders in airlifting their coffee from remote locations to markets (CIC, 2008b). The scheme began as the Freight Subsidy Scheme in 1999 and ran until 2001, with an annual budget of K400,000. Under the subsidy scheme, 40% of the cost was borne by the scheme while 60% was met by participating farmers. In August 2003, its *modus operandi* changed to a Freight Surety Scheme. The state, through the Public Investment Program, has supported the scheme since 2004. From 1999 to 2015, the scheme freighted 3,709 tonnes of green bean worth K12.8 million. The total cost of transportation during that period was K5.4 million while remote farmers have earned K7.4 million since the scheme began. In 2005, the Green Revolution Policy engaged the PNG Defence Force to assist in the freight program. The Defence Force planes and third level airlines facilitated the freighting of coffee. However, the partnership with the Defence Force was short-lived because of high costs in mobilising its aeroplanes to airlift coffee.

Cherry ban policy

Smallholders and plantation and block owners were losing cherry through theft, and this became a disincentive to growers. Consequently, in 2008, to address rampant cherry theft and coffee quality problems that emerged during the sale of cherry, a Cherry Ban Policy was initiated. The policy restricts cherry buying and only allows buyers who have obtained cherry-buying permits from the CIC to engage in the cherry trade. The cherry trade ban is still active and operates as a self-regulated policy, which means that coffee industry stakeholders and village court officials act in concert to implement the policy. The CIC was to have facilitated the policy implementation by providing advisory and technical support to stakeholders. However, the stakeholder partners were not enforcing the policy and expected the CIC to implement it. Furthermore, there was inconsistency in regular budgetary support from the CIC, and this derailed the execution of the ban and thus its enforcement is weak.

Coffee curriculum

A primary and high school coffee curriculum was launched in 2009. The intention was to expose upper level primary and secondary students to knowledge and techniques on coffee farming through the education system. However, with the departure of senior officers overseeing the project, the CIC management has been unable to continue funding this innovative project. School children were to be targeted so when they left school early, they were equipped with skills and knowledge to return to the land and engage in coffee production.

Grower group mobilisation

The Coffee Growers Support Services adopted the farmer demand-driven extension (FDDE) model, and the approach required farmers to work in groups. The Growers Support Services was able to mobilise large numbers of coffee farmers around the country using the participatory rural appraisal planning (PRAP) methodology (see Api *et al.* 2009). PRAP is a participatory process in which farmers identify their own problems that constrain them in coffee production. CIC often organises targeted training based on farmers' knowledge gaps pertaining to coffee husbandry practices, processing, marketing and book keeping. Many farmers benefited from the training they received. According to a recent review of extension services in the CIC, a total

13,211 farmers of which 2,318 were female farmers have been trained (Murray-Prior and Padarath, 2013). They reported that from 2005 to 2012, a total of 160 grower groups have undergone PRAP, of which about 51% of the groups received training. However, cost per head was high and a very small percentage of coffee farmers was reached.

Village coffee rehabilitation

The Village Coffee Rehabilitation program began in 2009 through NADP funding, which totalled K3.9 million (CIC, 2009). The project aimed at rejuvenating the coffee tree stock by pruning, replanting, shade control, and infilling of seedlings in smallholder gardens. The coffee rehabilitation project involved four districts in three provinces: Anglimp-South and Nondogul (Jiwaka); Kundiawa (Simbu); and Obura/Wonenara (EHP). A RGSD report for 2009 reported the following achievements. In the year ending 2009, a total of 6,329 smallholder gardens were rehabilitated with a tree population of more than 5 million (approx. 1,989 ha). Also, a total of 11 coffee blocks and seven plantations were rehabilitated where the total tree count was 200,000 (approx. 312 ha). A total of 60 nurseries were established throughout the four participating districts with each nursery having a capacity to produce 10,500 seedlings annually (CIC 2010).

Partnership for Productive Agricultural Project

In 2010, the Partnership for Productive Agriculture Project (PPAP) was launched with the intention for stakeholders in the industry to foster productive partnerships (CIC, 2010). The project aims to assist in building the capacity of chain leaders, lead partners and farmer groups and is consistent with the coffee industry strategic plan. Farmers are supplied farm inputs, training and in some cases where infrastructure was required, such as water supply or rehabilitating access roads, PPAP funded the project. The World Bank/IFAD project was originally worth K40 million. In 2015, the project was extended to 2019 and it is now valued at K306 million (“Update on Productive Partnership”, 2015). About 40% of this support is being spent on productive partnerships while the rest will be used in policy development and to create market access by improving rural infrastructure. At the project design stage, it was intended to cover EHP, Simbu, and WHP; however, it has been expanded to other Highlands provinces and Madang province (Table 4.5).

Table 4.5: Total number of partnerships and households participating in the project.

Province	No. of partnership*	No. of households
Eastern Highlands	10	8,161
Simbu	2	2,106
Jiwaka	4	2,176
Western Highlands	3	2,475
Madang	1	877
Total	20	14,501

*Note: The total number of partnerships and participating households is from approved partnerships in calls 1 and 2. Calls 3 and 4 have not been finalised, which will cover SHP and Enga Province (Source: PPAP records).

The PPAP is impacting about 4% of the total households involved in coffee production. However, the PPAP intends to increase its coverage to 10% of coffee households by 2019. As part of its screening of applicants wishing to participate in PPAP, chain leaders or lead partners are expected to produce audited reports for the last two years before they are considered for PPAP projects. Thus, many nationally owned coffee businesses and CSOs failed to meet this criterion. The project drives a message that commercial activities including coffee plantations and blocks must demonstrate they are viable enterprises by producing audit reports.

The Dream Cash Crop

The early European planters laid the foundations for the coffee industry to grow. As the industry matured, the coffee industry was eventually taken over by villagers. The European planters built coffee factories which acted as central coffee processing mills in the rural areas. The majority of farmers could sell their cherries and parchment quickly at these depots. When these factories were in operation in the rural communities, PNG was known for its premium coffee which was sought after by international coffee connoisseurs. These mills had stringent quality control systems in place that ensured only top quality coffee was produced (Stewart, 1992). The European planters, with the assistance of the Australian administration, built access roads which were useful for rural communities in later years. The infrastructure provided the bedrock for services and goods to begin to flow into rural communities and, facilitated the growth of fresh food markets as coffee and garden produce were able to be transported to town markets.

Coffee was a 'dream' crop for villagers as it readily gave them the cash income that they could use to meet their household needs, customary obligations, as well as the capacity to acquire luxury items. As Finney (1973) points out, villagers' eagerly embraced capitalism, as coffee paved the way for Papua New Guineans to advance into the modern cash economy in the early stages of coffee development. Sexton (1988) in her study in Daulo, EHP, in the mid-1980s also reports that capitalism had taken a firm foothold with the accessing of modern goods and services, including meeting socio-cultural obligations: coffee thus provided the medium for exchange. She was implying that cash earned from coffee contributed to meeting modern goods and services, as well as meeting indigenous socio-cultural obligations.

Later, in acquiring plantations from European planters, PNG owners and shareholders envisioned that they would graduate to the grand lifestyle that European planters lived. Similarly, groups of smallholders who had collectively released their small parcels of land to develop mini-plantations had hoped to enjoy prosperity from the proceeds of the newly created blocks. The owners of blocks and plantations dreamed about owning luxury cars, stylish modern houses and sending their children to private schools.

During this formative period, the people and the government assumed the growth of the coffee industry would continue uninterrupted. There was enormous optimism amongst coffee farmers, the industry and the government that the industry would continue to prosper. However, the hope of coffee farmers to live a better lifestyle from income earned from coffee has turned out to be a dream. Some farmers lost confidence as their dreams disappeared, which led to a lack of motivation to farm coffee as an enterprise.

Conclusion

In the first phase of development, the coffee industry grew with hope for prosperity among the coffee farming population. The growth of the industry was derived from structures within the indigenous and modern market economies. For instance, in the indigenous economy, the rivalry to compete with kinsmen provided the impetus for villagers to plant more coffee as a form of prestige for the coffee farmer, leading to central nurseries often running out of seedlings. Furthermore, the monetary benefits

and subsequent generation of wealth from coffee originating from the cash economy also enticed villagers to plant coffee. Although colonial administration extension services were sporadic, the industry grew rapidly to become a key economic driver for development in the Highlands region.

In the second phase of development, some industry-based policies were developed and implemented to support industry growth. Policies like PRS and THDS allowed Papua New Guineans to engage in commercial businesses. These plans included the transfer of plantations to local control and the development of blocks. As the industry began to grow, other sectoral and industry plans were initiated to enhance and support further the development of the coffee industry.

In the third phase of the growth, governance systems were created to support the rapid expansion of the PNG coffee industry. Over time governance systems were reformed, and new institutions were established to accommodate the changing circumstances. CIB and its predecessors performed regulatory and promotion functions of the 'embryo' industry. In the mid-1980s, coffee research and extension institutions were created to carry out research and development functions and service the needs of the coffee farming community. In the 1990s and 2000s, further reforms to the institutions were initiated like the formation of CIC to make operations efficient and focus on advancing the industry.

Chapter 5 will discuss in more detail some of the problems that began to undermine the coffee farmers' dreams of development as the industry entered into a period of stagnation and decline since the late 1980s to the present.

Notes

1. Jim is one of the famous Leahy brothers, Mick and Dan who were part of a team of pioneer Europeans to explore the 'Middle Kingdom:' the Highlands of PNG in the late 1920s. Jim was mainly into business and later joined his brothers in the Highlands.
2. The Agriculture Bank now called the National Development Bank was also formerly known as PNG Development Bank and Rural Development Bank. The name change occurred to reflect priorities of the government over the years. The aforementioned names will appear in various parts of the thesis.
3. The NSDP is a medium term development plan with a lifespan of 20 years whilst Vision 2050 is a long term plan that is of 50-year duration.

Chapter 5

Lost Dreams: Stagnation and Decline

Introduction

This chapter departs from the story and optimism in Chapter 4 concerning the early and rapid growth of the coffee industry in PNG. The dream of local coffee farmers to enjoy an affluent lifestyle funded with income from coffee began to fade in the 1980s as will be discussed in this chapter. Chapter 5 outlines the faltering of the growth, then stagnation followed by the gradual decline of the coffee industry through the 1990s to the present time.

In line with the objectives of the thesis, this chapter discusses the managed subsector problems, low coffee production among smallholders who are not members of grower groups or are referred to in this thesis as independent farmers, and national and institutional constraints, which together contributed to the decline of the coffee industry. This chapter argues that when plantations were sold through government policies in the 1970s to local landowner groups and corporate companies, problems began to emerge that undermined their profitability and contributed to their subsequent decline. Experienced expatriate managers departed after the plantations were sold leaving plantation management to inexperienced local business managers. The support services that were once enjoyed by coffee smallholders living in the vicinity of efficiently run and managed plantations and their rural mills also ceased. Smallholders were left to their own devices to fend for themselves in producing coffee. It is argued that the decline of the plantations and their rural mills led to smallholders' low productivity and production of inconsistent coffee quality. Moreover, sectoral policies and institutional programs and projects were also poorly designed and when executed, problems began to rise producing both positive and negative results.

Annual coffee production in the 1990s to mid-2000s averaged 1 million bags (60 kg gb). From 1980/81 to 1998/99, there was growth in the smallholder sector while production in the managed subsector was stagnant (Figure 5.1). Since 1998, the growth of the coffee industry began to slow down (Figures 5.2). Coffee production started to plateau from 1998/99 and has remained stagnant except for a sharp rise in 2011, when there was a record high production of 1,187,981 green bean bags, a response to very high prices (see Figure 4.2). Because of the high prices, coffee from remote areas made their way to the market. After 2011, coffee production fell again.

Also, a critical factor in explaining the decline in production is the ageing stock of coffee holdings in PNG. Most of the current stock of coffee trees was planted in the boom years from the 1950s to the early 1970s, so are now old and need to be replanted to re-invigorate the tree stock (Mitio, 2014). The revised coffee industry plan (2013-2018) also identified land and labour shortages, deteriorating rural infrastructure, lawlessness, and competition from other cash crops as undermining coffee production (CIC, 2014). Therefore, a range of factors are contributing to the general decline of the industry and are discussed further below.

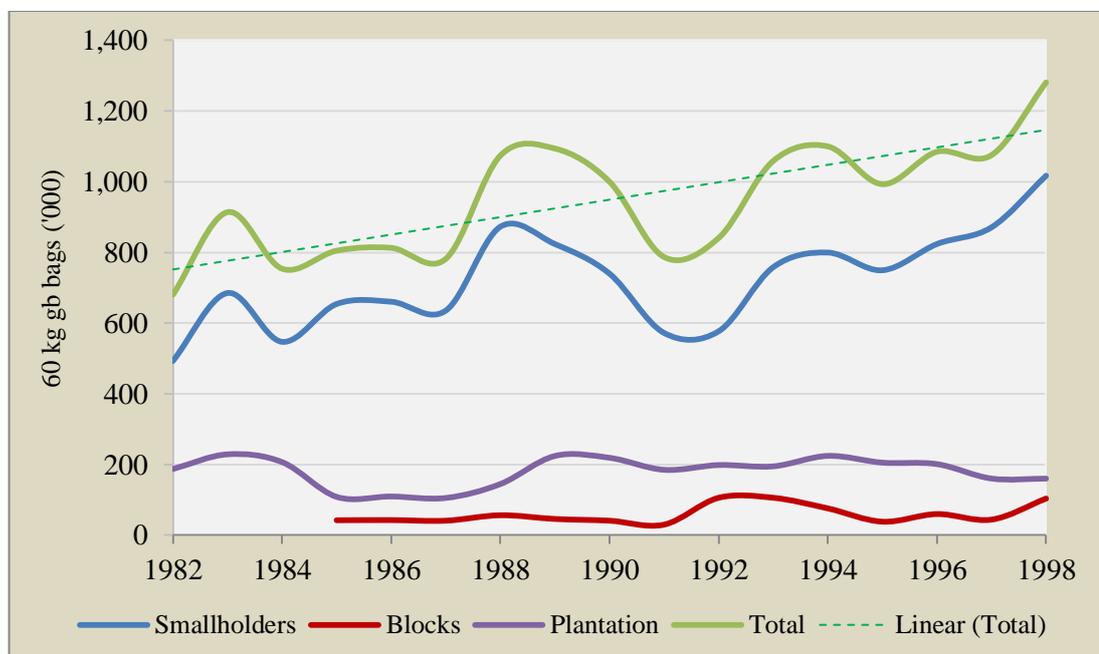


Figure 5.1: Coffee production by smallholders, blocks and plantations from 1980 to 1998 (Source: CIC data).

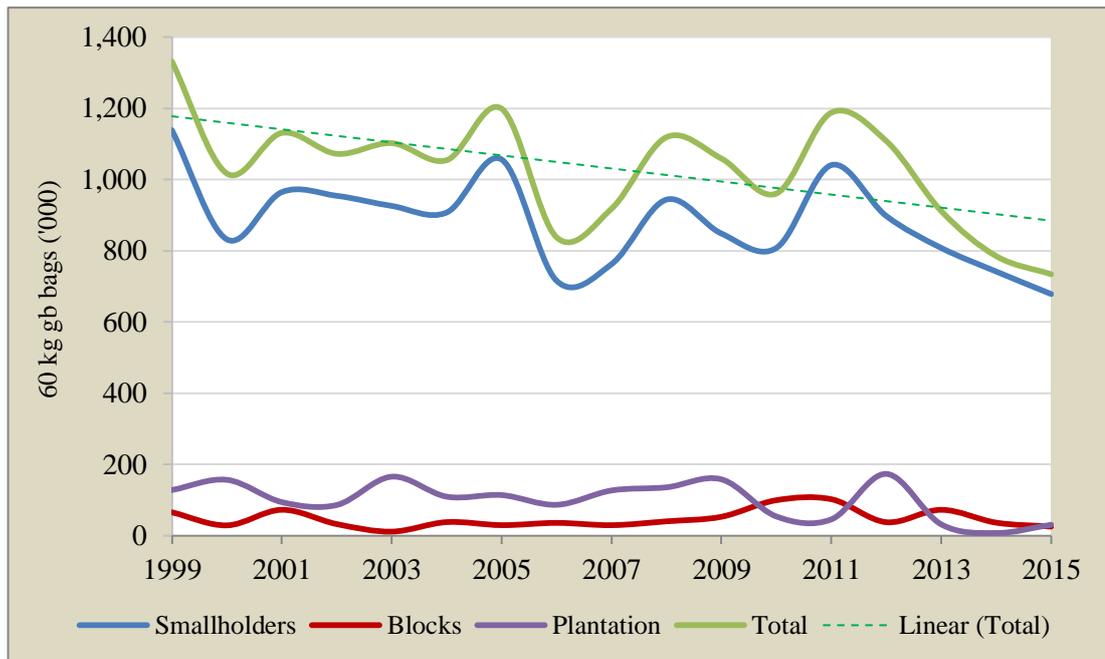


Figure 5.2: Coffee production by smallholders, blocks and plantations from 1999 to 2015 (Source: CIC data).

Managed Subsector: Plantations and Blocks

The number of functioning coffee plantations and blocks has been declining over the years. In 1969, there were 237 plantations and by 2007, only 33 were still in operation. Estimates in the 1970s showed plantations were consistently producing about 2,500 kg gb/ha (Munnul and Densley, 1977) but by the early 1980s yields had dropped to 2,000 kg gb/ha (ACIAR, 1987b). By the late 1980s, plantations were no longer achieving productivity levels as expected from a high input-high output production system. In the early 1990s productivity remained low and thus doubts about the future existence of the managed subsector began to emerge (McWilliam, 1996). Allen *et al.* (2009) reports that the average productivity of plantations from 2000 to 2006 was 600 kg gb/ha, which was less than one quarter of the mean productivity of 2,500 kg gb/ha for plantations in the 1970s. In the mid-1980s, the number of coffee blocks increased from 200 to 636, however, the majority are now non-operational (Allen *et al.* 2009). In 1992, block productivity was around 1,040 kg gb/ha (Irog, 1992). The last survey of the managed subsector was conducted in 1997 so there is little information available on the number of plantations and blocks that are still in operation.

Many problems have affected the managed subsector, some of which are outlined in this chapter. They include land disputes, poor farming knowledge, deficiencies in the PRS, failures in THDS, the poor performance of management agencies, lack of advisory services, the banks' reluctance to provide loan, increased input costs and the adverse impacts of politics. This chapter also includes interviews with coffee industry experts (CIEs, n=32). Chapter 7 discusses in more detail some of the problems and prospects of the subsector by presenting four case studies of plantations including interviews of CIEs.

Land disputes

Much of the land which the European planters alienated in the 1950s and 1960s to develop coffee plantations had some form of traditional significance in the communities (see Chapter 4). Plantations developed on battlefields and disputed land posed problems to potential investors as conflicts over ownership continued well after the acquisitions. Twenty-three percent of the CIEs I interviewed confirmed that land disputes were harming the managed subsector and have resulted in the demise of some plantations. A few land disputes were related to the initial land purchases, swamp land which is no man's land but villagers are now laying claims of ownership, and a lack of proper understanding by customary landowners of land leases.

In the initial land acquisition for plantation development, the customary landowners' names were not recorded. Instead, the official documents recorded the names of *luluais*, *tutuls* and 'big men' who represented the customary landowners, and who facilitated discussions with the purchasers and patrol officers, and who also received and distributed payments (Donaldson and Good, 1981; Strong, 2004). Rasis Klink, a former coffee factory manager asserted that "customary landowners have therefore never been rightfully recognised" and their grievances continue to disrupt production (CIE #4, 14/03/14). Finch (1991) highlights a case at Ontenu in Tairora area, EHP, where traditional leaders who distributed money obtained from land sales failed to include some of the customary landowners and thus complaints were later made. Such cases have led to aggrieved landowner families and groups making land claims on plantations and forcefully reclaiming plantation land.

The location of many plantations in the Western Highlands Province (WHP), Jiwaka and the eastern region of Eastern Highlands Province (EHP) were once swamp lands which were drained by European planters and turned into fertile land for coffee. In some areas, villagers believed that swamps had 'spirits' living in them (Ketan, 2004), so they chose to reside on hilltops. Nobody made gardens or resided near them. With the advent of formal government administration, villagers laid claims on drained swampland. Bill Gardner of Kigabah Coffee reported that "... when villagers complained about the estate land I pointed to the trees and the drains and questioned them who cleared this place" (CIE #20, 06/04/14). Bill stated that after a few disputes with the villagers challenging the ownership of the estate land, there have been no more complaints. However, several land disputes continue on plantations developed on swamp land.

Land disputes over plantation land have arisen because many landowners have inadequate knowledge and understanding of the concept of state or 'private' land. After selling land, original landowners perceive that they have residual rights over the land they have sold (Crocombe, 1964; Filer, 2012). For example, Strong quotes a landowner's perception of coffee plantation land which was under dispute: the landowner stated that "the coffee tree and assets can be owned by others [referring to the European planter and shareholders] but for the land, I am the father" (2004:178-179). This plantation land dispute resulted in a fierce tribal warfare in the late 1990s in which many lives were lost, properties destroyed and families were displaced. Also, in WHP, many plantations were abandoned as a result of tribal warfare (e.g. Anderson and Connolly, 1992; Ketan, 2013). The viewpoint of landowners that they still retain residual rights over their customary land that has been sold or converted to state or individual tenure was revealed in an interview with Thomas Mosen of WR Carpenters in Jiwaka Province. He reported that "villagers still have that mentality as *papa graun* [landowners], and they continue to steal coffee from our estates" (CIE # 25, 08/04/14).

In the 1980s and 1990s, the banks tendered nationally-owned plantations that had arrears on bank loans to recoup their losses (Hunt and Eko, 2001). Successful bidders moved onto the plantation. However, disputes with customary landowners soon emerged. These conflicts often led to landowners harassing plantation workers and

cherry theft. Landowners deemed the purchasers as ‘outsiders’ without rights to the plantations. Afflick (1981) notes that legally because the customary landowners still hold the lease on the land, the banks cannot mortgage the property: financiers only have the right of entry to the land. Here Afflick is implying that the land continues to belong to the landowners as the land is leased and has not changed ownership or title.

Disputes on plantation land are also more likely to occur when the new owners are from outside the local area. In an interview, Max Kumabong, a coffee entrepreneur from Mt Hagen, WHP gave the following account about why purchasing plantations away from their own locality can be a problem. Kumabong reported that:

... seeing at what is happening around me [alluding to plantation land disputes], I will not move into another area. ... On Warauwa [his plantation], I live in proximity, have traditional kinship ties with locals, and am also a landowner, so I feel at ease to invest here. (*CIE # 23, 08/04/14*)

When locals purchase nearby plantations, they are likely to encounter fewer problems (Chapter 7). However, when investors from other areas of the province or regions purchase plantations, ownership disputes are more likely to emerge. For these reasons, many plantations were abandoned in the 1990s.

Lack of farm management knowledge

After acquiring land from villagers, the European planters began to plant coffee, but initially there was a general lack of knowledge about coffee farming. Many European planters were not from farming backgrounds. However, they had learnt coffee farming techniques by reading literature, from friends or learning through coffee cultivation. In the 1950s, the Highlands Farmers and Settlers Association saw the need for the knowledge gap to be filled and arranged for a coffee expert to visit the Central Highlands and provide advisory services to European planters. Hence, Baron Goto, a coffee specialist from Hawaii came to the PNG Highlands and conducted training for coffee farmers (Cartledge, 1978). Field days were organised, and the European planters learnt about proper coffee husbandry practices such as raising seedlings, field planting, pruning and fertiliser application (Sinclair, 1995).

Moreover, in search of coffee knowledge, some European planters travelled to countries like Kenya to learn about coffee production techniques. Despite the search for information, in-depth knowledge of crop physiology and soil chemistry was lacking (*CIE #1, 10/12/13*). In the mid-1970s, more information became available on raising yields by removing shade and applying fertiliser, and plantation managers followed this advice (Sinclair, 1995). Managers learnt that exposing the coffee trees to the sun increases the photosynthesis. Thus, the trees would require more nutrition to facilitate the increased metabolism. Consequently, the demand for fertiliser escalated. John Fowke, a former coffee plantation manager reported that the new need for fertiliser caused two adverse effects on plantations (*CIE #1, 10/12/13*). Firstly, heavy dieback occurred where insufficient fertilisers were applied after the removal of shade trees. Secondly, on plantations where excessive fertiliser was applied, the soil became acidic and lime had to be applied to neutralise it.

There have been suggestions that the plantations were ‘milked’ by the European planters in the years leading up to independence in 1975 (Sinclair, 1995). Coincidentally, in 1975, frost devastated coffee in Brazil, so in the subsequent years, the drop in global supply pushed up prices (Figure 4.3). Some owners wanted to make fast money before selling their estates and thus removed shade trees. They received large returns from increased fertiliser application and eventually sold their plantations through the PRS. Besides this, the euphoria of approaching independence engulfing the local population in 1975 brought apprehension and insecurity to European planters, which may have discouraged on-going investments in their plantations. The non-reinvestment explains why many plantations were in poor conditions when locals bought them (Paliau, 1981). After local business groups acquired the plantations, they enjoyed income for a couple of years, but after a while local business managers did not re-invest in the plantation and dieback became a major problem. Local business managers were not aware that re-establishing shade would have lessened dieback and restored the plantations back to sustainable production levels without the need for fertiliser.

After plantations were acquired by landowner business groups, farms were not managed as a high input-high output system of production. Rather local plantation business managers or owners applied the smallholder low input-low output system

resulting in falls in production. According to Jacob Taru, a coffee entrepreneur, local business managers at the time were using a ‘smallholder mentality’ to manage their plantations: alluding to the low input-low output farming system (*CIE #31, 10/04/14*). The ‘new’ owners failed to comply with farm schedules and apply timely farm inputs such as fertiliser. The smallholder mentality continues to dominate plantation management methods. Thus, many plantations were abandoned while others continue to struggle.

Deficiencies with the plantation redistribution scheme

There were several problems associated with the PRS. The ‘Report of the Committee of Review into the PRS’ reported the poor conceptualisation of the Land Acquisition Act (the Act governing PRS), and the poor business practices underlying the scheme (Walter, 1981). The main problems included:

- a lack of oversight on loan repayments;
- landowners’ equity did not have a uniform standard for participating landowner business groups to comply with;
- the selling prices of plantations were inflated;
- many landowner business groups were not formally incorporated groups; and
- loans were interest-free unlike those that have been offered through commercial banks where interests are charged.

As there were no strict criteria for accessing PRS support, some landowner groups considered the loan to be a ‘gift’ from the government and did not bother to repay the loan. Sinclair (1995, p. 351) confirms that the PRS was “rushed into existence to satisfy political demands” and, therefore, was a very poorly conceived policy. Landowners believed that they were entitled to repossess the plantation land which was their customary land as discussed in Chapter 4. Munnul (1981) affirms that landowner business groups contributed a meagre amount while the state heavily subsidised the purchase of plantations. There was a laxity towards managing the plantations by landowner business groups thus many ran into management and financial difficulties.

From the late 1970s to the early 1980s, many locals had limited education, lacked business knowledge and skills, and had minimal understanding of plantation management, which was in short supply (Sinclair, 1995). As a result, unsuitable people who lacked business experience were appointed as business managers. In some cases, directors of business groups held dual positions and acted as managers and directors (Paliau, 1981). A few European planters who had sold their estates returned as advisors but withdrew because of lawlessness, which was surfacing in some areas as a result of deteriorating rural infrastructure and land disputes.

Failures of mini plantations

Under the THDS, it was intended that blocks would be self-sustaining enterprises concerning both funding and management (Fleming and Antony, 1993). In reviewing the THDS, Gimbol (1988) reports that shareholders failed to supply labour as sweat equity during the development phase. As a result, management agencies recruited labour from elsewhere which ultimately over-stretched the farm budget (Sinclair, 1995). Thus, a significant component of farm budget was spent on an item that was originally planned to be available cash-free. The reluctance of customary landowners to work on their blocks reflected indigenous notions of prestige that possessing a business enterprise means they are above labourers. As owners, it would be degrading to provide their labour as sweat equity. Also, shareholders' status as owners of the enterprise had to be visible to rival tribes, and this was best illustrated by them not working on their blocks as labourers but bringing in workers from elsewhere for this low-status menial work.

Poor performance of management agencies

In 1974, the National Plantation Management Agency (NPMA) was created as discussed in Chapter 4 to provide management services to plantations and blocks. The transfer of European-owned plantations to locals and the development of coffee blocks increased the demand for extension and advisory services, therefore, additional management agencies were formed to service the subsector (Table 5.1). By 1987, 60% of the managed subsector was serviced by numerous management agencies (ACIAR, 1987b). However, management agencies failed to apply sustainable practices and gave little thought to the indigenous values and norms that the local populace regarded highly. This undermined their services to the subsector.

Also, management agencies were often looking after many plantations or blocks and this had an impact on their advisory services. Freyne (1991) confirms that where management agencies had many plantations to manage, services were reduced. Conversely, management agencies that had fewer plantations and blocks performed better (Turner, 1986).

Table 5.1: Some of the management agencies that existed during the PRS and THDS era.

Management agencies	Owner	Location	Year of operation
NPMA	State	Goroka	1978-1987
ANGCO* Development	ANGCO	Goroka	Receivership in 2001
Waghi Mek	Wahgi Mek Pty Ltd	Mt Hagen	Receivership in the 1990s
Gouna Development	Gouna Pty Ltd	Goroka	Receivership in the 1990s
Maltunal Propriety Ltd	Ou Propriety Ltd	Mt Hagen	OK Corporation
Southern Highlands Management Agency	SHP Provincial Government	Mendi	Ceased operations in the 1990s
Plantation Management Agency	PMA Ltd	Mt Hagen	Advisors left and did not return
Natgrow Management	Pipilka	Mt Hagen	Receivership in the 1990s
Komakama Investment	Nokondi Investments	Goroka	Receivership in the 1990s
Smallholder Rural Planning Management (SRPM)**	Rural Development Bank	Goroka	From the 1990s or early 2000s

*ANGCO - Australia New Guinea Coffee and Cocoa, **SRPM was originally known as Agriculture Bank Management Pty Ltd.

In addition, management agencies' fees were exorbitant (Turner, 1986; Gimbol, 1988). The fees were charged before coffee came into production. Agencies had numerous expatriate advisors, and substantial costs were subsumed in administration. The agency fees began at K250/ha/yr in 1974 and then rose to K400/ha/yr in the 1980s (Sinclair, 1995). In some cases, fees went as high as K680/ha/yr. Later, fees stabilised at K300/ha/yr in the late 1980s. The SRPM charged a low rate of K150/ha/yr for blocks thus forcing many opportunist agencies out of business. Other agencies could not compete with the reduced management fees of the SRPM.

The extension and advisory services for the managed subsector have been inconsistent and poor (Orlegge, 2010). The demise of the management agencies in the late 1980s combined with the lack of advisory services from CIC has contributed to the dwindling of services to the subsector. Although, the CIC created the Technical Management Advisory Services (TMAS) to provide extension and advisory services, due to lack of budgetary support from CIC, TMAS was unable to adequately service the subsector. In 2003, the extension arm of the CIC subsumed TMAS and it has been virtually inactive since (CIC, 1996). The TMAS did conduct some training of business managers of plantations and blocks in the late 1990s and early 2000s, but it was inconsistent.

Banks reluctance to support the managed subsector

A further problem that confronted the managed subsector was the massive outstanding debts on loans obtained from the banks in the 1970s and the 1980s associated with the PRS and the THDS. These debts included accrued interest, especially those that had been taken as commercial loans which were later written-off (Hunt and Eko, 2001). In subsequent years, the banks were reluctant to provide further loans to the subsector because of loan arrears and the unfavourable socio-political conditions that prevailed in rural areas in PNG (Afflick, 1981).

Increased costs of farm inputs

Since the 1990s, increases in costs of agricultural inputs, like fertiliser, labour and security have diminished productivity and the financial viability of many plantations and blocks. For example, costs of fertilisers such as Sulphate of Ammonia (SOA) and Muriate of Potash (MOP) have increased by 76% from 2007 to 2016 (Table 5.2). Also, Kufinale and Fleming (2002) reported that security costs arising from law and order problems were a major cost for the subsector.

Table 5.2: Prices of different types of fertilisers for 2007, 2013 and 2016.

Year	Cost of fertiliser (PGK)		
	Sulphate of Ammonia (50 kg)	Muriate of Potash (50 kg)	NPK (50 kg)
2007	29.70	36.67	72.88
2013	193.00	108.00	63.00
2016	180.00	181.81	138.71

Note: Prices were from one supplier only (i.e. Farmset Ltd), Goroka, EHP.

Negative impacts of politics

Political activities have had a deleterious effect on the running of plantations and blocks. In my interviews with CIEs, 67% believed that national, provincial and local level politics had negatively impacted their operations. The adverse effects of politics identified in interviews were twofold. First, business managers that align themselves with political candidates create problems on the plantation. Philip Kapal, the former premier of WHP and now a coffee entrepreneur revealed that “supporters of candidates have attacked us, so [we] disallowed workers from openly supporting candidates, and we stopped polling occurring on the plantation” (CIE #17, 03/04/14). The aftermath of election-related fights and problems can persist long after the election thus disrupting plantation operations. Second, during elections, many plantation labourers return to their home provinces to vote or move out from company premises to engage in election-related festivities in the community. Money and food are plentiful during election periods, and some labourers forgo working on the plantations so they can be involved in election-related activities. Consequently, labour shortages can become acute on plantations around elections.

The productivity of the managed subsector is low because of the problems outlined above. Since the late 1980s, many plantations and blocks have been abandoned, while a few struggle to remain viable. From the outset, the transfer of plantations under the PRS did not adhere to proper business protocols and many were distributed as ‘gifts’ to landowner business groups. The scarcity of local experienced business managers to run the newly purchased plantations led to poor business practices. Also, many management agencies closed, leaving the CIC to deliver advisory services to the subsector but these services was erratic and ineffective. Moreover, the adverse impacts of politics have undermined production of the subsector. During the purchase of plantation land, proper social and genealogical mapping was not conducted, thus many legitimate landowners were not identified and did not benefit from land payments. Therefore, the children of the customary landowners continue to dispute the current ownership of plantation land. It is these complex and multiple problems that create a bleak future for the subsector.

Smallholdings

As the managed subsector declined, the support services it used to provide to smallholder farmers in their neighbourhood also ceased. This contributed to low productivity and production of poor coffee quality. Smallholder production plateaued in the 1980s (Figure 4.3) and has been stagnant and declining since the 1990s (Figure 5.2). Although, smallholders eagerly embraced coffee in the 1950s to the 1970s as outlined in Chapter 4, maintaining high production and the processing of good quality coffee has been, and remains a challenge.

Since the 1990s, the productivity of smallholders who operate on their own and were not members of grower groups or independent farmers has varied. The average smallholder productivity in the 1970s was 830 kg gb/ha. In the 1980s, productivity increased to 968 kg gb/ha and in the 1990s, it was 1,090 kg gb/ha (Munnul and Densely, 1977; Hassall and Associates, 1982; Harding, 1988; Collett, 1992; Overfield, 1994; Allen *et al.* 2009). In a 2013 study, coffee productivity for the smallholders in the Central Highlands was 382 kg gb/ha (UniQuest, 2013). Productivity has decreased by 65% from the 1990s average. In studying independent farmers in Bena, EHP, Collett (1992) shows the average number of coffee gardens as 2.5 for Bena households with a total average coffee holder's farm size of 0.43 ha. UniQuest (2013) reports an average garden size of 1.4 ha for independent farmers in other parts of the Central Highlands (see Table 6.1).

Several reports have highlighted problems that undermine productivity and quality of coffee amongst independent smallholder coffee farmers and these impediments include poor rural infrastructure, labour shortages, pig damage, lack of credit, coffee theft, volatile prices, lawlessness, gender constraints, tribal fights, and inadequate extension services (Collett, 1992; Mauro *et al.* 2010; Aba *et al.* 2012; UniQuest, 2013; Inu, 2015). Some of the key factors this study considered important that explains the low productivity and coffee quality of independent smallholder farmers stem from the low input-low output system of production, limited land access, inadequate extension services, poor access to credit, household labour constraints, poor rural infrastructure, tribal conflicts, and the closure of rural coffee mills which are discussed below (As for cooperative member farmers, their constraints are discussed in Chapter 6).

Low input-low output production system

Smallholder coffee farmers apply a low input-low output system to produce coffee so coffee yields are below potential levels. In this system, smallholders are unwilling to allocate sufficient labour to prune their coffee trees, maintain the drains and control shade. This low labour input reduces yields. According to Aba *et al.* (2012, p. 25-26) in a supply response study of coffee in PNG, “smallholders produce for specific reasons, and if those reasons are satisfied, they do not bother producing more.” Inu (2015) in her study in the Bena area, EHP, reports a number of factors that led to farmers not maximising coffee production. These factors were: competition for labour with other lucrative cash crops such as pineapples and vegetables; coffee maintained to ensure income security in case of natural disasters and so may not be regularly harvested (e.g. drought); and, farmers planting coffee to secure clan land for a household’s future use and not for immediate production. The two latter strategies together with competing labour demands result in households investing minimal labour or farm inputs in their coffee gardens which results in low productivity.

Farm investments in smallholder coffee gardens is also low. Farmers invest coffee income in socio-cultural activities and indigenous exchange, and they rarely reinvest coffee income into their coffee farms (Strathern, 1982b; Sexton, 1988; Mauro, 2010). Indeed, it is typical for socio-cultural events and compensation payments to be timed to the coffee harvesting season when villagers have more cash after the sale of their coffee. The importance of socio-economic factors influencing coffee farmers’ investment practices also concurs with smallholder studies in the cocoa and oil palm industries in PNG (Koczberski *et al.* 2001; Curry and Koczberski, 2013).

Farmers may sometimes perceive coffee farming as a waste of time and labour and instead cultivate other cash crops that generate better returns (Aba *et al.* 2012). Many smallholders with high market access have a diversity of income opportunities; they can choose to abandon coffee and switch to other more profitable crops like vegetables that have a short cultivation time-span and provide quicker returns than coffee (Inu, 2015). Thomas Kilip, a plantation manager with WR Carpenters in Jiwaka Province reported in an interview that in villages close to towns “smallholders were removing coffee trees from their land to plant vegetables which

can generate income two to three times more” (CIE #24, 08/04/14). Studies in PNG, and elsewhere, have shown that farmers sometimes believe that coffee production draws farmers’ labour away from other priority areas that are essential to sustaining their livelihoods (Babin, 2012; Inu, 2015).

Limited land access

Declining land availability for coffee has contributed to low coffee production among smallholders. The increasing population in coffee growing areas is exerting pressure for land use. In certain areas, farmers can no longer expand the area under coffee. In other areas where land shortages are severe, households are reluctant to allocate more gardening land to coffee. This process is reaching a peak in some villages, where it is leading to a contraction in the area under coffee per household. For example, some households are subdividing their coffee garden among their children, which is resulting in coffee garden size per household shrinking in each generation (Aba *et al.* 2012). Other households facing land shortages for food gardening have uprooted coffee to plant food crops.

Land disputes are surfacing which have resulted in family, clan and tribal conflicts (Collett, 1992). When cash crops like coffee were introduced, households began to plant coffee and this has locked land up for long periods (Kalinoe and Kiris, 2010). By farming short-term food crops, households were provided with the flexibility to share the portion of land; however with the cultivation of perennial crops like coffee, the land can no longer be shared (Babin, 2012; Inu, 2015). This has resulted in conflicts which have led to the original landowners reclaiming land planted to coffee (see Chapter 6).

As discussed above, the flexibility of villagers to change farming sites freely as it used to happen in the past on communally-owned customary land has diminished. Inu (2015) affirms that the individualisation of land was occurring in the Bena area with 69% of land for food and coffee production now inherited by sons. Thus, at Bena, there is less flexibility in land use. In some areas in the Highlands, farmers are renting land to plant short-term crops like sweet potato (*Ipomoea batatas*) and vegetables (UniQuest, 2013) because of land shortages. Also, in areas of land scarcity, some farmers are beginning to ‘purchase land’ from family members,

clansmen or tribesmen to plant coffee. McWilliam (1988, p. 79) confirms that “considerable buying and selling of land between smallholders” in the Highlands was occurring as early as the 1980s. However, the security of land “purchases” is insecure as is the case in some areas in PNG (Numbasa and Koczberski, 2012).

Inadequate extension services to smallholders

In part, the poor farm practices of smallholders are also a result of their limited access to extension services which have declined over the years. In the 1980s, extension services were devolved to provincial governments which led to a general decline in extension services (Fleming and Antony, 1993). The provincial extension officers focused on other priority areas and the coffee sector did not feature prominently in their programs. In 1987, the Coffee Development Agency (CDA) was formed. It employed the training and visit method to provide extension services to smallholder farmers (Table 5.3). The CDA merged with CIC in 1991 which led to changes in the mode of providing extension services to smallholders. As a result, the Extension Services Division (formerly CDA) of CIC used Coffee Management Divisions and Central Training Points and mainly focused on conducting training in coffee husbandry practices and postharvest techniques. The Coffee Management Divisions were larger extension units than Central Training Points. Coffee Management Divisions were established depending on accessibility, incidences of CLR and the population of coffee farmers in an area. The establishment of the Central Training Points depended on: a pro-active response from willing coffee growers; requests from farmers to grow coffee; nominal cash flow within the community; and sufficient arable land for coffee cultivation. In 2003, CIC adopted the farmer demand-driven extension (FDDE) approach which focused on grower groups (Api *et al.* 2009). Most of the extension efforts have failed to adequately address the decline in smallholder productivity.

Table 5.3: Extension approaches deployed in the coffee industry since 1987.

Period	Entity	Extension approach	Target farmer size
1987-1990	CDA	Training and visit	Individual farmers
1991-1997	ESD, CIC	Coffee Management Division	3,000
1998-2001	ESD, CIC	Central Training Point	1,000
2003-now	RGSD, CIC	Farmer demand-driven extension	20-100

(Source: CIC 2005b)

The merging of CDA with CIC and subsequent restructures of the CIC drastically reduced the number of extension officers based in coffee growing districts and provinces (CIC, 1997; CIC, 2008b). At times, the number of extension staff after a retrenchment round, has increased in subsequent years as the organisation has realised staffing levels are insufficient to provide adequate extension services to coffee farmers (Table 5.4). These incidences show the lack of proper planning which has undermined extension services to smallholders.

Table 5.4: CIC extension staff numbers since 1987.

Year	Extension staff	Source
1987	800*	Biosi Gunure (pers. comm., 16/06/15)
1998	53	CIC, 2000
2000	144	CIC, 2000
2003	36	CIC, 2005b
2005	53	CIC, 2005c
2015	36	CIC records

*CDA also had 1,000 casual extension assistants. Gunure was the pioneer general manager for CDA.

The restructures in CIC have led to only one or two extension officers being placed in each coffee-growing province with a disproportionate ratio of coffee farmers to extension officers (CIC, 2008b; Murray-Prior and Padarath, 2013). The low levels of extension officers have contributed to the decline in farmer contacts which has impeded productivity of smallholders. Also, extension funding mostly caters for salaries of extension officers and little remains to facilitate the execution of extension services (Sitapai, 2012). For instance, because of lack of funding, province-based CIC extension officers are sometimes under-resourced and not able to effectively carry out extension services.

Furthermore, the reduction in extension services to growers has meant that extension information and new technologies intended for smallholders are not reaching them (Mauro *et al.* 2010). Moreover, some of the advice and new technologies promoted among farmers were not always appropriate and so smallholders were reluctant to adopt them (Fleming and Antony, 1993; Poulton *et al.* 2010). Therefore, the extension problems highlighted above have all contributed to decline in productivity of smallholders.

Poor credit access

Poor access to credit has been reported in PNG as limiting coffee production (Mauro *et al.* 2010; Aba *et al.* 2012). Credit could be used to purchase farm inputs like secateurs to prune coffee and knapsacks for spraying weedicide. Additionally, credit could be invested in technologies like hand pulpers that could improve coffee quality and the efficiency of labour, which would lead to farmers earning better incomes. Because of poor credit access, smallholder coffee production is undermined. Although smallholders have had access to credit facilities in the past, many do not have a good track record of repaying loans. A preliminary cost-benefit analysis of the coffee credit scheme, which was implemented by CIC in the 1990s and early 2000s, showed that 56% of farmers that obtained loans did not repay (Inu, 2009). Additionally, Curry *et al.* (2007b) contend that oil palm smallholder farmers in West New Britain Province, PNG have too many household expenses, which limit their ability to purchase farm inputs. Curry *et al.* further argue that after obtaining loans, some farmers had difficulties in repaying them because of a myriad of other expenses. Instead of providing cash, it is possible to facilitate credit access in the form of farm inputs like pruning saws, secateurs and pulpers through value chain partnerships (see Chapter 8) or agro-nucleus setups (Curry *et al.* 2007b).

Lack of household labour

Labour shortages can constrain smallholders from improving coffee production. The smallholder system of production practised in PNG allows for labour to be deployed across a range of livelihood activities such as subsistence farming and raising pig herds. Coffee farming is just one of many livelihood strategies smallholders juggle to sustain their lives. Because smallholders are engaged in multiple livelihood activities, it impacts on labour availability for coffee farming. Two studies in Bena, EHP, on independent farmers established that food production was a principal activity of farmers followed by coffee production (Collett, 1992; Overfield, 1998). Other studies have shown that in household labour allocations, women spend more time in food gardens than coffee (Overfield, 1998; Curry *et al.* 2016; Chapter 6). For coffee harvesting and weeding, smallholders in many instances may have insufficient household labour to carry out these labour intensive tasks (Curry *et al.* 2016). A couple of factors can constrain labour availability for a household. First, internal household problems in which husbands fail to remunerate wives fairly with coffee

income. This can lead to women reducing their labour in coffee farming activities and diverting it to other cash earning activities where they have more control over income (Overfield, 1998). Second, the increasing size of the coffee garden also increases the demand for labour to farm coffee and for processing tasks (Finch, 1991; Collett, 1992). Thus, labour problems also undermine smallholder coffee production.

Low and unsteady coffee prices have eroded the motivation of smallholders to produce coffee (Aba *et al.* 2009). Coffee farmers are price sensitive so when prices are low, they are less motivated to produce coffee. During periods of high prices, farmers spend more time maintaining their coffee gardens, but when prices are low, they neglect their coffee gardens and even abandon them to be taken over by bush (Allen *et al.* 2009; Batt and Murray-Prior, 2011). In my interviews with farmers at Korofeigu, they reported that they sometimes store parchment in their houses waiting for coffee prices to rise. However, parchment quality can deteriorate if it is stored for more than three months. Farmers tend to store parchment when the price falls below K3.00/kg.

Poor rural infrastructure

An important factor that has been identified in several reports as contributing to the decline and stagnation of coffee production is poor infrastructure in the rural areas. Coffee is grown in rural and remote areas where feeder roads are sometimes impassable or no longer in use (Murray-Prior and Batt, 2007; Aba *et al.* 2012). In some cases, bridges have been destroyed by floods thus smallholders walk long distances to access transport. Farmers living in remote areas descend into deep gorges, cross fast flowing rivers and climb steep mountains carrying their parchment to the nearest roads or airstrips (Plate 5.1). It is not unusual for coffee growers in remote areas such as Baira in EHP and Jimi in Jiwaka to walk for days carrying coffee to access points that will get them to market. Transporting coffee over long distances is not only costly through hiring carriers, but creates the economic disincentive for smallholders to increase production.



Plate 5.1: Remote farmers carry parchment coffee uphill from a deep gorge (Source: CIC collection).

Tribal conflicts

Smallholder coffee production has been negatively impacted by tribal conflicts (Sinclair, 1995). There have been instances of a tribe driving its enemy off its land and then cutting down coffee trees and uprooting newly planted seedlings. Donaldson and Good (1988) reveals tribal conflicts in Simbu, PNG, where the primary intention was to destroy the properties of rival clansmen, including felling of coffee trees. During tribal conflicts, abandoned coffee gardens can remain unproductive as the bush takes over. It would be risky for displaced farmers to return to their coffee gardens to work them unless peace has been brokered through mediation by law enforcement agencies, which can sometimes take years.

Closure of mills and poor quality coffee

Apart from the low production of smallholder coffee holdings, coffee quality is also a major problem. In part this is due to the closure of the mills outlined in the first half of the chapter. From the 1960s to the mid-1980s, the majority of the plantations had coffee mills in rural areas and they operated as central mills (see Box 8.3).

Smallholders could sell cherries and parchment coffee to these factories. Coffee buyers working for processors typically purchased coffee cherries from smallholders and supplied the rural central coffee mills (Stewart, 1992). Also in the 1980s, the blocks supplied ripe cherries to mills instead of parchment because they received better income. These mills had quality assurance mechanisms which ensured the processing of excellent quality coffee. The mills demanded and bought only quality cherry and parchment from coffee farmers. This resulted in farmers producing and delivering coffee according to the mills' quality standards. However, with the demise of plantations and the abandonment of factories checks on the quality of coffee sold by smallholders ceased (Plate 5.2). Without these quality assurance mechanisms, coffee quality declined (Hunt and Eko, 2001; West, 2012).



Plate 5.2: Abandoned coffee factory at Roka Coffee Plantation, in Daulo, EHP.

The closure of coffee mills in rural areas created a vacuum for a new and unregulated group of coffee buyers to enter the cherry and parchment trade. These buyers are 'middlemen' who buy for large coffee buyers or chain leaders (West, 2012). Private entrepreneurs also engage in coffee trading. Many of the buyers do not adhere to quality regulations. Buyers can purchase ripe cherries and keep them for several days

before pulping. Thus, the quality of the coffee deteriorates. Also, parchment buyers fail to comply with parchment standards and pay a standard price for all grades (Murray-Prior and Batt, 2007). Thus, the present system does not offer incentives for farmers to consistently produce quality parchment. Buyers are also careless about storing parchment after purchase, so when it rains, the beans become soaked. The pressure on buyers to meet contractual obligations leads them to purchase dubious quality coffee (Hunt and Eko, 2001). The inconsistent supply of quality coffee has led to international buyers labelling PNG coffee as ‘inconsistent’. Because of poor quality coffee, farmers are not receiving as high a price as they could if they were to produce quality plantation parchment. This creates a further disincentive for households to invest labour into coffee.

The challenge to reduce the exports of low-quality Y-grade coffee continues. In the past, the majority of coffee exported was of high quality. In the 1980s, Harvey-Jones (1988) reports that plantations produced more than 60% of AA or A grade green beans. It is argued that in the past, PNG’s excellent reputation for quality was based on well-managed plantations and their efficient and well-maintained mills, which processed both plantation and smallholder coffee to produce the renowned premium coffee. Now only a small percentage of PNG coffee exports are of high quality graded as AA or A which have not varied in the last five years (Figure 5.3). In 1995, to differentiate smallholder coffee from plantation coffee, the premium smallholder coffee (PSC) grade was introduced for the smallholders. Although, the PSC earned better prices compared to Y-grade it is deemed of lower quality to plantation coffee.

In 2016, the CIC in consultation with stakeholders revised the present green bean standards, which will reduce the number of coffee grades from 12 to 5 (Appendix 1). The revision has done away with the differentiation of smallholder and plantation coffee as two separate categories. The new standards assess coffee on the basis of quality only rather than by sector (plantation and smallholder). The new premium grades are A and B. The lower quality grades consist of Y, Y2 and Y3, in order of increasing number of defects. The revised standard has been submitted for gazettal.

While a few smallholders have the technical expertise and resources to process high-quality coffee, most use a variety of inferior methods. These inferior methods result in poor quality coffee. For instance, instead of using raised beds to dry washed coffee, many farmers have adopted the use of polythene canvas to spread over the ground to dry coffee and then fold it over the parchment in the evening. This technique collects moisture which sometimes results in ‘tainted flavour’ coffee. Also, farmers in many remote locations lack hand pulpers and use stones and other methods to pulp coffee which leads to processing delays. A lack of clean water, over-fermentation, delayed pulping of harvested cherry, and incomplete drying are common practices among smallholders and lead to poor coffee quality (Murray-Prior and Batt, 2007).

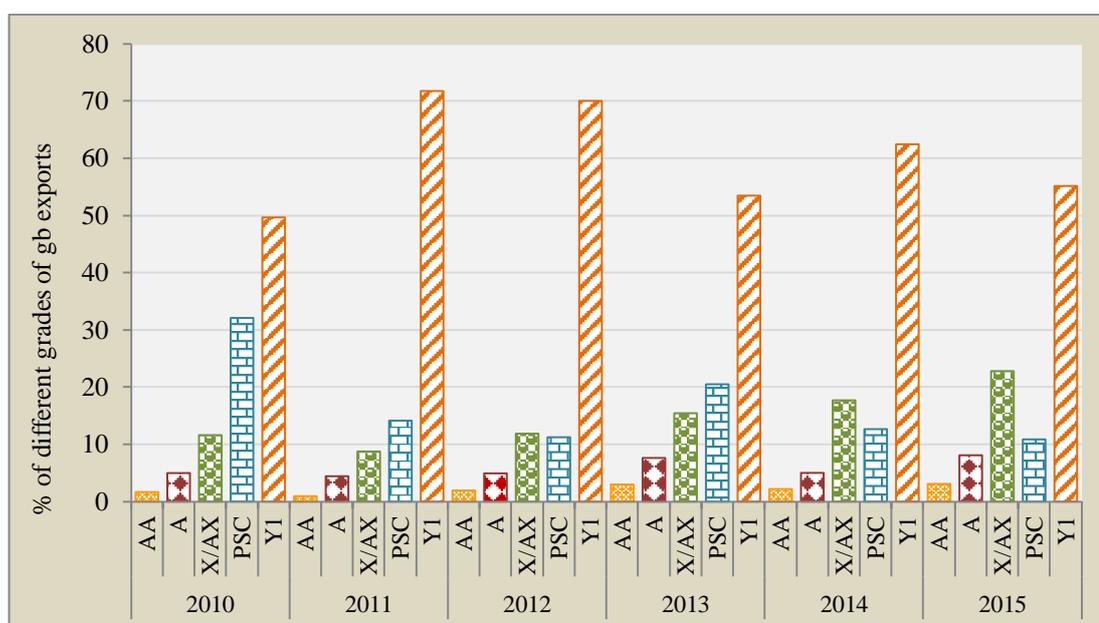


Figure 5.3: Percentage of various coffee green bean grades exported from 2010 to 2015 (Source: CIC data).

As argued above, smallholders who are independent farmers face numerous socio-economic challenges that undermine their productivity. The smallholders’ approach to low input-low output production seems to arise from the numerous livelihood strategies farmers engage in to sustain their lives. Also, some household heads are subdividing coffee gardens as a result of population growth while others uproot coffee trees to plant more profitable crops and food crops. Moreover, smallholders were not accessing credit because many have failed to repay past loans. The diminishing number of extension officers is restricting farmer contact. As a result,

smallholders are not accessing extension information, new innovations and technologies which would have helped in building their capacity to improve productivity. The persistent labour constraints and low prices are also disincentives for farmers to improve productivity.

National and Institutional Constraints

At a more macro-level, national and institutional problems also constrain coffee production both for the managed subsector and the smallholder sectors. The main problems include the inappropriate use of industry funds, poor implementation of sectoral and industry strategies, and institutional governance systems. Each is discussed below.

Industry fund

Since the inception of the Coffee Industry Fund (CIF) in 1968, periodic reviews of the fund were made, and rules and priorities regarding the fund were revised to keep the fund relevant. Levies were collected during periods of high prices, particularly to pay bounties during periods of very low prices. When there was a prolonged period of low prices and CIF funds were depleted in the 1990s, the government gave grants as price support. In the past, exporters were the primary beneficiaries of the fund and they became mediums for transmitting the levies to coffee farmers (McWilliam, 1996; Smith, 1992; Stewart, 1992). The levies were paid to farmers in addition to the prevailing market price of coffee.

In 2014, the government allocated K11 million for coffee price support. Mitio (2014) in reviewing mechanisms to spend the K11 million recommended that current coffee prices were above the threshold levels so price support should be deferred. Instead, he recommended the establishment of large nurseries to replace the aging coffee trees. He also recommended that coffee farmer groups must be registered so that they could participate in differentiated markets.

Problems with national and institutional policies and strategies

The National Development Strategic Plan 2030 is a medium-term plan anchored on Vision 2050 and forms the basis for allocating financial resources to different sectors including agriculture (see Figure 4.4). The National Agriculture Development Plan

(NADP) is a sectoral plan but its projections were unrealistic. The projections in the plan were dependent on accessible rural infrastructure, efficient markets, unhindered land access and good governance thus the plan is unworkable.

Problems related to sectoral and industry strategies that have affected coffee production include the abuse of the NADP funds and the partial implementation of the coffee strategic plan. Some institutional projects were moderately successful while others failed. They include the credit scheme, freight scheme, grower support services, village coffee rehabilitation and collaborations with partners.

Abuse of NADP funds

The NADP was allocated a total of K528 million from 2007 through to 2012. This proved to be a disaster because genuine, hard-working farmers were unable to access the fund. Politicians, bureaucrats and ‘paper farmers’ who did not own coffee gardens or were not engaged in agricultural activities swindled the funds (Nalu, 2009). The state carried out an inquiry which revealed massive abuse and misappropriation of funds (“Probe NADP scam”, 2013; “K528mil for Agro Misused”, 2013). Commodity agencies, including the CIC were supposed to take a leading role in implementing the NADP (DAL, 2007). However, because of political manipulation, commodity agencies rarely participated in project formulation, implementation or the allocation of funds. Benjamin Poponawa, a politician from WHP reported that NADP funds were serving ‘paper farmers’ and not genuine farmers (“Planning Dept should explain”, 2009). In response, the former DAL minister John Hickey stated that:

They’ve (Planning [Department]) been very tricky. NADP is special intervention. But, somehow bureaucrats have changed it to PIP [Public Investment Program]. It was deliberate, so they can dip their hands into it. (“No NADP Funds”, 2009)

Some ‘coffee farmers’ who benefited from the funds were associates of those who managed the fund or had political connections (“Probe NADP scam”, 2013; “K528mil for Agro Misused”, 2013). Others submitted coffee proposals, but after obtaining the funds invested the money in other businesses. This funding is an example of how finances managed by politicians and elites yielded little or no benefit

for coffee farmers and did little to invigorate the coffee industry and arrest the decline in production.

Partial implementation of coffee plan

Some of the strategies enshrined in the Coffee Industry Strategic Plan (2008-2018; 2013-2018 (revised)) that are related to raising productivity are increased production of high-quality coffee, rehabilitation of plantations and blocks, facilitating supply chain linkages, training, credit facilities and other services (CIC, 2008a). Some are discussed below while others are reported elsewhere in this and subsequent chapters. The coffee plan is partially being implemented, but programs that have not received stakeholder input are at times being elevated at the expense of programs that have been conceived through consultative processes. Some activities currently been undertaken by CIC that were not part of the strategic plan include the issuing of export licences to the districts and the opening of a CIC office in Sydney, Australia. Such impromptu projects may soak up much of CIC's resources, thus undermining the execution of the strategic plan.

Problems with coffee credit scheme

To assist coffee farmers with credit access to purchase farm inputs, the government in 1996 introduced a credit scheme for smallholders (Chapter 4). In the late 2000s, the scheme encountered problems, as the fund manager, the Rural Development Bank (RDB) could not make the funds available for lending. The RDB still had a balance of K1.6 million; when the loans to the coffee credit guarantee scheme (CCGS) were suspended in 2003 they claimed that the bank was being restructured (CIC, 2005b). In 2005, a report revealed some problems with the implementation of CCGS (CIC, 2005a). These problems included the RDB's lack of oversight of the facility and the unavailability of operational funds to support the logistics of the program. Because of poor institutional record keeping, only a preliminary cost-benefit analysis was carried out for CCGS.

Problems associated with the freight scheme

As outlined in Chapter 4, the Freight Subsidy Scheme initially began in 1999 to freight coffee from remote locations to market but the financial sustainability of the scheme became a concern. Through subsidising freight costs, the fund was depleted

over time. Moreover, as government support declined, an alternative approach had to be sought. In 2003, the scheme was redesigned to the Freight Surety Scheme to make it more sustainable by allowing the scheme to pay freight costs up-front, with costs recovered at the point of sale. Thus, it guaranteed a pool of funds to be used as a revolving fund. A cost-benefit analysis conducted in 2006 reported that recorded freight costs did not reconcile with the amounts collected at the point of sale. This anomaly may mean record keeping was poor or records may have been manipulated. The scheme encountered misappropriation of funds with a few CIC officers being reprimanded. The scheme is currently operational.

Inconsistent grower support services

In 2003, in another attempt to assist smallholders, the CIC began promoting grower groups. This was part of a reformed approach to provide extension services based on farmers' demand (FDDE). It was believed that by developing collective action in grower groups, coffee production, and quality would be improved. The CIC used the PRAP process to organise farmers into grower groups. Api *et al.* (2009) highlighted many of the problems associated with the PRAP methodology including the high costs to execute the program. PRAP costs exerted pressure on the recurrent CIC budget; the PRAP method was cumbersome and farmers were not asked to participate in suggesting the types of training they required from the production constraints they had identified but which were left to CIC to decide. Murray-Prior and Padarath (2013) reveal that on average K40,000 per year was spent on conducting a single PRAP involving 800 coffee farmers in a year. They further report that in the seven years (2005-2012) of executing FDDE, less than 1% of coffee farmers were involved. Recommendations were made that the PRAP process be streamlined to make it more cost-effective (Api *et al.* 2009; Murray-Prior and Padarath, 2013). Also, because of inconsistencies in the available 'hard data', detailed evaluation of FDDE was not possible (Murray-Prior and Padarath, 2013).

Other problems that affected FDDE were related to payments of service providers and cash flow. From 2007 onwards, payments for training and service providers were not released because of internal cash flow problems in CIC (Batt *et al.* 2009; Murray-Prior and Padarath, 2013) and CIC did not have a dedicated pool of funds to support the FDDE. Many of the farmer groups that underwent the PRAP process were

informal; the intention was that eventually grower groups would be registered with the cooperative office as they began to develop social capital and strengthen group leadership. However, 'new' priorities, like village coffee rehabilitation program, district partnerships and nursery projects diverted the focus away from strengthening grower groups and leadership.

Poor implementation of village coffee rehabilitation

The CDA extensively rehabilitated smallholder coffee gardens in the late 1980s, but failed to make follow-up visits to carry out de-suckering and sucker selection (Fleming and Antony, 1993). The huge effort in pruning coffee trees in many places may have reduced the available number of CDA officers to conduct follow-up visits. By 1991, the CDA merger with CIC led to priorities once again being changed.

In 2009, the CIC carried out the village coffee rehabilitation program to rejuvenate ageing coffee trees with financial support from the NADP (Chapter 4). The project attempted to mimic the CDA coffee rehabilitation of the late-1980s. However, the project spent vast sums of money on items that had no relevance to improving coffee production, such as the purchase of blankets, and bush knives. An institutional investigation revealed huge discrepancies in record keeping and poor quality tools were acquired at inflated costs. Low smallholder productivity and poor quality coffee continued to remain significant problems. Thus, the execution of the program lacked proper planning and efficient monitoring.

The lack of regular monitoring and scheduled reviews of many of the memorandum of agreements (MOAs) with provincial governments, districts, civil society organisations and resource companies have rendered many MOAs not fully capable of achieving their intents to promote coffee production. Many of the MOAs were based on partners contributing finances while CIC offered expertise and training. However, the approach to partner with districts has an element of political leveraging rather than achieving improved coffee production. For example, the MOA finances were in most cases expedited by partners with minimal input from the CIC on where money should be spent thus undermining the intent of the MOAs.

Poor institutional governance systems

Industry institutions were created with the aim of regulating, facilitating and providing leadership through research and development activities to assist the growth of the industry. However, Itika (2005) cautions that, sometimes, reforms in institutional frameworks could constrain the growth of the coffee industry. Some of the problems associated with reforms in implementation are outlined below.

The CMB was created to regulate the PNG coffee industry. The localisation policies that were derived from the 1974 legislation of the CMB to allow local entrepreneurs to participate as processors and exporters led to some problems (Fleming and Antony, 1993). For example, between 1974 and 1979, non-citizen ownership of coffee processing facilities declined considerably and shifted to local ownership. About this period, overseas buyers of PNG coffee complained of the poor quality (Fleming and Antony, 1993).

As explained in Chapter 4, political interests also became apparent with attempts to manipulate the issuance of licences to political cronies in the industry. For example, in the late-1980s, the late Sir Iambakey Okuk, the then Agriculture Minister influenced the CIB to issue an export licence to Panga Coffee. The company obtained a loan of K11.1 million from the CIF to purchase and stockpile coffee but was unable to repay it. The CIB and thereafter CIC as fund manager sued Panga Coffee, which led to a protracted legal battle in the 1990s (Sinclair, 1995) and 2000s to recover the loan. The CIC eventually won the case in the 2000s and was awarded a K14 million but was unable to recover the monies as the owner of Panga Coffee died (Ricky Mitio pers. comm., 11/06/16).

Also, the CIB encountered illegal activities of processors and exporters that challenged its regulatory functions (Fleming and Antony, 1993). For instance, the CIB placed on notice a coffee mill owned by a local company from Lufa, EHP, because it did not meet licensing requirements and ordered it to cease processing coffee. When coffee inspectors made a visit to the site, they were harassed by the operator. This undermined the power of the CIB, and the processor continued to use the facility.

From 1986 to the mid-1990s, the CRI was active in research as finances were readily available. However, following the merger of the CRI with the CIC in 1991, research outputs such as innovation and publications of peer-reviewed articles and stakeholder engagement have diminished significantly. This is because the CRI has suffered from protracted periods of limited funding support from the CIC in its regular budget to facilitate new research activities and, thus, there are gaps in innovation generation. It is paradoxical that the CIC researchers are paid salaries but the organisation fails to fund research projects. This problem, as argued by Fleming and Antony (1993) occurs when political expediency takes precedence over research priorities and funding. Moreover, the merging of the CRI with the ESD in 2003 was to facilitate effective information exchange between scientists and extension officers so that new technologies could reach farmers through regular interactions. Unfortunately, inadequate funding has drastically curtailed effective research and extension collaborations (Murray-Prior and Padarath, 2013).

Conclusion

The coffee industry is beset with numerous complex problems which are undermining coffee productivity, production and quality. The seeds of the problems in the managed subsector began as early as when plantation land was bought and the original landowner names did not feature in the land sale agreements. Lack of proper coffee farming knowledge was also a problem. These problems had an enduring influence upon plantation productivity, which worsened after plantations were transferred to local entrepreneurs, landowner business groups and corporations. Local business managers and owners did not manage the plantations and the blocks as commercial businesses, which led to failures. As for the blocks, lack of sweat equity investments from shareholders, differences between management agencies and business managers, and internal conflicts among shareholders have contributed to their decline.

After the departure of European planters in the 1970s, the support services that used to be available for smallholders also collapsed. There was no entity to fill the gap, particularly the availability of quality processing facilities nearby for rural farmers to access and sell their coffee. Incompetent local business managers could not replicate the efforts of early European planters who had strong bonds with villagers

surrounding the plantations (see Chapter 8). Smallholders had to produce coffee on their own and encountered numerous challenges to increase their productivity and produce good quality coffee.

The failure of sectoral and industry strategies have contributed to the decline in productivity and production in the coffee industry. The strategies failed as a result of poor governance and weak institutional leadership. The inconsistent support from the CIC and the demise of management agencies led to diminishing services for plantations and blocks. Also, institutional projects produced mixed results where records were not kept thus making evaluation impossible. The CDA coffee rehabilitation program assisted in revitalising the coffee tree stock, which led to the industry achieving 1 million green bean bags in the late 1980s. However, recent approaches applied in coffee rehabilitation have been unsustainable. Furthermore, poor governance systems emanating from poorly designed institutional reforms in CIC has also undermined service delivery. Inadequate funding to institutional programs and projects has resulted in poor services to stakeholders in the industry. Lack of credit facilities, inadequate extension and advisory services, close of rural coffee mills and tribal conflicts have in all contributed to the decline of the coffee industry.

Chapters 6, 7 and 8, examine the constraints on coffee production in more detail and outline some strategies resilient farmers are employing to be successful. Chapter 6 focuses primarily on smallholders who are members of grower groups.

Chapter 6

Constraints on Coffee Production of Smallholders in Cooperatives

Introduction

Chapters 4 and 5 examined the historical growth of the coffee industry and the main factors contributing to its decline. Chapter 5 in part discussed some of the coffee production problems of smallholder farmers who are not members of farmer groups or independent farmers. Because of the decline of the plantations, the support services that plantations used to provide to smallholders in the 1960s and 1970s also disappeared. To address the lack of support services some farmers formed cooperatives to source services from partners. However, independent farmers and cooperative farmers continue to encounter problems in coffee production which have contributed to the fall in productivity and the inconsistent supply of quality coffee.

This chapter focuses on smallholders who are members of cooperatives. It argues that coffee production problems that smallholders in groups encounter are not as severe as for independent farmers. Smallholders participating in cooperatives have benefited from receiving support from chain leaders and lead partners in partnerships which have improved farmers' coffee production capacities (see Chapter 8). Through group participation, farmers have been able to improve their productivity and quality of coffee (Chapter 8). The smallholder grower groups are replicating the role of early European-owned plantations as focal points for support services for coffee farmers. However, at the household level, even farmers in grower groups still face a number of constraints that undermine their production.

In this chapter, I present my survey results derived from two farmer groups (see Chapter 3). In group one there were 47 coffee farmers who were members of the Neknasi Coffee Growers Cooperative Society from the Wain area, Nawae District, Morobe Province; and group two consists of 44 farmers who belonged to the Korofeigu Organic Coffee Farmers in the Korofeigua area, Unggai/Bena District,

EHP. These grower groups cooperate with chain leaders and lead partners to produce coffee. The two cooperatives are hereafter referred to in the thesis as the Neknasi group and the Korofeigu group.

Smallholder Productivity

The productivity of farmers participating in grower groups is better than that of independent farmers. Average productivity reported for the Neknasi group is 876 kg gb/ha and for the Korofeigu group 610 kg gb/ha and 747 kg gb/ha for the two groups combined. Whilst the average productivity of the two groups is lower than those attained from the 1970s to the 1990s, it is higher than the more recent finding of UniQuest (2013), which was 382 kg gb/ha by independent farmers (Chapter 5). The average number of coffee gardens per households in the Wain area was 1.7 and 3.1 in the Korofeigu area. The average garden size at Wain was 0.9 ha and at Korofeigu was 1.6 ha. This compares with mean average areas of 0.3 ha from 1960s to 1990s were higher from the two study sites (Table 6.1). The higher productivity in the Neknasi group may be an outcome of the better maintenance of the Wain farmers' gardens. The Wain farmers also have a smaller area of coffee to care for which may account for the higher yields than the Korofeigu farmers.

Table 6.1: The mean number of coffee trees and the mean size of farmers' gardens.

Year	Mean no. of trees	Mean area (ha)	Location	Source
1965/66	346*	0.15	Goroka, EHP	Donaldson and Good, 1988
1968	425*	0.17	EHP	Finney, 1968:399
1972/73	500	0.20	EHP	Anderson, 1977
1977	530	0.21	EHP, Simbu, WHP	Anderson, 1977:10
1992	1,102	0.43	Bena, EHP	Collett, 1992:89
1994	1,102	0.43	Bena, EHP	Overfield, 1994
2013	3,519	1.37	Anglimp South, Jiwaka; Kundiawa, Simbu; Obura/Wonenara, EHP	UniQuest, 2013
2016	1,798	0.7	Baira, Bena, Asaro, Marawaka (EHP)	Curry <i>et al.</i> (2016), unpublished
2016	2,187	0.90	Boana, Morobe	This thesis
2016	4,048	1.60	Bena, EHP	This thesis

*Goroka area. Tree population and areas are calculated using 2,569 trees/ha (see Chapter 3).

Another reason that may explain the difference in productivity between the two farmer groups is education (Figure 6.1). Farm productivity is positively correlated with education levels (Appleton and Balihuta, 1996; Kurosaki and Khan, 2006). Educated farmers are more likely to adopt technologies that improve farm productivity (Li and Ma, 2015). When education levels rise, there is also potential for educated households to diversify into non-farm activities to sustain their livelihoods (Oseni, 2007).

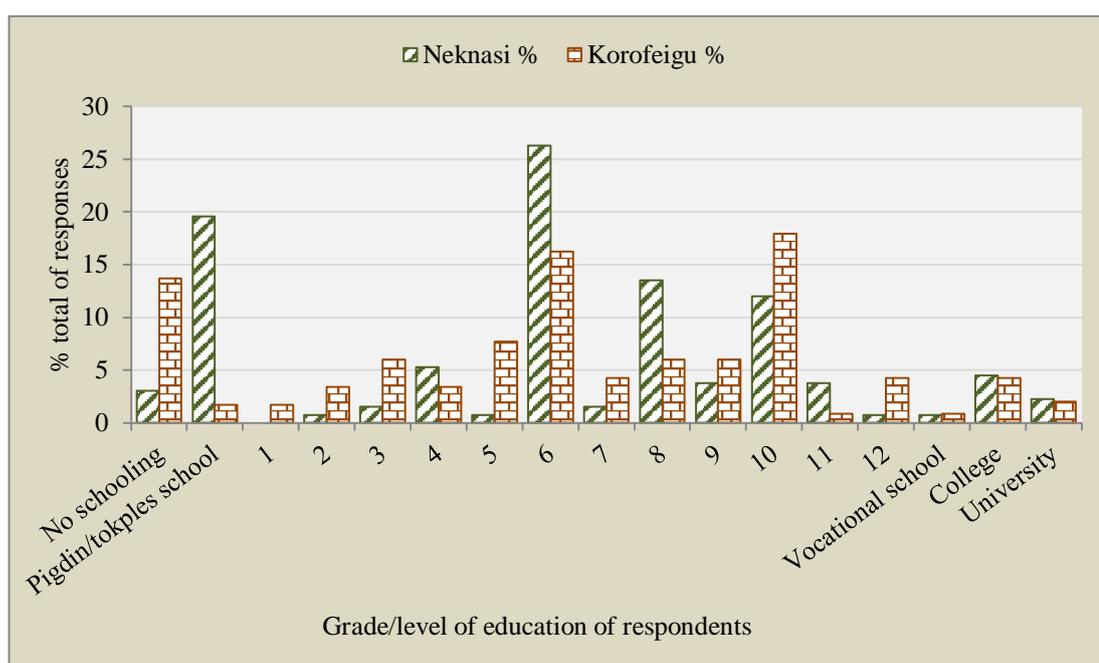


Figure 6.1: Education levels of household members who are 18 years old and above among the Neknasi and Korofeigu group farmers.

A higher proportion of household members from the Neknasi group who were 18 years of age or older completed Grades 6 and 8 compared with Korofeigu farmers. Most respondents who were over 50 years of age from Wain (20%) area attended *tokples* [local language] schools run by Lutheran missionaries compared with only 2% of the Korofeigu group. Furthermore, 14% of household members from Korofeigu have not attended school compared with only 3% of the Neknasi group. The basic literacy levels among Wain farmers are better than households from the Korofeigu group. Thus, higher literacy rates among the Neknasi group members may partially explain their better farming practices and higher productivity.

Additional factors that influence coffee productivity and production include farm inputs, labour, the price of coffee and the health and age of coffee trees. Farmers from the Neknasi and Korofeigu groups have been planting coffee since the 1960s. Some growers have expanded the coffee plantings of their parents or grandparents. In this study, a high proportion of coffee was planted in the 1990s among members of the Neknasi (55%) and Korofeigu (50%) groups (Figure 6.2). The surge of coffee planting in the 1990s could be related to several factors. In the late 1980s, the Coffee Development Agency had conducted massive awareness programs on coffee production through coffee rehabilitation exercises and field days, which may have encouraged many farmers to plant coffee. Another factor that explains the increase in planting was the formation of the CIC in 1991. CIC extension officers were stationed in all coffee growing districts in PNG. Consequently, the regular contact with extension officers may also have positively influenced farmers to expand their coffee plantings.

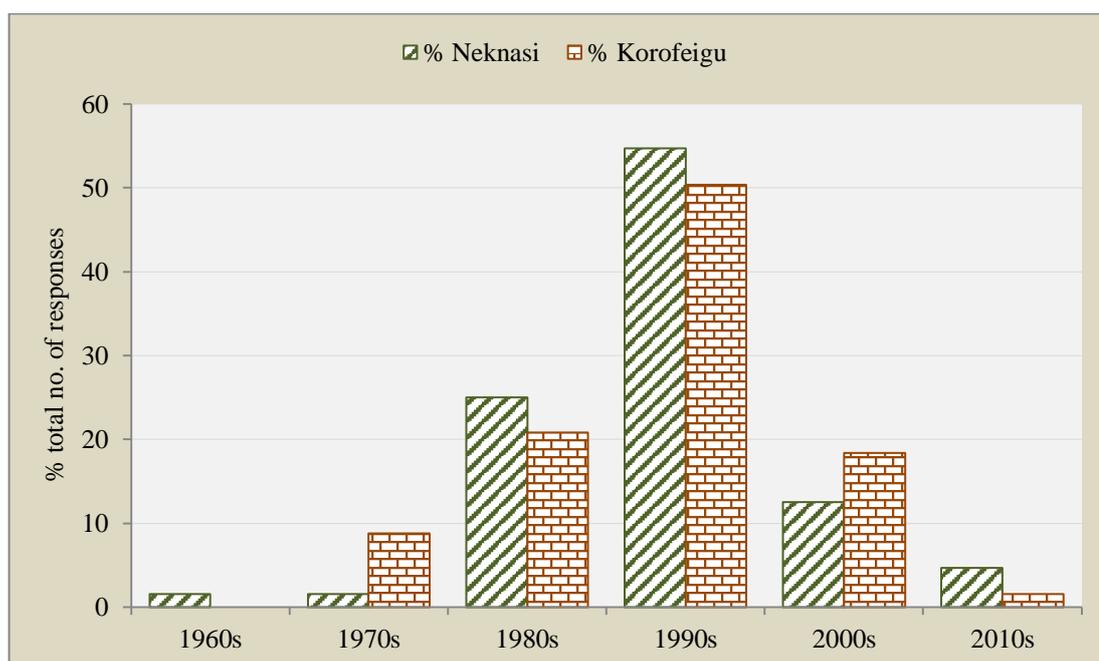


Figure 6.2: The decades in which farmers from the Neknasi and Korofeigu groups planted coffee.

Coffee Production Constraints

Despite the relatively high coffee productivity of farmers in this study, several factors combine to undermine their productivity and production. Respondents in this study reported that some of the key factors undermining coffee production are:

household labour strategies that cause labour shortages; pests and diseases; pig damage; cherry theft; lack of credit; lack of training; land scarcity; and, lack of coffee pulpers. These are discussed below.

Household labour strategies

This section discusses how household members allocate their labour. In March 2014, just before the onset of the peak coffee season, I interviewed smallholders who were members of the two cooperative groups. Farmers were asked to rank activities in terms of the total time allocated to coffee farming and processing activity. Labour activities included work in coffee, food gardens, and other events including school attendance, church, socio-cultural activities, assisting relatives or leisure. Data were collected from husbands, wives, and their first-born sons and daughters.

The main activity for men and women in the Neknasi group was coffee production. Husbands (71%) and wives (69%) almost equally ranked coffee work as their dominant activity (Figure 6.3). The Neknasi group farmers reported that husbands and wives have demarcated coffee gardens. The husbands own the coffee gardens and allocate a portion of the gardens to the wives to harvest coffee as their own. After processing, the couple separately sell their coffee and earn their own income. The subdivision of coffee gardens has enabled husbands and wives to both contribute equally to coffee production.

Coffee production is also the main activity among households in the Korofeigu group. Seventy percent of husbands ranked spending most of their time in coffee production while only 12% of wives ranked coffee work as their main activity. There are two possible reasons why husbands ranked coffee work as their primary work activity. Firstly, the average holdings of households in the Korofeigu area are more than double the size established by Collett (1992) for independent farmers (Table 6.1). The larger coffee garden sizes of the farmers from the Korofeigu area may explain why male farmers claim they spend more time in coffee work than food gardening. Secondly, the married women members of the Korofeigu group spent more time in food production, which may result in husbands needing to do more of the coffee work to maintain coffee production. In my interviews with women from Korofeigu, they mentioned spending more time in food production where they had

more control over the income they received from food sales. This finding concurs with the findings of Curry *et al.* (2007a) and Koczberski's (2007) in the PNG oil palm industry where women were reluctant to assist in oil palm production if their husbands did not share income with them fairly. However, husbands and wives from Neknasi group equally share responsibilities for coffee work because each is assured to earn income from coffee they produce.

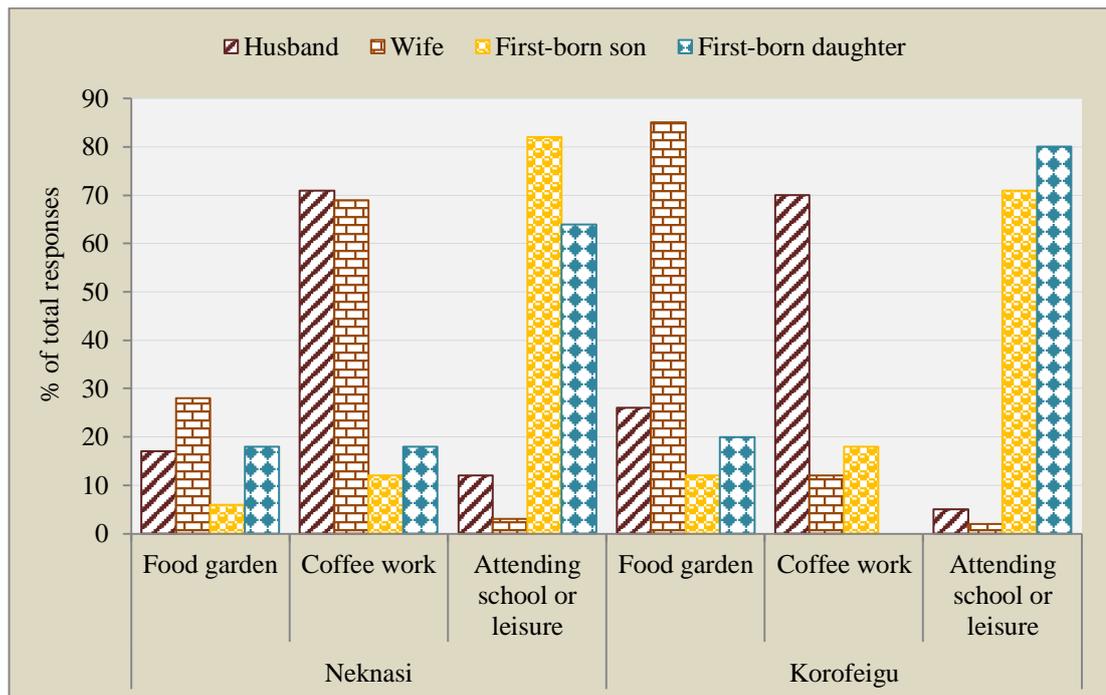


Figure 6.3: Household members first ranked activities where they allocate most of their labour time.

Farmers were asked to report on coffee activities that were carried out in the previous month (Figures 6.4 and 6.5). The Neknasi farmers indicated that both husbands and wives harvest ripe cherries, process coffee, market (sell) parchment coffee, apply organic fertiliser in coffee gardens and maintain new coffee gardens. The large contribution of labour of husbands and wives in the Neknasi group, and of men in the Korofeigu group may be related to the positive influence of social capital generated through collective action (Chapter 8). This is because farmers in cooperatives are able to exchange labour and information in coffee production which has facilitated increased productivity.

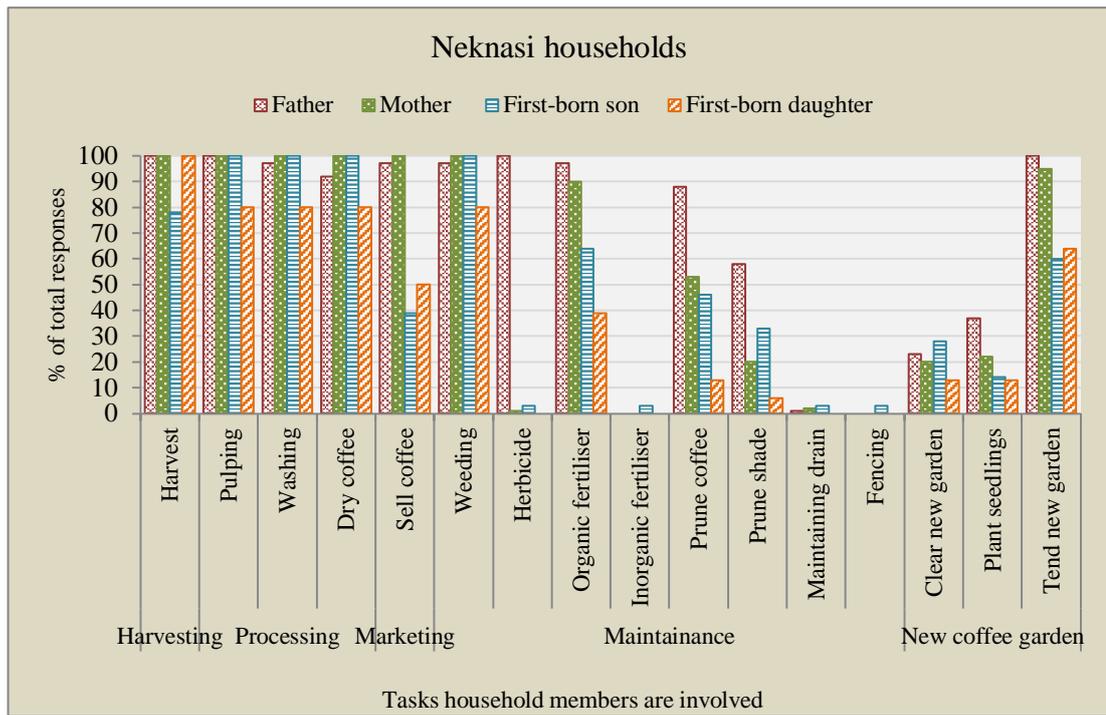


Figure 6.4: Coffee farm tasks in which the Neknasi household members are involved.

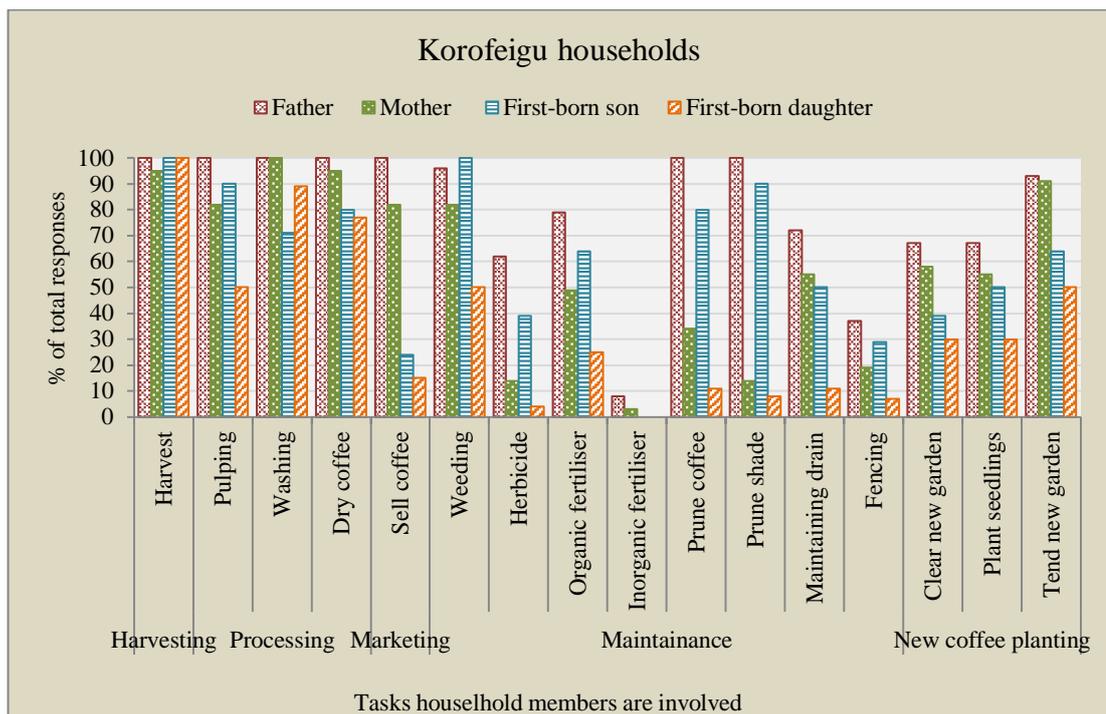


Figure 6.5: Coffee farm tasks in which the Korofeigu household members are involved.

Moreover, men from the Wain and Korofeigu areas prune coffee and shade trees. The women in the Neknasi group mainly assisted with harvesting, processing and working in the new coffee gardens. Fencing and maintaining drains were additional tasks performed by farmers from Korofeigu, which are not carried out by farmers

from the Neknasi group (Figure 6.4). Husbands from Korofeigu largely carried out coffee garden maintenance work but in harvesting and marketing their wives also assisted (Figure 6.5)¹. The first-born sons and daughters helped their parents in harvesting, processing, weeding and maintaining the new coffee gardens. The first-born sons assisted with male dominated tasks like pruning coffee trees and applying organic fertiliser. By contributing labour, sons are building up a claim to inherit the coffee gardens.

Labour shortages

Labour shortages are a universal problem among smallholders including members of cooperatives. The shortage of labour was considered to be one of the most prominent constraints on coffee productivity and production among the Neknasi group farmers but less so with farmers from the Korofeigu group (Figure 6.6).

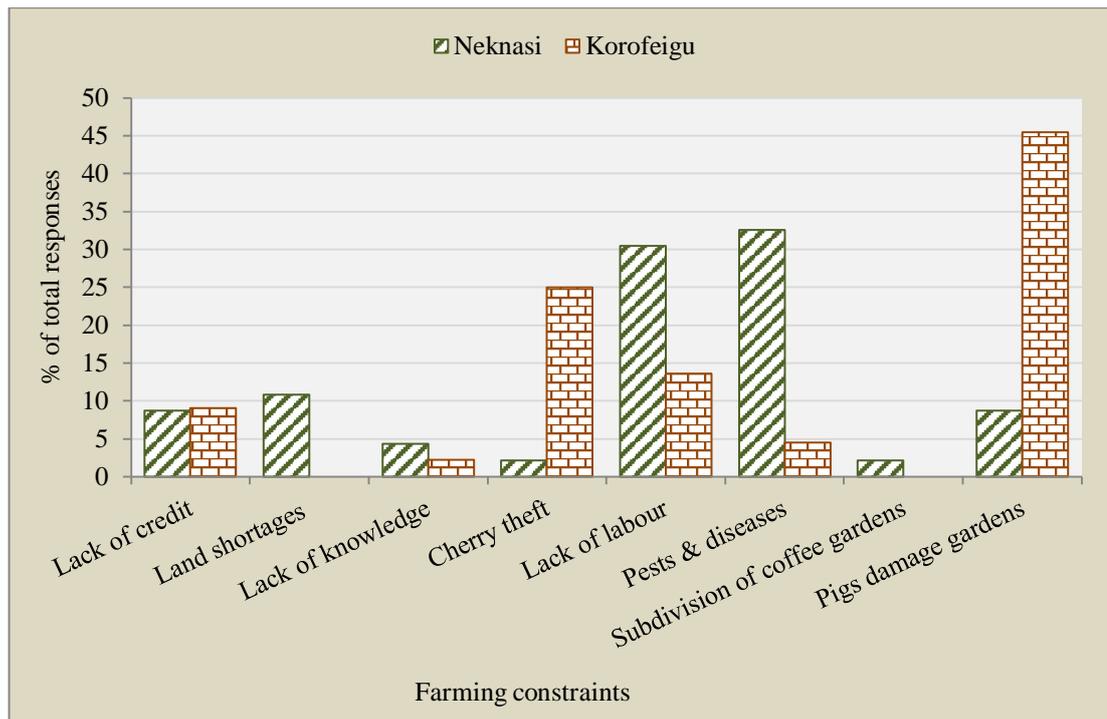


Figure 6.6: Coffee farming constraints among farmers from the Neknasi and Korofeigu groups.

The reason for the Wain farmers' complaints about labour demands were because they comply with stringent Fair Trade standards which were at times cumbersome and require more labour to produce coffee. Many households attempt to meet labour needs by hiring labour or accessing labour through reciprocal labour exchange.

Collett (1992) confirms that both reciprocal labour and hired labour were used together among farmers in Bena, EHP. However, Collett did not provide details of how farmers sourced labour and the modes of ‘payments’ made for labour. I shall, therefore, present details on labour sources and the types of ‘payments’ made for labour.

As discussed above, household members undertake most coffee farming tasks but for some tasks, they engage relatives or paid labourers to supplement labour needs. Additional labour is often sought from relatives for harvesting and weeding by both farmer groups (Figure 6.7) and this concurs with previous findings in PNG (see Finch, 1991; Collett, 1992; Overfield, 1998). The relatives who supply ‘unpaid labour’ include extended family members, other villagers and in-laws. ‘Paid or hired labourers’ tend to be sports, church and youth groups who are paid an agreed amount after the completion of set assignments while others are individual local villagers or labourers from disadvantaged areas who are paid fortnightly wages. Generally, farmers with larger coffee gardens hire labour to prune coffee, maintain drains and load dried parchment coffee for the market. Hired labourers are engaged when households have insufficient labour for coffee production.

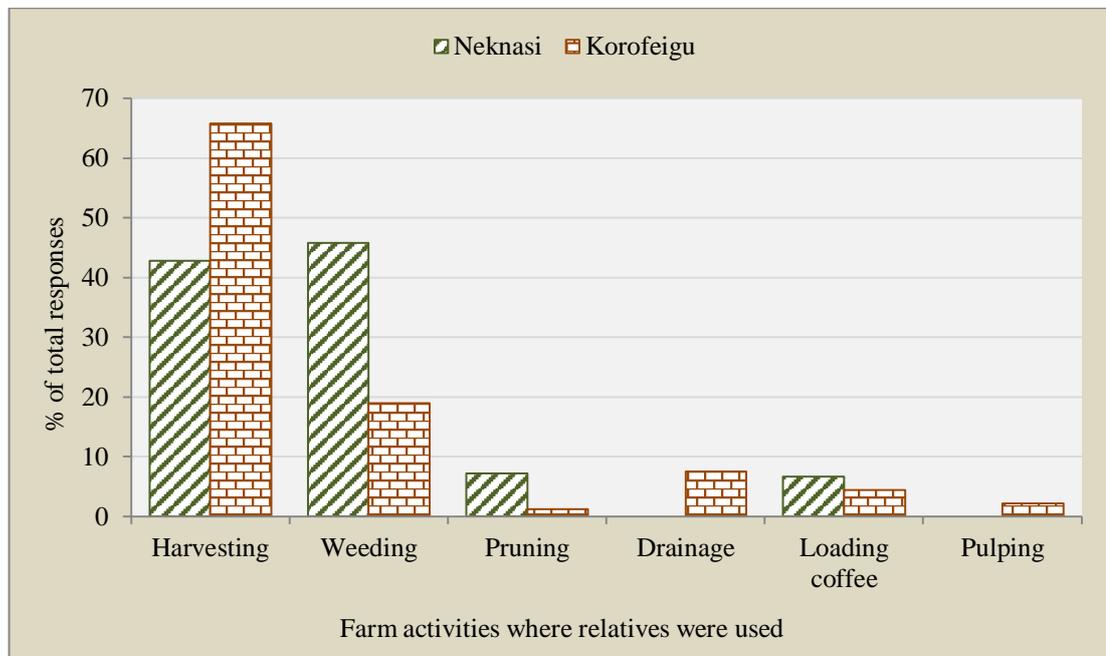


Figure 6.7: Farm tasks where relatives assist farmers who are members of the Neknasi and Korofeigu groups.

The harvesting period in the Wain area is in the wet season. Farmers require additional labour from kinsfolk and paid labourers to harvest quickly before ripe cherries are lost to the rain. The majority of farmers grow the Arabica variety of coffee, Mundo Novo, which is high-yielding but is susceptible to ripe berries being dislodged from the trees because of heavy rain. Some farmers pay cash to relatives who help with coffee work, in addition to the cooked or uncooked food that is normally provided.

Farmers in the Neknasi group do not provide instructions to relatives when they assist in coffee work. Many of the relatives are members of the Neknasi group and are well trained in proper coffee husbandry practices or tasks (Chapter 8). In the Korofeigu group, farmers reported that relatives assist because the household would be unable to complete coffee tasks on their own. Even if the job was of poor quality, Korofeigu farmers appreciated that the task has been accomplished. These farmers are afraid that if they are critical of the quality of the work undertaken by relatives, they may refuse to assist in the future. However, 46% of farmers in the Korofeigu group offer advice to hired labourers on how to harvest and to cut grass before work is undertaken.

The ability to recruit labour among farmers in coffee production is dependent on meeting social obligations, gift and labour exchanges, and participating in socio-cultural events. Many studies in PNG have confirmed the significance of engaging in reciprocal labour exchange to mobilise labour for agricultural farm tasks (e.g. Sexton, 1988; Collett, 1992; Curry and Koczberski, 2012; Inu, 2015). Households remunerate relatives and hired labourers in several ways (Figure 6.8). The form of 'payments' in order of most to least common are the sharing of cooked food and assistance at a later date with labour and cash or in-kind goods for socio-cultural commitments (Table 6.2). Cooked food consists of stored foods such as rice, tinned fish, noodles and lamb flaps. At times, sugar, cooking oil, soap and liquor are also given. Sometimes uncooked food is given to family members to take home. These 'payments' are made as tokens of appreciation for labour supplied. The prevalence of exchange labour among farmers in the Neknasi group is higher than amongst the Korofeigu group (Figure 6.6). This is because when members of Korofeigu group require additional labour, it cannot be met through reciprocal labour exchange as

relatives face similar labour constraints and therefore are forced to pay cash to recruit labour.

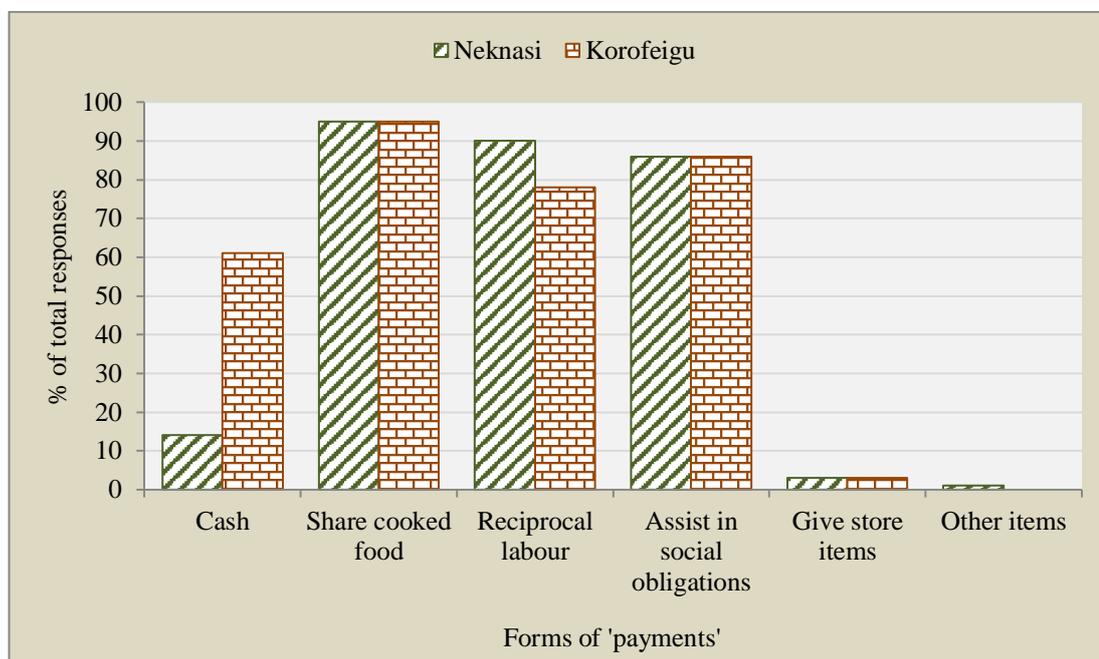


Figure 6.8: The types of 'payments' made by households in the Neknasi and Korofeigu groups to relatives for assistance.

Table 6.2: Typical amount of cash contribution for different levels of education and to meet other social obligations.

Activities		Cash support for relatives or their own social obligations* (PGK)	
		Regular support	One-off payments
Educational fees	Primary school	20-30	100
	High school	10-50	200-300
	Colleges/university	10-50	1500
Mortuary		10-30	100-300
Menarche (<i>Sik mun</i>)		10-20	100-200
<i>Het</i> (male) or <i>beksait</i> (female) payments		10-20	100-2000

*The cash support for school fees offered to relatives is for each year. However, support given for other socio-cultural obligations and activities depends on when the event is taking place, as these events might not occur every year.

Assistance at a later date, to meet social obligations may include supporting kin with cash or in-kind payments towards school fees for children, mortuary payments, community events (*komini hevi*²), bride prices, *het* (head) or *beksait* (backside) payments³, and aiding those seeking medical assistance. Cash support usually occurs when a need arises in the community. However, amounts exceeding K100 are usually one-off contributions for large expenses like school fees or customary

obligations given to relatives. A farmer who receives labour assistance from relatives may pay school fees for his grandchildren, their siblings' children or in some cases, his in-laws' children. Some farmers favour supporting their wives' relatives because in-laws are more likely to provide labour. Relatives receive cash or in-kind support from the farmer and in exchange provide regular labour in coffee farming tasks as required.

Coffee farmers who reside and farm coffee on maternal or wives' land commit more labour and cash support to their maternal uncles and in-laws respectively. These farmers stated that they were obliged to assist their maternal uncles or wives' relatives when problems, social obligations or labour for coffee tasks were needed. Maternal uncles or wives' relatives do not formally request help from nephews or sons-in-law. Because nephews and sons-in-law live nearby, they are aware of pending tasks and therefore are obligated to assist their maternal uncles or wives' family members with cash, labour or food. Providing assistance to their uncles and wives' families facilitates continuous and untroubled access to land and maintains social relationships with them.

These forms of 'payments' and labour exchange systems fit into Netting's (1993) concept of household implicit contracts. Netting describes implicit contracts as the providence of work offered to a family member without expecting an immediate payment for the service rendered. The person providing labour can expect that the individual assisted will reciprocate in the future with a cash payment, labour or in-kind payment when needed. Households receiving labour support from relatives are expected to reciprocate this help in times of need so that the labour supply is assured and the implicit contract is maintained. In my field sites, farmers reported that they were compelled to assist their immediate family members, other villagers and in-laws who regularly supplied labour when a problem or financial need arose. This is also akin to observations made by Finney (1968) of 'big men' lending cash and in-kind support to kinsmen in the Goroka area while Koczberski (2007) reports on similar labour allocation and payment modes for oil palm growers in West New Britain Province, PNG. The recipients of support in return were expected to provide labour. Curry *et al.* (2007a) posit that the labour exchange with relatives maintains

social capital within the community. Thus, reciprocal labour exchange practices reveal the mutual interdependence of coffee farmers in rural communities.

Smallholders from Korofeigu area with larger coffee gardens appear to spend more money, distribute more store goods and give away coffee cherries, than farmers with less coffee trees (Table 6.3). These farmers with coffee garden sizes of 2-5 ha allow their relatives after harvesting to weigh cherries they have picked; they are paid K0.10-0.30/kg or given 10-15 kg of harvested cherries, which they themselves can sell. A similar case was observed with the ‘Loose Fruit Mamas’ in the oil palm industry in PNG, where husbands gave their wives some oil palm fruit bunches for assisting with oil palm work (Koczberski, 2007). The payment of labour with cherry coffee is a mechanism to pay relatives for their labour. Paying relatives with coffee cherry and oil palm fruits to sell and earn their own income is an innovative way to show appreciation of the labour offered and to guarantee continued labour support. This illustrates that indigenous and market exchange is occurring simultaneously in local rural economies thus creating a form of hybrid labour exchange.

Table 6.3: Modes of payments of labour by smallholders with large areas of coffee.

Types of hired labour	Farm tasks	Types of payment
Extended family members and other villagers	Harvesting, grass cutting and pruning	<ul style="list-style-type: none"> • Cooked food (store foods, lamb flaps (<i>mumu</i>⁴), garden food) • Fresh garden food, store foods (e.g. 5-10 kg rice bags) • Cash given after the sale of coffee (K10-100) • Other items (tobacco, betel nut and beer)
Youth, church and community groups	Harvesting, grass cutting and pruning	<ul style="list-style-type: none"> • Cash payment (K20-100) to the group depending on the size of the task
Hired labour	Fence repair, drain work	<ul style="list-style-type: none"> • Fortnightly wages of K50

Disengaging from non-market systems

More coffee farmers, especially those with good market access or who belong to particular churches, are beginning to disengage from participation in traditional socio-cultural activities. Some church members limit their assistance, and have refused to assist with activities that conflict with their religious beliefs such as contributing to compensation payments related to adultery, theft and warfare. Some farmers are reluctant to assist with court fines because they do not want to be seen to

be taking sides with opposing villagers as they also rely on their labour for coffee work. However, coffee farmers who refuse to participate in indigenous exchange systems may be shunned by the community (Strathern, 1982a; Aba *et al.* 2012). For example, when farmers refuse other villagers' requests for assistance in coffee work, help is unlikely to be reciprocated.

Some farmers reported that they work hard to produce coffee to sustain their livelihoods, but social obligations continue to undermine farm investment. The ensuing extract from an interview with a farmer, who owns a 5 ha coffee garden shows his perspective on village social obligations and their impact on his livelihood, and his family's ability to accumulate household and farm assets.

I contribute cash and in-kind to mortuary payments, bride prices, school fees and other socio-cultural activities. Sometimes we need to decide which requests for help from our relatives are important to us as a household so that when we contribute it also benefits us. I can spend 60-70% of my income on socio-cultural activities and, therefore, I do not have sufficient money to meet the needs of my household. For me, I need to compete with my former schoolmates who are engaged in businesses and others who already have permanent houses. We need to adjust and accommodate the changing circumstances. If there is a court case and villagers request me to accompany them, who will then do my coffee work? I have to decide and manage my time. As of 2013, my wife and I made a commitment to purchase an item each year. Last year, I bought a knapsack [for spraying herbicide]. (SH #23, 06/03/14)

The above interview demonstrates that some farmers realise the need to reduce their time and contributions to the indigenous economy and instead reinvest cash income in coffee farming, entrepreneurial activities and education. Some farmers prefer to assist relatives when they have money or surplus food or selectively support their immediate or extended family members over more distant relatives. This study reveals that farmers are beginning to recognise that socio-cultural commitments are drawing away resources, which could have been deployed to improve their livelihoods. However, farmers are intelligent and can exploit indigenous forms of economies to meet the labour demands, food and social security. Other farmers fear that if they refuse to invest in social obligations, a superstitious calamity will befall their family or their coffee gardens, and this compels them to participate in socio-cultural activities or labour exchange.

Coffee pest and disease problems

Further, constraints on coffee production that Neknasi group farmers recognised were the pest and disease problems (Figure 6.6). The Wain farmers reported that pink disease (*Phanerochaete salmonicolor*) was prevalent in the area. Many farmers cultivate Mundo Novo coffee variety, which is susceptible to pink disease. The problem is aggravated by the use of Lamtoro (*Leucaena* spp.) as shade, which is known to host the disease. Wain farmers sell their coffee under the Fair Trade label and are prohibited from using herbicides to spray or spades to weed. To control weeds, farmers must slash the weeds with bush knives, however the cut grass creates wet and humid conditions, which the farmers believe increase the incidences of pink disease. A coffee farmer said that “when we used to spray [herbicide] in the past [before partnering with Fair Trade], pink disease was not a major problem, but now the disease is prevalent after we began to cut grasses in our coffee gardens” (SH # 16, 17/03/14). The Wain area is also cold, affirming Kenny *et al.*'s (2012) finding that pink disease is more prevalent in the cooler and humid regions.

Only a few farmers from the Korofeigu group reported that they had pest and disease problems. The Korofeigu area is dry and so they do not have as many pests and diseases of coffee. The Korofeigu area is highly accessible to extension and advisory services. When farmers have pest and disease problems, they can quickly reach extension officers located in nearby Goroka.

Pig damage to coffee gardens

Another significant problem affecting coffee production among members of the Korofeigu group is pig damage to coffee gardens (Figure 6.6). In the Korofeigu area, many coffee gardens are not fenced⁵ and are at risk of damage by feral and domesticated pigs, which forage freely in coffee gardens often blocking drains and damaging coffee trees and roots. In the Wain area, pig damage was not a severe problem because most farmers' domesticated pigs were fenced. Those farmers affected by pig damage in the Wain and Korofeigu areas have reported the damages to owners and requested them to tether pigs, but some owners have not complied. Thus, some farmers have either killed or harmed pigs found damaging their coffee gardens, and several owners are now responding by tethering their pigs. Farmers are reluctant to sue pig owners, as they are family members. A court action against a

relative can cause disharmony in the extended family. Some Korofeigu farmers claimed that coffee gardens further away from the village were not fenced. A member of the Korofeigu group has identified a strategy to ward off pigs from his coffee gardens. The farmer collects the pig faeces and scatters them in areas pigs have freshly dug in his coffee garden (*SH #22, 06/03/14*). When the pigs comb the area and smell the waste, they do not return to the coffee garden. After the waste has dissolved, the pigs return to root on the coffee garden.

Cherry theft

Cherry theft is a problem among some members of the Korofeigu group (25%, Figure 6.6). Farmers from the Korofeigu area have high access to coffee markets so thieves steal and quickly sell the cherry without being caught. Also, numerous cherry buyers are available in the community. Stealing occurs when farmers are away from the village, attending church services, or when coffee gardens are not visited for several days during the ripening period. Coffee theft affects the morale of coffee farmers and is a disincentive for them to produce coffee. The CIC introduced the cherry ban policy in 2008 to address cherry theft (Chapter 4). However, coffee buyers and some processors are not cooperating with the CIC to enforce the policy, and so the cherry ban has been ineffective. Some farmers have also reported itinerant coffee buyers to village court officials and CIC inspectors, but the response to address the problem remains limited and ineffective. Also, not all villagers are members of the cooperative and thus non-members are likely to be involved in cherry and parchment theft. A village participating in the Korofeigu group has a community law that when a villager catches a coffee thief and is successfully prosecuted in a village court, the thief is fined K200, and the fine is paid to the witness. This community law has deterred cherry theft in that village.

Coffee theft is minimal amongst the Neknasi group members. One reason for this is because there is limited market access and there are very few coffee buyers in the Wain area. Moreover, there are several coffee cooperatives operating in the area, and most farmers are affiliated to these cooperatives and this makes coffee theft difficult. During field visits to the Neknasi group, I observed that farmers could leave their hand pulpers, fermenting or drying coffee and roofing iron in their coffee gardens without any security problems.

Land shortages

Land shortage constrains coffee production (Collett, 1992) and is a widespread problem among smallholders. Population increase has led to household heads subdividing gardens among their sons (Chapter 5). Thus, individual land holdings for coffee are contracting. In this study, land shortages were identified among some members of the Neknasi group (11% of households, Figure 6.6). Two factors explain land shortages among the Neknasi group. Firstly, the geography in the Wain area is steep, hilly and stony so there is little land suitable for coffee and for other farming uses. Thus, access to good farm land is shrinking and some families are facing land shortages to cultivate coffee. Secondly, when husbands die, the widows return to their natal village with their children; thus, many farmers are residing at their maternal village and accessing maternal land. In one case, the maternal uncles of a member of the Neknasi group reclaimed their customary land with 3,100 mature coffee trees (*SH #80, 19/02/14*). In another case, a village court official, and member of the Korofeigu group had to relinquish a block of coffee to a claimant from the same village (*SH #29, 26/03/14*). The claimant argued that the land on which the coffee stands was his customary land. In the past, the population was small, so farmers used relational exchanges to allow relatives to use the land (Chapter 5). However, with an increasing population, the demand for land has grown; leading to some landowners reclaiming their customary land. Therefore, farming coffee on someone else's land, maternal land or wives' land has an uncertain future that can undermine productivity and deter investment in the coffee garden.

Limited coffee farming knowledge

Although farmers from the Neknasi and Korofeigu groups have received various kinds of training, a few reported that they still require additional training in basic coffee husbandry practices (Figure 6.6). Farmers reported that they appreciated training when it is organised with practical demonstrations. Many farmers from the two cooperatives have attained the skills and knowledge on farming and processing coffee. Trained farmers acknowledged that after implementing correct ways of pruning, weed control, cleaning drains, and pruning shade, their coffee gardens were transformed, and they obtained yield increases with high-quality cherries. Also, farmers received training on harvesting ripe cherries (Plate 6.1), the importance of pulping coffee on the same day of harvesting, fermenting pulped coffee using

appropriate fermenting boxes and bags, washing fermented coffee with clean water and drying coffee on raised beds. The farmers from the Wain area take more care in fermenting and washing beans and so produce good clean parchment coffee.



Plate 6.1: A farmer harvesting coffee cherries in the Korofeigu area (Korofeigu group).

Farmers from the Neknasi group acknowledged that they lacked knowledge about the control of pests and diseases of coffee. Some farmers were unable to identify some pests and diseases when asked to do so. Others did not know how to control pathogens like pink disease, which was a major problem among Wain farmers. Farmers could have suppressed the problem by carrying out sanitation pruning where unproductive branches and stems are removed to ensure coffee rows and inter-rows were clear for air ventilation and thus reduces humidity in the coffee garden.

Farmers from the two groups expressed a desire for more training in bookkeeping and budgeting. Some believed that if they understood how to budget household income, they would limit ‘wasteful’ spending and invest more in areas that will benefit the household. In an assessment of training needs for PNG coffee farmers,

Batt *et al.* (2009) confirm coffee farmers ranked financial management as their most critical need. Farmers' desire for knowledge on budgets and bookkeeping suggests that the modern cash economy is gaining a stronger foothold.

Lack of credit

A small number of farmers from the Neknasi and Korofeigu groups reported the lack of credit as a further constraint on coffee production (Figure 6.6). This is because many farmers in the two groups have been receiving farm inputs like tools and pulpers from chain leaders and lead partners through their cooperatives thus their need for credit was minimal (Chapter 8). However, a few Korofeigu farmers with large coffee gardens reported the need to have access to credit facilities from financial institutions so that they could invest in their coffee gardens. Some members from the Neknasi group have obtained credit for school fees for their children from the cooperative group and have failed to repay the loans. Consequently, their cooperative has ceased providing credit services to its members. As pointed out in Chapter 5, farmers have in the past accessed credit, repayment rates were very low.

Postharvest Constraints

Apart from coffee production problems, farmers from the Neknasi and Korofeigu groups identified several postharvest limitations at the household level, which affected production of quality coffee. Farmers face the following problems: poor access to clean water, shortages of motorised and hand pulpers, lack of canvas, parchment theft (Korofeigu group only) and lack of fermenting boxes (Figure 6.9). Fresh water is essential to pulp cherry and wash fermented coffee. The lack of clean water was a major problem for the Wain farmers. Most farmers live away from streams and, thus, traverse gorges and steep hills to access water to process their coffee. Fair Trade policy restricts farmers from using metal drums to store water for processing. The metal drums are likely to rust and contaminate the fermenting bean. In 2015, the Neknasi group expended their premium income to establish a water supply to Sikilan Village and to a site near the village where the group's wet mill is being established. The Korofeigu area is arid, and access to clean water is limited. Korofeigu farmers improvised by using water from water wells to process coffee and sometimes the use of murky water compromised coffee quality. In July 2014,

reticulated water supplies were established in a few villages, although some villages such as Namaro and Sozugu villages are unable to access them.

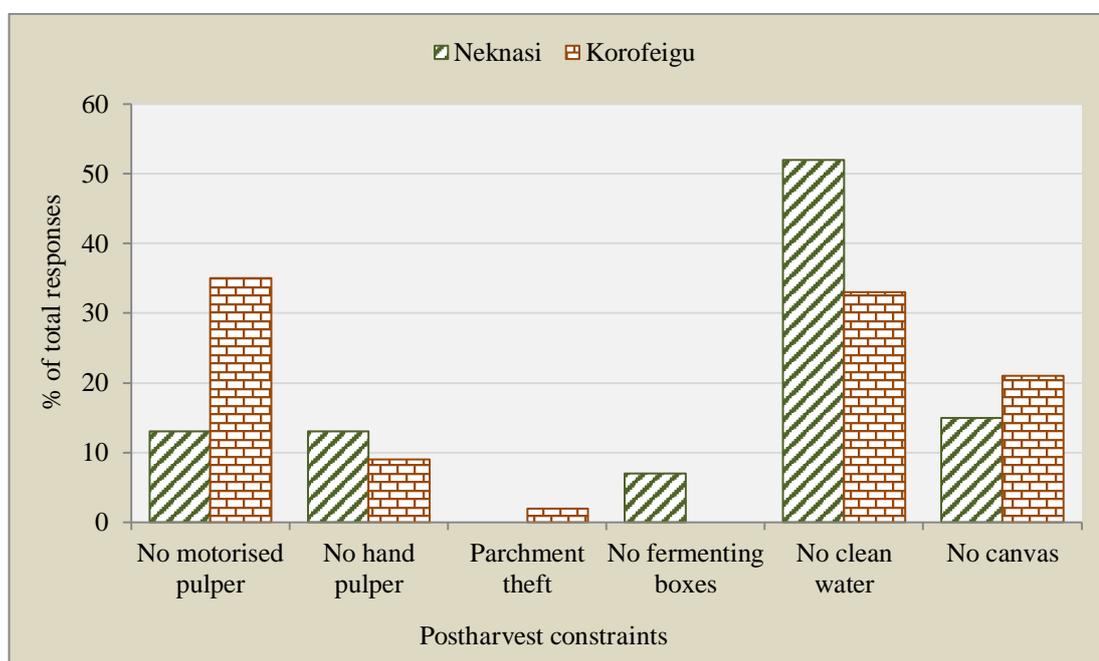


Figure 6.9: Postharvest constraints among farmers from the Neknasi and Korofeigu groups.

The lack of canvas to dry washed beans also limits the production of good quality parchment coffee. Of farmers from the Korofeigu group 21% lack polythene canvas (or a tarpaulin) to dry washed beans. The canvas is shared among relatives and this reduces the availability of the canvas during the coffee season. A small number of Wain farmers (15%) reported that the transparent polythene sheets that they use in drying have a short lifespan and must often be replaced. It is for this reason why some Wain farmers, dry their coffee beans on raised beds while others use polythene canvas that lasts a little longer than the transparent polythene sheets. Furthermore, many farmers build shelters covered with clear polythene sheets to carry out ‘easy drying’⁶ or skin drying of washed beans (Plate 6.1). A few innovative Wain farmers have purchased polycarbonate clear roofing sheets as a permanent solution to dry coffee. Some farmers skin-dry coffee under thatched roof shelter in the coffee garden and transport them to the village to fully dry the beans (Plate 6.2). Others have coffee garden houses, so they thoroughly dry the parchment coffee in their gardens before carrying the coffee to their house for storage.



Plate 6.2: A couple of shelters covered with clear polythene canvas for ‘easy drying’ of washed beans in the Wain area (Neknasi group).

About 87% of Wain farmers reported owning a pulper or have access to a relative’s hand pulper, and 13% (Figure 6.9) of farmers wished to own motorised pulpers because they have larger coffee gardens. Of the farmers in Korofeigu 91% have access to a pulper with very few owning motorised pulpers. Some members of the Korofeigu group (35%) also reported that they wished to own motorised pulpers. Farmers with large coffee gardens and have labour shortages in the household lamented that they are unable to complete manual pulping each day. Thus, pulping continues into the following day leading to deterioration in coffee quality. To address the problem, some Korofeigu farmers pay K7-10 for hired labour for a day’s pulping (*SH #43, 29/03/14*).

Some members of the Neknasi group also reported the lack of fermenting boxes has affected their coffee processing. The Wain farmers are banned from using copper dishes and plastic containers, as these are banned materials under the Fair Trade standards. This is because during the fermentation process, chemical reactions might occur with the surfaces of copper dishes or plastic containers and contaminate the

fermenting coffee beans. Farmers are restricted to the use of wooden boxes that rot quickly. Thus farmers have to regularly build new fermenting boxes.



Plate 6.3: ‘Easy drying’ of washed beans under a palm thatched shelter which is not enclosed in the Wain area (Neknasi group).

In summary, the productivity of the Neknasi group is higher than the Korofeigu group. Several reasons can be attributed to the higher productivity of the Neknasi group such as their higher literacy levels and husbands and wives sharing the coffee farming tasks. However, with the Korofeigu group, there is a lower level of literacy and women spend much less time in coffee production and therefore productivity is lower. Other constraints on coffee production include coffee theft and pig damage among members of the Korofeigu group while a lack of coffee knowledge was a constraint among the Neknasi group, especially in relation to pests and diseases of coffee which are undermining coffee production. The demand for knowledge among Wain farmers could be related to higher literacy levels in the area. As a consequence, Neknasi group farmers were encouraged to seek more knowledge on coffee farming and processing techniques.

Conclusion

The declining support services from the government and state actors have created an opportunity for collective action among coffee farmers to source services and address constraints in coffee production. Farmers in grower groups were better equipped to attain high productivity and produce better quality coffee, which the farmers in this study were able to achieve. This study shows that the average productivity of 747 kg gb/ha from the two cooperative groups is significantly better than the productivity achieved by independent farmers in parts of the Highlands (UniQuest, 2013). Additionally, the Neknasi and Korofeigu group farmers also produce good quality coffee (Chapter 8).

Labour strategies and constraints on labour supply are also important constraints among members of the two grower groups. The equal sharing of labour input from husbands and wives for coffee farming in the Neknasi group led to higher productivity than for the Korofeigu group where women's contribution to coffee was very low. However, labour shortages still remain a challenge in both groups and farmers were pursuing a range of strategies to recruit labour including reciprocal exchange arrangements and using cash to pay labour. The four areas in which farmers invest to access relatives' labour are: providing food, giving gifts, assisting relatives in social obligations with cash and food, and giving money. Smallholders need to be prudent in engaging in the non-market economy as money and time allocated to these activities can draw resources away from efforts to increase coffee production.

Members of the Neknasi and Korofeigu groups encountered production problems like pests and diseases, pig damage, coffee theft, land shortages and limited knowledge of coffee farming, which adversely affected production. With postharvest problems, the lack of clean water to process coffee and a shortage of canvas to dry washed coffee undermined coffee quality. Factors like better knowledge of farming and business that farmers have requested for training can have a positive influence on production and the upgrading of coffee quality. This chapter also points out how the better literacy levels among farmers in the Neknasi group has had a positive influence on their coffee productivity and postharvest practices they employ to

produce clean parchment coffee. In all, some of the production constraints have been alleviated through group action (see Chapter 8 for details).

This chapter argues that smallholders participating in grower groups also encounter coffee production constraints at the household level. However, through collective action, smallholders have improved their productivity and quality of coffee by receiving support services from partners. It can be argued that farmers have been proactive by forming grower groups as a medium to obtain support services from partners. Thus, grower groups have filled the void created by the departure of plantations and their mills, which used to provide support services to smallholder farmers in the past.

In Chapter 7, I present detail case studies conducted for coffee plantations and results from the interviews of coffee industry experts.

Notes

1. The application of organic fertiliser and use of herbicide took place before farmers from the Neknasi and Korofeigu groups had their gardens certified under Fair Trade and National Association for Sustainable Agriculture, Australia (NASAA) Organic respectively.
2. *Komini hevi* (community problems) includes skirmishes, fights, land disputes and adultery cases between households, families or with other people.
3. *Het* (male) and *beksait* (female) payment is a traditional ceremony honouring maternal relatives (see Sexton, 1980). The payment can be made for wives, husbands or their children. It is one-off giving of cash and pigs appreciating the maternal relatives of allowing their daughter (sister) to marry into another tribe and acknowledging the mothers' contribution in the reproduction of the household. This practice is a social obligation prevalent in Unggai Bena, Goroka, and Daulo districts in EHP and Chuave district in Simbu Province and certain regions of PNG only.
4. A form of meal preparation where stones are heated in open fire and when hot, food is placed onto it and is covered with banana leaves, then covered with earth. Water is poured in a hole through the top and the food is steamed during cooking. It is common practice in the eastern region of the Highlands of PNG.
5. Smallholders in the Highlands spend about 65 days per year mending or building new fences to protect their coffee gardens (UniQuest, 2013).
6. Easy drying is a process of drying washed wet beans under a sheltered raised drying bed. The aim is to ensure the water from the bean evaporates and importantly does not crack the parchment skin, which can happen when beans are dried in direct sunlight after washing. The easy drying process produces a better quality green bean.

Chapter 7

Impediments to Success in the Managed Subsector

Introduction

The previous chapter discussed coffee production constraints on smallholder farmers who are members of cooperative groups. This chapter builds on the discussions on the decline of the managed subsector in Chapter 5 by presenting four case studies of coffee plantations and interviews of coffee industry experts (CIEs). The managed subsector in PNG has lost its pre-eminence as the producer of premium plantation coffee. During fieldwork, a few plantations were operating successfully from which lessons can be learned and applied to struggling or failed plantations to reinvigorate them. The chapter argues that when the institutional leadership provided to the managed subsector by CIC and management agencies diminished, numerous problems beset the plantations and blocks, and the subsector went into decline. This chapter further contends that community engagement, which was active during the days of thriving plantations in the 1960s and 1970s diminished after plantations were taken over by local business groups. There have been successes for those plantations and blocks which are actively involved with their local communities; while those that fail to engage in community relations encounter numerous problems.

The case studies on plantations were able to reveal a number of factors that have impeded the managed subsector or successes of some resilient plantations. These factors include institutional leadership, financial management, socio-cultural obligations and prestige, transitional leadership, the inadequacies of modern leaders, the negative impacts of internal conflicts in group-owned plantation and blocks, the benefits of prior business experience, community engagement, and individually-owned businesses. The first case study is a group-owned plantation and the second is an individually-owned plantation. Both case studies reveal the factors that have contributed to the difficulties in maintaining their operations. The third case study is a group-owned plantation that was once successful but is now struggling while the

final case study is an individually-owned plantation which has remained resilient and successful.

The Case of a Group-owned Plantation

The Akai Coffee Plantation had leadership problems, which contributed to the subdivision of the plantation (Box 7.1). It is one of many plantations that Australia New Guinea Coffee and Cocoa (ANGCO) had developed and managed from the late 1970s to 1990s (Sinclair, 1995).

Box 7.1: Akai Coffee Plantation: Lacking institutional leadership

Background

The Akai Coffee Plantation is situated at an altitude of 1,356 m asl in the Arona Valley, Obura Wonenara District, EHP. ANGCO initially developed the 98 ha plantation in 1984 in partnership with clan groups from the Akai villages. In 2001, ANGCO went into receivership and the Akai plantation was returned to the landowners.

Chain leader support

ANGCO established the Akai plantation on customary land on a 25-year lease with the landowners through the Twenty Hectare Development Scheme (THDS). The ownership was 51% to ANGCO for providing capital and management services, while landowners held 49% for their land and sweat equity. Four registered clan-based business groups owned the plantation through their company Akai Pty Ltd. ANGCO developed each of the clan's blocks separately and managed them all as a single entity (Table 1). ANGCO also developed and managed other plantations and blocks totalling 322 ha (including Akai) in the Arona Valley (Sinclair, 1995).

Table 1: The clan name and the area of land contributed by each clan.

Block no.	Business group name	Area (ha)
Akai 1	Oyadimpa	26
Akai 2	Domumpa	32
Akai 3	Oyankake	30
Akai 4	Onayapa	10
Total area		98

From 1984 to 1997, Francis Saliu from Manus Province supervised the planting and subsequent management of Akai. During the development phase of Akai, shareholders supplied sweat equity as part of their contribution. Akai plantation used to produce 1,000 tonnes of cherries annually from 1986 to 1997. The productivity of the plantation was 1,633 kg gb/ha. The plantation created jobs for local people and cash flowed through to the community each fortnight. Sometimes Saliu sourced labourers from Simbu, Okapa and Goroka areas during harvesting seasons and the labour force could reach 1,000. The fortnightly rate paid in 1984 for field workers was K35.00 and K40.00 for sprayers. Harvesters were paid K0.30/kg.

In 1998, ANGCO transferred Saliu to work at one of the company's mills situated in the Arona Valley.

From 1984 to 1997, ANGCO gave annual dividends to each of the groups ranging from K900 to K3,000 depending on the size of their blocks and which groups were the first to join the business partnership. ANGCO also purchased for the groups a Dyna and two L200 Mitsubishi utilities in the mid-1980s. The Dyna was allocated to Akai Pty Ltd, the parent landowner company while the two smaller vehicles were given to Akai 1 and 2 clan groups for being the first two groups to partner with ANGCO. The income from cherry paid by ANGCO after recouping some of its costs was distributed to each landowner group depending on the yield harvested from each block. The clan groups did not have bank accounts, and thus, they were paid cash from the sale of cherry including their bonuses.

Central coffee mill

The partnership between ANGCO and Akai plantation was part of a larger effort to consolidate the supply base in an agro-nucleus setup in the valley. When the number of ANGCO supported plantations increased, it built a coffee factory in a central location in the Arona Valley in 1989. ANGCO and the customary landowners of the mill site agreed to a 25-year land lease for the factory site. The lease agreement allowed landowners to collect rentals of K1,500/month. Partner plantations that surrounded the mill supplied coffee cherries in an agro-nucleus setup. The mill also purchased coffee from independent plantations and smallholdings. Over time, Arona Valley through the ANGCO coffee mill became reputable for producing high-quality green bean.

Lack of institutional leadership at lead partner and group levels

ANGCO maintained a stable leadership of Akai plantation through its management service. According to Elias Menta¹, the Arona Valley Development Authority manager, "The Akai plantation had one principal leader, and that was ANGCO." During ANGCO's management, logistics like transport, farm inputs and wages for employees were readily available to the operations. Hence, there was the timely application of agricultural inputs; labourers were paid on time, and reliable and timely transport facilitated farm activities. Menta cautioned that for new investors to assist the business, the leadership and financial support must come at a level where ANGCO set the benchmark.

In 2001, the plantation was returned to the landowners and ANGCO departed. After the exit of ANGCO, the effect was twofold. Firstly, the Akai group leaders of the four clans who previously relied solely on the institutional leadership of ANGCO had to appoint their own manager. Kawoti Serendi from Akai (group) 1 was appointed by ANGCO to manage Akai Pty Ltd for the next two years. Prior to Serendi's appointment, he was block supervisor to Akai 1. "I applied for the job and ANGCO appointed me to the position," Serendi mentioned. Because he was using the Dyna, other clan group leaders began to feel threatened that Serendi may assume control of their land and benefit from it, and thus disputes and suspicions began to emerge. The dispute over Serendi's leadership led to a leader from one of the other clan groups forcefully removing the Dyna from Serendi, as a demonstration of his lack of trust in Serendi's leadership.

Secondly, in 2003 the clan groups were unable to work collectively and eventually reclaimed their blocks. Prior demarcations already existed, with each clan having their own registered business group and each block developed separately, which later made it easier for clans to reclaim their own blocks. The subdivision and reclaiming of clan blocks at Akai was similar to what happened in other block developments in the Highlands (Hunt and Eko, 2001). ANGCO failed to put in place an exit plan to arrange assistance from state agencies when it left in 2001. Serendi lamented that ANGCO neglected training landowners to become managers, although some villagers had worked as block supervisors. When ANGCO departed, there was no state actor like the CIC to assist the clan business groups and so plantation production began to decline and the mill soon closed. Attempts to revive the plantation were made. However, without strong leadership, the plantation fell prey to many opportunists raising false hopes among the landowners about how to revive the plantation.

Institutional leadership

This case study, among others, suggests that group-owned coffee businesses such as plantations and blocks require regular advisory services, monitoring and supervision from institutional leaders. At Akai plantation, the initial institutional leadership from the chain leader, ANGCO, and leadership in the landowner group were good but with their withdrawal, the plantation went into decline and eventual disintegration. ANGCO's role in facilitating the development of Akai plantation and subsequent management as the leader of the partnership contributed to its success by holding the entire group together. The landowning clan leaders perceived ANGCO as independent and not favouring any one particular clan group. Thus, ANGCO's leadership and authority were respected and clan leaders were heavily reliant on and bound by the institutional leadership of ANGCO. This created stability and helped the plantation to successfully produce good quality coffee from 1984 to 2001. The plantation also attained a respectable productivity of 1,633 kg/ha from 1986 to 1997.

However, when ANGCO departed, clan rivalry set in and the clan groups were unable to work collectively, which resulted in the subdivision of the plantation. Four factors explain the subdivision of Akai plantation. Firstly, other clan leaders in Akai plantation would not accept the leadership of Kawoti Serendi who was previously an assistant manager during the ANGCO management period, as they feared that he would take total control of their blocks and redirect revenue to benefit only his own family or clan group. Thus, internal conflicts between clans together with the absence of a respected chain leader or lead partner to hold the clans together led to

the subdivision of the plantation and its eventual demise. Secondly, the reason for the Akai landowners not undertaking collective action was because each clan's block was originally developed separately and each clan was a registered business group. With the loss of ANGCO's leadership, this initiated the subsequent return of blocks to landowner clans. Thirdly, sometimes in PNG, rivalry can be fierce among clan members and clans to assert control over others (Murray-Prior *et al.* 2009) and some within the group can become resentful of other people's dominance or success (Chapter 2; Box 7.2). Such rivalries and jealousies can lead to the subdivision of plantations and blocks into smallholdings.

Fourthly, another reason for the failure of Akai plantation was that ANGCO failed to institute sustainable approaches to building the management capacities of landowners to become managers (see Chapter 5). Serendi confirmed to me that ANGCO had not trained shareholders as managers. ANGCO also did not have an exit strategy in place in case the partnership broke down. Unlike other management agencies, ANGCO relied heavily on the sweat equity of landowners during the development phase of the coffee blocks (Stewart, 1992). Thus, ANGCO's decision not to invest in training shareholders might be because its commercial interest was paramount; that it wanted to maximise profit unhindered by the non-participation of shareholders at the management level. Other studies reported that many plantations acquired under PRS or blocks developed through THDS failed because of poor management, internal conflicts and poor leadership (e.g. Walter, 1981; Sinclair, 1995; Orlegge, 2010).

When ANGCO managed its coffee mill in the Arona Valley, the mill produced top quality coffee. ANGCO offered agro-nucleus services to most of the plantations and blocks and was able to produce premium coffee. The central processing allowed for quality assurance systems where only good quality cherries or parchment were purchased (Chapter 8). Also, coffee growers that supplied the mill were aware of the quality requirements of the mill. Since it was sold to Arona Valley Development Authority in 2002, the mill remains underutilised. If Arona Valley Development Authority can take the lead in reviving the coffee mill with the agreement of mill landowners, the mill has the potential to re-engage in agro-nucleus services. Plantations such as the Akai clan groups can then be supported to once again come into production.

The Case of an Individually-owned Plantation

Noiya Se'e owns Etawa Coffee, which is a coffee plantation located at Ontenu Village, Tairora area, EHP. Anthropologist John Finch (1997) chronicled the transition of Se'e from ordinary villager to 'big man', who embodied multiple identities as villager, shopkeeper, entrepreneur and a 'big man' in his society. The case study (Box 7.2) highlights the financial difficulties that can arise when business managers make poor investment decisions.

Box 7.2: Etawa Coffee: The challenges of modern business principles

Background

Se'e went to a mission school to attain literacy in the 1950s but left school early at the insistence of his father to assist in the village. Finch (1997) explained that Se'e's exposure to the modern cash economy by working in a shop in Kainantu, EHP enabled him to later enter into business. Se'e's decision to engage in coffee was made when he realised that the income from casual employment in Kainantu was minute compared to what he could earn from his coffee garden in the village. In the early 1970s, Se'e sold ten bags of coffee and he was surprised to earn A\$600 (Finch, 1997). Finch further reported that Se'e purchased a second-hand Land Rover and used it to buy coffee around the Kainantu and Okapa areas.

Plantation acquisition and management phase

Etawa coffee plantation is situated at an elevation of 1,366 m asl. John Boi, a European ex-serviceman, initially purchased the 46.1 ha of land for £165 in 1959 and planted coffee (Finch, 1991). Boi obtained a loan from the Ex-Servicemen's Credit Board and planted half of the land before he died in 1962. The creditor assumed control of the plantation and in 1967 assigned its lease to the PNG Development Bank (Finch, 1991). The bank sold the plantation under the PRS to Se'e in 1975. With the help of clansmen, Se'e completed planting the 46.1 ha.

In the 1980s, Se'e had two land cruisers, a second-hand tractor and a cattle farm. He used the tractor to plough his land to plant coffee and also assisted other coffee farmers who wanted to establish plantations and blocks at a cost of K150/day. In 1981, Se'e obtained a loan of K90,000 from the PNG Development Bank to expand Etawa plantation and develop wet processing facilities. The wet mill to process coffee cherries was established in the mid-1980s. The National Plantation Management Agency (NPMA) became involved as part of the bank loan requirement. Since the NPMA was reluctant to consider some of his interests in management decisions Se'e severed ties with the agency. He reported the unwillingness of NPMA to train him or some of his children on farm and financial management. He claimed that the NPMA received K650/ha/yr as management fees. After the NPMA had exited, a local management agency assisted Se'e for one year. When Se'e took control, he hastily repaid the loans. "I thought that money would continue to come so whatever income that I earned, I quickly repaid the loans," he said. By 1998, Se'e had retired all his debts.

Financial management

However, when I visited Se'e at his plantation during my first period of fieldwork in 2014, he was having financial difficulties. His financial problems hampered his ability to maintain his plantation and fully equip his wet and dry coffee mill. At the time no labourers were working on the plantation. Se'e's land cruiser had broken down, and he was unable to afford to repair it. Se'e began building his dry factory in 1997 (Plate 1). The dry coffee mill depleted much of his savings, and the mill is still incomplete. Vital equipment like a densimetric table has not been installed. Although, the dry mill operates, a few problems require Se'e's attention. For instance, the stove to churn in hot air for the dryer is not working at its optimum; the present dryer is small, thus there is a need for another one. The huller's polisher needs adjustment but the huller does not have an operating manual and, thus, relies on guesswork to fix faults. Se'e revealed that he did not obtain a loan and depended on coffee income to construct the dry mill and the purchase of equipment. He has built a permanent house close to his factory, which was completed in 2005.



Plate 1: Se'e in front of his dry coffee factory.

Because of the diversion of coffee income into the dry mill, Se'e was unable to purchase farm inputs and pay labourers. In March 2014, the plantation was overgrown with thick bushes, and the coffee trees had not been pruned for several years. The current annual production is estimated to be 10-15 tonnes of green bean (i.e. productivity was 217-326 kg gb/ha). Conversely, in 1987, the plantation was attaining 34.1 tonnes of green bean giving a productivity of 742 kg gb/ha (Finch 1991). In 2015, Se'e sold his parchment coffee to Beser Coffee, a nearby plantation (see Box 8.4).

Se'e was asked whether he had financial plans like budgets and farm management

schedules to guide him in management decisions. He paused for a long while before he replied:

I now realise that this is my biggest problem. I can see that it is having an adverse impact on my operations after going through the present financial crisis. Money plan is an essential part of business operations.

Dick, one of Se'e's sons, who has an accounting certificate, was with his father during the interview in 2014. They were further asked if they had some form of record-keeping of income and expenditure to which Dick responded that they had none. In March 2015, Dick had left home to work in Madang. Se'e approached banks for a loan, but they declined his request, as he was unable to produce the required 30% equity.

His children, especially his sons have made attempts to assist but Se'e does not delegate responsibilities to them to manage the plantation. The children come from Se'e's two wives. He has nine sons who will eventually split the assets of their father. "My children are not helping me nor offer advice to me on how to manage the business so I am thinking of selling my plantation and other assets in Kainantu town," he said. Although he is blaming his children, a couple of them informed me that Se'e makes most of the business decisions. In an earlier interaction in 2010, one of his sons was asked why they were not practising recycle pruning on the farm. He replied that Se'e decides on how the plantation is managed.

Plantation labour

In the late 1980s after the plantation was fully developed, Se'e hired around 100 workers from the neighbouring Kamano tribe, Kainantu to harvest but now locals and settlers who live nearby are engaged. Se'e also had permanent workers whom he has now laid off. He says that when he finds money, he engages harvesters to pick the ripe cherries and his relatives to assist in processing coffee. When the operation was running smoothly in the 2000s, Se'e paid K100-120 to permanent workers fortnightly, and cherry pickers were paid K0.30/kg. After facing financial difficulties, Se'e began to engage groups of young men, and they were given tasks to slash grass and prune coffee. After the tasks were completed, they were paid K5-10 depending on the size of the task. Kinsmen no longer assist Se'e in his operations. "In the past, I gave them food after work but the younger villagers no longer help me in my coffee work," he lamented. Villagers now insist on immediate cash payment from Se'e for work done on the plantation.

Engaging in the local socio-economy

"My father advised me to be generous in the society, and in return, I will be blessed," Se'e declared with tears in his eyes. This principle drives Se'e to assist relatives and villagers and to contribute towards community activities with cash and in-kind goods. He contributes to mortuary rituals (K500 each time), bride prices (K100-200) and school fees (K100-10,000) for his children, including relatives. In 2000, he paid compensation of K5,000 and a cow because his car accidentally ran over and killed a villager. His status as 'big man' is maintained occasionally by hosting large feasts. He hosted two huge traditional feasts portraying himself to be a 'big man' in his village (Table 7.2). One was related to the death of his mother in

1987. The other was associated with the opening of the coffee mill in 2002. In addition, he has assisted churches and primary schools and sometimes maintains the feeder road and bridge that leads to his property and village.

Table 7.2: Contributions to two traditional feasts.

Items used	1988	2002
	Mortuary for Se'e's mother	Coffee factory opening
Cash (PGK)	-	1,600
Cattle	1	2
Pigs	42	13
Chicken	-	30
Meat cartons	50	-

(Source: Finch 1991:268-269)

His financial problems have prompted him to consider entering real estate. His plantation has a reasonable number of lumber trees, which he can mill to construct residential houses for public servants. The other option he mentioned was that the government was searching for a piece of land to build a high school in the area, and he is planning to lease the land to the state.

Financial management

Initially Se'e succeeded in his coffee business. He was able to purchase the plantation, several vehicles, a tractor, and build the coffee factory, which consists of both wet and dry mills. A key factor in his success was better coffee prices in the late-1970s and the availability of loan facilities, which the government supported through the PRS and THDS. Additionally, management agencies supported Se'e to comply with budgets, which also facilitated the proper use of recurrent income in relevant operational activities. The management agency ensured that Se'e's debts with the banks were retired according to repayment schedules so the plantation operations ran smoothly.

Se'e is semi-literate and lacks financial management skills, which have negatively impacted on the long-term viability of his business. His inability to fully understand the economic processes of managing a modern business during periods of downturn affected his investment decisions. In my interviews with CIEs (25%), they reported that the lack of basic understanding of business principles and concepts, and the tendency of business managers or owners to divert, misuse or misapply funds reduced reinvestment in plantations and blocks. Several studies on the managed subsector have shown that poor financial management is a major constraint on coffee

productivity (e.g. Walter, 1981; World Bank, 1992; Hunt and Eko, 2001; Orlegge, 2010). This is illustrated in the case of Etawa Coffee. Likewise, poor record keeping is prevalent among business managers and owners, which could have been used for planning allocation of funds and future investment and this has often resulted in the misappropriation of revenue.

When Se'e took over as business manager after the departure of the management agency, he repaid all his outstanding loans by 1998 but failed to follow a repayment schedule to retire his debts. His high rate of repayment: greater than required by the loan repayment schedule affected his cash flow. Without a planned budget, Se'e could not adequately allocate financial resources to various parts of his business to maintain their operations. At the same time, coffee prices were high because of a frost that devastated coffee in Brazil (Talbot, 1997) and Se'e believed coffee prices would remain high. David Freyne in elucidating the dilemma of business managers and owners reported that many locals lack understanding of the influence of world supply and demand on coffee prices (*CIE #3, 03/02/14*). Rarely did local business managers or owners save for bad times.

The costs of farm inputs including labour have increased, which has undermined plantation and block production. The 2014 rural minimum wage determinations have increased the hourly rate from K2.29 (2008) to K3.50, an increase of almost 53% (Imbun 2015). Plantation business managers and owners like Se'e were paying wages ranging from K70-120 per fortnight, which were below the rural minimum wage of K280 per fortnight (Bank of PNG, 2016). On many plantations and blocks, the new rates have not been able to be implemented as rising farm costs have exerted greater pressure on recurrent budgets.

A further problem of Etawa Coffee was the lack of a succession plan which the management agencies and Se'e failed to implement. Similar cases of agencies' unsustainable approaches to managing plantations and blocks have been reported in the coffee industry in PNG (see Stewart, 1992; Sinclair, 1995; Hunt and Eko, 2001; Box 7.1). The engagement of management agencies was part of the loan conditions under the PRS and THDS policies, which local business groups or owners had with the banks. The owners were tied into this arrangement and were forced to pay for

management services, even if they were not satisfied with the performance of the agencies. Owners were mere spectators and had very little to do with daily management (Chapter 5). Relationship problems between owners and management agencies sometimes led to owners harassing agency staff or farm labourers. Sometimes the owners stole coffee. Agency advisors may have feared that owners' involvement would lead to low productivity, and management agencies were reluctant to involve them in the day-to-day management (Stewart, 1992). However, as experience shows, involving owners or business managers in a participatory manner in management would help them to take ownership of farm problems (Ballantyne, 1985; McConaghy, 1985).

Se'e is now 73 years old and desperately needs his children's input for a transition in management. His hesitation to groom his children to assist in management has been a mistake. His children claimed that Se'e does not heed their advice in managing the plantation. Se'e's reluctance to effectively engage them in the business has resulted in his son with the accounting qualification deserting his father to work in Madang.

Socio-cultural obligations and prestige

Abuse of plantation assets and finances sometimes originates from the socio-cultural context in which the plantations and blocks operate (Fingleton, 1981; Sinclair, 1995). Finances earmarked and budgeted for farm investments are often diverted to fund the indigenous economy such as social obligations, compensation payments and traditional gift exchanges. McKillop (1981) points out that the village socio-cultural environment made it difficult for businesses to succeed due to the demands on the business managers or owners to meet social obligations. In my interview with Francis Saliu, he affirmed that, "... many owners receive income from coffee and spend on socio-cultural activities which reduce the level of reinvestment in the plantation" (CIE #09, 28/01/14). Some business managers and owners knew about the technicalities of farm operations but elected to spend their financial resources on socio-cultural responsibilities (Finney, 1973), and even delayed loan repayments or the purchase of agricultural inputs to direct coffee revenue to the indigenous economy. For rural business owners like Se'e, maintaining a harmonious relationship with his clansmen was very important and he invested considerable amounts of money and resources in the local indigenous economy.

Se'e's continued involvement in meeting his social obligations to the clan was also important for the viability of his business as it reduced grievances among the clan and any attempts to reclaim clan land. It is also known that the failure of owners and business managers to become involved in socio-cultural activities in the community may cause grievances to develop around the business from local villagers. It is important for business managers and owners to participate in the local socio-economy to ensure cordial relationships are maintained with clansmen and the community. In group-owned plantations and blocks, it is also vital to ensure that the company meets shareholders' social obligations: if they are not met, reprisals may ensue and undermine commercial operations (Box 7.3).

Finally, Se'e like other local plantation owners perceive their plantations and blocks as a status symbol that give them prestige and help them attain and strengthen their 'big men' status (Grossman, 1981; Turner, 1986; Finney, 1993). Finney (1987) gives an illustration where owners of newly bought vehicles in the Goroka area placard their names on the sides of vehicles to show ownership to other villagers. For some PNG entrepreneurs and business managers the objective of making profits and growing the business takes a subservient role to using company finances and resources to pursue non-market activities that are culturally important and provide personal prestige (Curry, 1999; Boyd, 2013). It can be argued that the shift from the indigenous economy to the modern cash economy has been rapid, and many locals like Se'e did not immediately grasp the amount of work and finance management skills required to manage high input-high output production system, and so diverted business resources to the non-market systems, which undermined productivity on plantations and blocks.

The Case of a Group-owned Plantation

The OK Corporation has operated consistently for the last 37 years. This case study covers two eras: the first era under the guidance of the late Kisan Pau, a 'transitional' leader; and the second era when 'modern' leaders took over. There were successes during the reign of Pau, but when modern leaders took over, problems began to surface and threaten the survival of the company (Box 7.3).

Box 7.3: OK Corporation: Leadership critical to business success

Background

The OK Corporation plantations namely Kimel (147 ha) and Koban (447 ha) are situated at an altitude of 1,575 m asl and located in the fertile Waghi Valley, near Banz township, Jiwaka Province. The total area is 620 ha with 594 ha under coffee planting and 26 ha used for a coffee factory and houses. The plantations have 500 permanent workers and employ over 1,700 seasonal workers annually during good coffee seasons. The company produces between 3,000 and 4,000 tonnes of green bean per year, which includes coffee sourced from smallholders and blocks. In 2014, for farm tasks, the rate for labourers was K70/fortnight except for pulping the cherries, which was K75/fortnight. Cherry pickers are paid K2 per drum (15 kg) of cherry picked.

Pau's leadership, 1960s to 2000

Bobby Gibbes planted coffee on Kimel from the late-1950s to early 1960s. Gibbes sold Kimel Plantation Ltd to Koitaki Para Rubber Estates Ltd in the early 1970s. ANGCO managed the estate for Koitaki from the 1970s to 1979 until it was sold. The local landowner business group acquired the Kimel Plantation in 1979 under the PRS. The OK Corporation is 100% nationally-owned by several clans and tribes in the Kimel area and Jimi Valley. Subsidiary businesses of the company include Kundu Coffee Exports, Kui Kopi Ltd², Kimel Estate and Kopan Ltd (Koban plantations). The Kimel Estate also has processing facilities to process its plantation coffee and coffee purchased from surrounding growers.

Pau instigated the creation of OK Corporation in 1979. He was already an adult when he went to a Catholic Mission School in Banz in the 1950s. Despite being semi-literate, he was a councillor for over five clans in the 1960s. Pau was one of the 'big men' who made an early entry into the modern cash economy by farming livestock and commodity crops when they were being introduced during the post-independence period. Pau mobilised his clansmen to venture into cattle farming in 1976 and vegetable farming in 1978 and 1979. By then he was a village councillor and a church layman and had some knowledge of the modern cash economy. The cattle farm was prosperous, and Pau's clan group succeeded and was one of the local business groups in the area to repay a loan. Later, a rural development officer offered to assist Pau's clan group to venture into coffee farming. Pau mobilised his clansmen's labour and land and began planting a 20 ha coffee block under the PRS.

Pau's father, a traditional leader, Pau Win, who originally sold the Kimel land to a European settler in the early 1950s, felt obligated to re-possess the land for his tribe. The bank required more than K100,000 as equity to purchase Kimel Estate and his people contributed cash ranging from K2 to K1,000 that totalled K14,000 as an initial investment. The purchase price plus the K86,000 equity for the group came from Plantation Acquisition Trust Funds. Pau visited the late Sir Barry Holloway, then Finance Minister when the PRS was under his ministry (Sinclair, 1995) at his office in Port Moresby. Sir Holloway asked Pau how much he had to contribute as his group's equity. Pau responded "I do not have enough money but I want to inform you that I am representing my people and they come from several villages surrounding Kimel Estate and we are also original landowners" (Francis Pau quoted his father 09/04/14). Immediately, Sir Holloway wrote a cheque to make up the

equity and gave it to Pau to pass it onto the Koitaki owner in Banz.

Pau excelled in mobilising his family and clansmen to engage in customary activities. Pau led his people in bride price payments, feasts, mortuary, and compensation payments. He helped to resolve feuds among the tribesmen by using his traditional leadership and organisational skills. In public speeches, Pau's persuasive oratory was respected, and people readily participated in his undertakings. His son Francis Pau stated: "my father had excellent leadership skills; ... and he was always inclusive saying the shareholders are my children" (09/04/14). Pau possessed an intricate knowledge of kinship relationships, which assisted him in traditional distributions and exchange thus making him a natural leader for his people. From 1979 to the mid-1980s, OK Corporation had a stable board of directors led by Pau as its pioneer secretary and the company had minimal problems. He commanded the respect of company directors, general managers, shareholders and the expatriate community.

Business governance arrangements

OK Corporation has three directors and two ex-officio members who include the company secretary and the general manager. Under the leadership of Pau, some innovative and foresighted policies were developed and administered to safeguard the operations and these policies in part enabled the company to survive for 37 years. Policies significant to this success included: not to recruit Papua New Guinean general managers and shareholders; dividend payments to shareholders; mortuary assistance for shareholders; and coffee block development for some shareholders.

Company policy disallows the recruitment of a national general manager. This policy is still in place and since 1979, nine general managers have been recruited. The reason why Pau and other directors refused to recruit local general managers and divisional managers was that they could easily be swayed by the demands of the indigenous socio-economy and thereby deplete savings and profits. Thus, it was argued that an independent person without kinship ties with shareholders and locals would focus on managing the business on commercial principles, which has enabled the company to sustain its operations over the years.

OK Corporation has a committee system³ to distribute shareholder benefits. Bonuses and dividends have been paid since 1980. The amounts have ranged from annual totals of between K80,000 and K300,000 depending on annual profits but in some years there were no payments especially when the company made losses. The company also assists in community, church and sporting activities. Support is given to groups and not to individuals. Shareholders also benefit from mortuary assistance⁴. However, non-shareholders do not receive mortuary assistance. The late Paul Koi⁵, a divisional manager, stated, that "every shareholder knows this policy, so it restrains them from making unnecessary demands on things that are outside of this rule" (04/04/14).

In the 1980s, the company developed seven coffee blocks for shareholders with support from the THDS. The company invested initially with capital and was the bank guarantor for families to obtain bank loans to establish the blocks. The

recipients of this finance provided land and labour to develop the blocks. The company originally provided agro-nucleus services in the 1980s but no longer offers this service. Infighting among shareholders of blocks led to the subdivision of the blocks into smallholdings. However, for some of the surviving blocks, the OK Corporation purchases the coffee cherries only.

In 1998, under the leadership of Pau, the OK Corporation successfully acquired the Koban coffee plantations from New Britain Palm Oil. The Koban land is adjacent to Kimel Estate. Just after the purchase of Koban, Pau passed away in 2000 and in his honour, the land title was registered in his name. The late Koi explained to me that Pau before dying, eloquently declared “I am [buying] these plantations for your children; it is a flower garden to me and keep it for me [in remembrance of me]” (04/04/2014). After Pau’s passing, dissension within the shareholders began to surface and has beset the company since then.

Problems during transition of leadership from mid-1980 to now

In the mid-1980s, a person from Dei Council electorate, WHP, became a member of the OK Corporation board. He was the only educated person on the board and made many of the decisions that eventually led to financial difficulties for the company.

The director from Dei Council was said to have manipulated many board decisions. Some shareholders claimed this director had no shares but dominated decision-making and later became Chairman. In 1999, he influenced the building of Kui Factory near Mt Hagen as a subsidiary of OK Corporation to purchase coffee. However, the mill operated at a loss, as rental disputes emerged with the landowners of the factory site. The disputed mill was handed over to the landowners and the company sold the coffee processing equipment. Another poor decision made by the director from Dei Council was to buy cherries, and thus, the company had several cherry buying depots. Cash given for cherry purchases and the value of the quantity purchased did not reconcile. The decision to buy cherries led to a severe cash flow problem and nearly brought the company to bankruptcy in 2008. According to the current managers, this director colluded with buying depot owners. He also collected rentals from depot owners and also for the mill in Mt Hagen. The cherry buying project was carried out under the guidance of the seventh general manager, who later resigned. In the late 1990s, this director defaulted on a personal loan from the Bank of South Pacific and the bank initiated moves to recover its money from the company. He resigned as the chairman of OK Corporation. He then ensured his son became a director, but the son meddled with company assets and finances, so he was removed with a court order in the early 2000s.

The company policy on the recruitment of shareholders was relaxed in 1989. A few shareholders’ children had graduated from agricultural institutions and OK Corporation began to employ shareholders as divisional managers and permanent casuals. Some shareholders believed that this led to certain families dominating senior management roles and accruing unfair benefits from the plantation. Disgruntled shareholders in 2013 started to steal cherry from the plantations. Company security guards caught one of them, and a fight ensued resulting in two deaths. The fight was between two shareholding clans. During my first visit in 2014, the company was in the process of settling the feud by way of paying

compensation to the relatives of the deceased. A community leader remarked on a few shareholders' influential roles in the company. "When Pau was around, we knew that the business was for all of us, but after his death, it has become more like a family business", the community leader said (11/04/14).

A court case was pursued by certain factions of the shareholders against the company for a 60% share of Kopan Ltd. The aggrieved factions are ordinary company shareholders and based their claim on being the customary landowners of Koban plantation land. The company won the case. However, the disputing faction is determined to obtain the 60% shareholding, thus this dispute continues to simmer and is likely to re-emerge in the future.

The company's processing facility is leased to a local company to process coffee under a memorandum of agreement. OK Corporation has had cash flow problems since 2008. Rilke Coffee, a coffee buying company in Mt Hagen, has assisted and bailed the company out of the crisis. Rilke Coffee was operating the OK Corporation's coffee mill at Kimel during my first field visit in 2014. However, OK Corporation manages Kimel and Koban plantations and the cherries are sold to Rilke Coffee at market price (K1.00/kg). Rilke Coffee also purchases coffee from the surrounding community to process at the Kimel factory.

The Kimel and Koban plantations were well-maintained when I visited in March 2014 (Plate 1). Drains were clean, weeds were under control, coffee trees were pruned according to farm schedules, shade levels were sufficient to allow sunlight to penetrate through to coffee trees and roads on the farm were in a usable state.



Plate 1: Recycle pruned Catimor trees, a semi-dwarf Arabica coffee variety on one of the plantations in March 2014.

During my second fieldwork period in March 2015, the coffee trees on the plantations were nutritionally stressed, there was considerable dieback of coffee beans and the plantations were in poor conditions. Fertiliser was not applied on the plantations on time and this reduced production in 2014. Because of cash flow problems, the company could not afford fertiliser or pay labourers to work on the farm. Cherry theft was a major problem for the company in 2014 and 2015 and the company incurred losses in those years. The eighth general manager resigned in early 2015 and the ninth expatriate manager was recruited later in the year. In my third field visit in January 2016, the plantations were in poor conditions (Plate 2).



Plate 2: The poor status of coffee trees on one of the plantations in January 2016.

Transitional leadership

OK Corporation was once a successful group-owned coffee business. Its success was largely attributable to the leadership skills of Kisan Pau. Pau's leadership attributes epitomised a combination of traditional and modern values to mobilise his people effectively for coffee production. Sengere *et al.* (2008, p. 93) in a case study of a group-owned plantation contends that traditional leaders "live similar lifestyles to the others in the group, but whose drive, intelligence and charisma attract and stimulate other people" to engage in communal activities. When leaders like Pau who is inclusive in public speeches, which are backed with charitable behaviour towards shareholders and being good examples to their community, they can command the respect of shareholders and foes alike, which ensures a healthy business

environment. Pau was a transitional leader, a leadership style that embraces both traditional and modern leadership attributes, and can be seen as a hybrid form of leadership. Finney (1993) terms leaders such as Pau as first-generation business leaders. These were leaders who had been exposed to the modern cash economy and who were able to engage their people to enter into commercial business. Also, Pau's prior leadership in the clan business activities also positioned him to undertake larger leadership roles in OK Corporation. Thus, Pau was able to provide appropriate leadership that enabled the company to thrive during his period of management.

During Pau's leadership, the company developed unique and innovative company rules that assisted in meeting indigenous socio-cultural and economic aspirations of shareholders by providing mortuary expenses, paying dividends, and developing coffee blocks. Moreover, Pau and his directors were also conscious of the influences of indigenous values that could permeate into company operations through the employment of local business managers, thereby undermining business operations. Thus, the company had rules to prevent the recruitment of shareholders and national general managers. The two policies were intended to create a bulwark against the misuse of company finances and assets through indigenous values like the *wantok* system, which is deemed to be responsible for the demise of many commercial businesses in PNG and stifling opportunities for development (Martin, 2007). For example, some management agencies feared that when unemployed shareholders requested assistance, local employees would willingly misuse company resources to assist relatives and therefore many management agencies ceased recruiting managers from the shareholder group (Stewart, 1992).

However, others pointed out that some indigenous values have beneficial aspects in which social capital within groups can blossom and stimulate developmental activities (Mannan, 1976; de Renzio, 2003). For instance, clan and tribal groups collectively pooled resources like cash, land and labour to develop coffee blocks or purchase European-owned plantations as discussed in Chapter 2. Shareholders of Akai Coffee Plantation and OK Corporation used comparable approaches to develop and acquire their plantations respectively.

Inadequacies of modern leadership

The elevation of educated directors and recruitment of shareholders to managerial roles has undermined the operations of OK Corporation. The poor decisions of the director from Dei Council led to the cash flow problems of the company. Under his direction, he proposed projects, which later resulted in company losses. For example, the OK Corporation director proposed the cherry buying depots and later colluded with depot owners to financially benefit from the rentals. The embezzlement of company finances by the director undermined business operations. At OK Corporation, the rule on the recruitment of shareholders was relaxed and the company began recruiting shareholders, which led to some problems. A few of the recruited young managers at OK Corporation are influential in the decision-making of the company, which other shareholders resent. Several studies on plantations show that directors and business managers in PNG exploited their members by embezzling group-owned business income and abuse resources and this often damaged the groups' business interests (Ketan, 2004; Orlegge, 2010). Similar observations of group leaders exploiting members to take over group-owned assets have been reported from elsewhere in PNG and in the Pacific (e.g. Finney, 1968; Quinn, 1981; Grossman, 1984; Adams, 1997; Howard and Rensel, 1997; Bainton and Macintyre, 2013). The modern leaders from Kimel, who now manage OK Corporation, have not embraced the leadership virtues that Pau employed to hold the group together. Thus, the company's present leaders have failed to appreciate the importance of the indigenous economy on holding groups together. A better understanding of indigenous and modern market economies can assist business leaders to become transitional leader like Pau, which can contribute to the sustainability of group businesses.

Internal conflicts in group-owned businesses

At OK Corporation, the uneven distribution of income and the non-involvement in the management of company led to internal conflicts as a few families are beginning to take control of operations. In response, a faction of disgruntled shareholders initiated court proceedings to gain more shares in Kopan Ltd. Furthermore, cherry theft became rampant; company security guards caught cherry thieves and a fight erupted. The latter led to deaths and as a result, shareholders have been further divided. Moreover, in my interviews with CIEs, 16% confirmed that group-owned

coffee businesses were unlikely to succeed, as internal conflicts are common. Many problems prevail in group-owned coffee plantations and blocks in PNG, which arise from competing interests among shareholders. It has been reported elsewhere in PNG that the dominance of one family or clan faction can lead to ongoing internal conflicts, which can be detrimental to the survival of the coffee business (Sinclair, 1995; Ketan, 2004; Orlegge, 2010).

In some coffee plantations, a faction within a shareholding group manages the business for several seasons and then the next faction moves in and operates the plantation. Ketan (2004) in his study of community business groups that owned coffee plantations in WHP reports that the main aim of the factions' frequent change of management was to pursue private interests rather than for the benefit of the business group. McKillop (1981, p. 28-29) affirms that "Melanesian cultural tradition" does not recognise a hierarchal gap between a business manager and ordinary villagers, and thus many locals assume that they can also become business managers. In the Highlands, there is often fierce rivalry among shareholders to assume leadership of the business in order to access public goods and services as has happened in cooperatives (see Chapter 8). The difference between the modern leaders and Pau of OK Corporation is that he genuinely wanted his people to succeed in business which means honesty in leadership is essential. During Pau's leadership period, there were few disputes.

When a coffee business becomes a success, business managers and directors often try to marginalise others especially those shareholders who are not actively involved in the daily management. Afflick (1981) provides an example of plantations where records of shareholder listings were missing, and there was the danger of a few people assuming total control of the plantation. Group leaders' manipulation of business records to assert control over a business defeated the original intentions of the PRS and THDS for equal distribution of wealth among shareholders. For example, the dominance of a few families in the OK Corporation has led to reprisals against the company. However, business audits for group-owned plantations and blocks can facilitate long-term sustainability of their enterprises and ensure business managers are accountable to their groups (Itika, 2005; Sengere *et al.* 2008).

Disgruntled shareholders at OK Corporation have resorted to stealing cherries, which have had a detrimental effect on coffee production by imposing greater costs. Cherry theft is exacerbated by lawlessness in rural areas. In my interviews with CIEs, 36% attested to law and order as being responsible for the decline in the managed subsector. A significant cost factor on the subsector is security, as plantations and blocks spend more money to protect farm assets and deter coffee theft (Eko, 2002; Imbun, 2014). Philip Kapal reported the inconsistencies of law enforcement agencies when he said: “Thieves were caught and handed to local police to be locked up, but they were released thus the effectiveness of policing is dismal” (CIE #17, 03/04/14).

Some smart business leaders can misuse company resources to ‘buy’ support of shareholder leaders by providing gifts. Ketan (2004, p. 155) in his study of group-owned plantations argues that a few “clever business leaders entice traditional leaders with gifts and favours of mainly cash and beer ... to downplay economic disparities and promote the worthy efforts” pursued by the company. Thus, traditional leaders within communities can indirectly assist fraudulent business leaders by contributing to suppressing discontentment and potential reprisals from shareholders.

The Case of a Successful Individually-owned Plantation

Sero Bebes from Kainantu, EHP owns Akwitana Coffee Plantation (Box 7.4). He had retail stores before venturing into coffee in 2004.

Box 7.4: Beser Coffee: Business management expertise

Background

Beser Coffee operates the Akwitana Coffee Plantation, which is located in Aiyura, EHP, at an altitude of 1,622 m asl. Bebes is the fifth owner of the estate. The National Development Bank (NDB) tendered the property in 2004, and he successfully acquired the plantation. The original European planter purchased the land as a state lease and formerly farmed vegetables and later planted coffee in 1964 and 1965. The European planter sourced funding from the Commonwealth Bank of Australia to develop Akwitana. Later he developed a wet and dry coffee mill on the plantation. In 1979, the European planter sold the estate through the PRS to a nationally-owned company, Kainantu Komuniti Bisnis (KKB). Later, two other local group-owned companies acquired and managed Akwitana for a varying number of years until 2004.

The Akwitana estate is 42 ha in total, of which 12 ha is vacant. About 27 ha have mature coffee trees. In 2005, Bebes obtained a loan from the ANZ Bank for K145,000, with a compound interest rate of 12.7%. He used the loan to acquire the title of the plantation from the NDB. He successfully repaid the loan in 2009.

Previous business experience

Bebes was a bright student but dropped out at Grade 6 and worked with KKB and quickly learnt the trade to become assistant manager. He resigned from KKB to run his family trade store in Kainantu. He spent 18 years managing family businesses. His engagement as assistant manager with KKB and managing family stores enhanced his management skills for both assets and finances. Bebes resigned from the store business in 2005 to concentrate on his coffee business. Bebes did not register Beser Coffee as a company until 2013. He said that because he was moving into a new venture, the non-registration period gave him time to learn the intricacies of the coffee business. He once proudly commented that “I should have engaged in the coffee business a long while ago.” He was implying that his family store businesses were less lucrative than his coffee business. Bebes intends to open a separate bank account for the plantation and he has kept records of harvests, income and expenditure since 2007. Bebes claimed, “I have monies [budget] to invest in my farm for the following year.” While in the retail business, he engaged the services of an accountant for his budgets and cash flow schedules. In January 2016, he was preparing his 2015 annual records for audit purposes so as to comply with statutory requirements and submit claims for tax rebates with the Internal Revenue Commission of PNG. Coffee buyers trading green bean coffee are eligible to claim the rebates from the state.

Beser Coffee used to have an annual contract agreement with Arokara Coffee, an exporter based in Goroka under which the price for green bean coffee for the year was fixed. The fixed price was always above the market price and favours the Beser Coffee. Bebes explained that he bargained with Arokara after selling to the company for some years. He threatened to sever his ties with the exporter and move to another exporter. The exporter responded and increased the price. In 2011, Bebes was receiving K11.00/kg green bean while at the time K9/kg green bean was offered as the market price. The benefit for the exporter was a guaranteed supply of coffee. Since 2011, the prices he attains have been above the prevailing market price. However, in 2015, he severed ties with Arokara and partnered with Outspan (Olam International), a new exporting firm based in Goroka. He reported to me in January 2016, that Outspan also pays above the prevailing market price. Bebes sent coffee samples from his plantation to Olam’s Germany-based office and the physical and cup quality was rated 95% for his Y1 green bean which is very high quality coffee. A representative from Outspan was then sent to Bebes’ farm to verify the source of coffee. In the last quarter of 2015, Beser Coffee through Outspan had exported three containers of green bean (320 x 60 kg bags each) to importers in the USA. “To fulfil my contractual agreements, I began to buy cherry and parchment coffee from other blocks and plantations”, said Bebes. During, the dry season, Bebes advises his partner coffee growers to process their cherry but during wet days, he requests them to bring cherry to his farm for wet processing. This ensures coffee is dried properly in the wet season.

Rehabilitating the estate

Bebes began building a permanent house on the farm in 2014, which was completed in early 2015. He now resides permanently on the plantation (Plate 1). As manager, Bebes works 12 hours per day seven days a week on the plantation. He leads by example by performing manual tasks, and his casual workers follow him. In 2014, Bebes had 12 permanent casuals working on the plantation. During peak periods, the casual labour force average is 55 and during non-flush periods about 25 people are employed. In 2014, the company fortnightly wages were: K120 for permanent workers, K80 for casuals with *bos bois* [boss boys] receiving K90. Cherry harvesters are paid K0.25/kg. Beser Coffee is currently concentrating on rehabilitating its plantation and processing facilities. From the 1980s to 2004, the former owners dismantled and removed all processing equipment and the shed is still standing idle. In April 2014, Bebes was renovating the dry mill shed and making improvements on the wet mill. In 2015, Beser Coffee started to purchase most cherries and parchment from two plantations and blocks in the vicinity. One of his clients is Etawa Coffee (Box 7.2). Additionally, the company also buys coffee from other farmers. However, he does not have any formal coffee buying arrangements with farmers.



Plate 1: Coffee drying area and in the background is the newly built homestead (insert: new lounge items for the house).

The plantation was in good condition when I visited in January 2016. The coffee trees were healthy although the owner had ceased applying fertiliser about 4-5 years ago. Most of the coffee trees on the plantation are under *Casuarina* (*C. oligodon*) shade trees. The average productivity for the period 2007 to 2015 was 432 kg gb/ha (Table 1). When Bebes was asked why he was getting lower yields at the plantation, he replied: “All the coffee trees were planted in the mid-1960s and are old, and they

need to be replaced.” Also, as noted above he hasn’t been applying fertiliser for 4-5 years. Because of the abandoned state of the plantation when he took over ownership, many coffee trees have died and these are being replanted with new seedlings.

Table 1: Cherry harvests from Akwitana plantation from 2007 to 2015.

Year	Cherry harvested (kg)	Productivity (kg gb/ha)
2007	107,235	636
2008	65,035	385
2009	80,243	476
2010*	47,477	-
2011	65,488	388
2012	58,446	346
2013	68,754	407
2014	73,680	437
2015	63,629	377
Average	74,126	432

*The weights of coffee harvested from July to December of 2010 were missing.

Bebes plans to obtain a bank loan to purchase processing equipment for the dry mill. He lamented that “I cannot mortgage my plantation and other assets to get a commercial loan to build a dry factory because the banks have classified Aiyura as a remote location. Banks claimed the rule of law was absent in Aiyura and this will not guarantee their money.” Bebes was optimistic that if he succeeds in obtaining a loan, he will invest 70% in purchasing equipment for the dry mill, and the balance would be spent on farm inputs. Additional plans he has for the future include:

- a) providing extension and management services to smallholders and blocks so they will supply cherry and parchment to his plantation; and
- b) to produce high-quality coffee and target differentiated markets overseas.

Community engagement

Bebes believes taking part in socio-cultural activities that involve his neighbours and relatives are essential to his business success. He reported that he maintains close links with his clansmen in Kainantu in case some violent incidents occur on the plantation. Thus, security is imperative for Bebes as he is operating in a place where his relatives are not nearby. Coffee cherry theft used to occur on the plantation but has declined over time. The decline in theft started when Bebes began organising local villagers and migrant youths in sporting competitions, which he sponsored. His sponsorship of youth has helped maintain friendly relationships with the community. Bebes also seems to have excellent relationships with local politicians.

As part of community engagement, Bebes assists in mortuary, bride price payments and often transports the sick to nearby health clinics. For these activities, he recounts, “I spend less than K1,000 annually.” Local villagers are also engaged as farm workers. Bebes explained that it was better to help with a little support before bigger problems ensue, which may cost a lot more money to rectify. He delivers help by himself and avoids using ‘intermediaries.’ Intermediaries were unreliable in delivering the support he offered. The intermediaries are people who approach Bebes to seek help but they do so without a family member accompanying them as a

witness. He sometimes does not give cash but instead allocates specific tasks for villagers to work on, and they are paid wages to meet the pending obligation.

Benefits of prior business experience

Bebes' case study illustrates how prior skills in business management assist in the transition into new business enterprises. However, as the next section shows, they are not sufficient on their own and indigenous economic relations must also be managed carefully. Bebes gained vital business skills and knowledge from his employment as an assistant manager with KKB in the retail store operation, which he was then able to apply in his coffee business. He has used his business skills and knowledge to negotiate coffee prices above the prevailing market price in the area. Furthermore, Bebes has built his reputation for producing top quality coffee. Other research work elsewhere confirmed that prior business involvement or participation in the modern market economy can be beneficial in entrepreneurial activities (e.g. Finney, 1987; van der Grijp, 2004; Lan *et al.* 2014). Bebes is constantly seeking new business opportunities. He reported to me in 2014 during my first visit that he would like to export coffee directly from his farm. He accomplished his dream when he exported 57.6 tonnes of green bean to the USA market in 2015. Unlike many plantation and block owners who constantly seek financial support from the state or chain leaders, Bebes has a committed budget for his plantation, allowing him to be prepared for downturns in coffee prices, or when production from his plantation drops. Bebes exemplifies what Finney (1993) coins as a 'third generation business leader' who pursues an individualistic approach to business. Bebes is successfully operating in his home area, which is near to his natal village and is readily accessible to his relatives. Finney asserts that third generation business leaders would need to relocate their businesses away from their home areas to avoid excessive demands from relatives to meet cultural obligations (also see Imbun, 2000). However, Bebes shows it is possible to manage these demands to the advantage of his business.

Effective community engagement

Given plantations and blocks are rural-based, managers need to engage prudently in community relation activities to earn the 'social licence' to operate successfully (Imbun, 2013; 2014). In their efforts to strengthen community relations, some plantations and blocks have funds allocated to community engagement. Bebes, for

example, who allocates K1,000/yr to cater for community engagement. My case studies reveal that the two most commonly assisted activities were mortuary exchange and compensation payments. In the traditional context, relatives of the deceased expect other villagers and neighbours to show their respect for the deceased especially those with standing in the community by attending the *haus krai* [mourning house] and contributing cash and food to mortuary-related activities. Similarly, for compensation payments, villagers also expect local coffee plantations to contribute to such payments. Often customary activities are timed to occur during the coffee season when incomes are high. Locals and shareholders in some areas often request plantations and blocks to contribute to the event. Max Kumabong of Niugini Mountain Coffee reported that "... either the plantation owners participate in social obligations or their business suffers [from reprisals]" (CIE #23, 08/04/14). Company rules like the OK Corporation can guide plantations and blocks as to who should benefit from the support offered so that it curtails unnecessary demands from shareholders and local villagers.

It is vital for businesses to undertake community engagement to maintain a harmonious relationship with the community and landowner groups (Kalinoe and Kiris, 2010; Imbun, 2014). When providing assistance to villagers, it was beneficial for plantations to invest in activities where many community members benefit. Bill Gardner ensures his support targets the wider community: "I do not look at individual problems ... I only contribute to schools, health, *haus krai* [mourning house] and water supply projects" (CIE #20, 06/04/14). Bill has spent most of his life on the plantation and has good local knowledge of community expectations and rarely has problems with local landowners (e.g. MacRae, 2016). In my interviews with CIEs some reported that several plantations had funded the building of permanent houses for shareholders, clinics and classrooms. Some plantations also upgrade access roads (Box 8.5) and transport the sick to clinics as part of their community relations efforts.

Maintaining absolute honesty in dealing with community members has also proven essential for the successful running of plantations and blocks in rural areas. Tebi Ato, a former coffee block advisor, said that when providing assistance to community activities, recruiting locals, and paying wages, it is important to be honest and treat

workers fairly (*CIE #6, 23/01/14*). When business managers abuse their positions of power or lack integrity in discharging their duties, locals are likely to take advantage of the situation and create problems or make excessive and unnecessary demands on frivolous matters. Thus, the onus is on management to ensure they are conscious of the local socio-political environment and carefully manage the relationships. Moreover, active community engagement can earn the support of the local community during unstable and uncertain times. For example, during periods of dissent with certain factions of the community, local workers have been known to become allies of the plantation and protect plantation assets from destruction. Imbun (2013) provides evidence of a similar situation among Porgera Mine landowners who were either employees or locals on the company payroll who defended company assets during social upheavals at the mine site.

Individually-owned plantations and blocks

Beser Coffee and Etawa Coffee plantations rarely have land ownership disputes or problem with cherry theft, which are prevalent in many group-owned plantations. Kumabong pointed out:

Historically, we have not done well with group-owned businesses. ... If we need to move forward, individual entrepreneurs must be promoted and they will always take ownership of challenges that confronts their business. Who takes ownership in group-owned businesses? (*CIE #23, 08/04/14*)

It can be argued that individually-owned plantations have minimal problems and are likely to succeed. In group-owned plantations and blocks, problems like rivalry and land disputes can undermine their operations, which are evident at OK Corporation and Akai Coffee Plantation. Thus, good prospects remain with individually-owned plantations and blocks to thrive and to be sustainable.

Concluding Discussion

Internal and external problems highlighted in this chapter and those outlined in Chapter 5 have challenged the managed subsector and its future is gloomy. The post-independence exodus of experienced expatriate plantation managers after the sale of European-owned plantations in the 1970s created a void in management expertise. Inexperienced local business managers were appointed and this resulted in many

plantations encountering problems. The internal problems such as poor management, lack of leadership, poor financial management skills and knowledge, and internal conflicts in group-owned plantations have all contributed to the decline of the subsector. External problems like increased cost of farm inputs, poor rural infrastructure, lawlessness and land disputes are other factors suppressing the subsector. However, some plantations are able to mitigate these challenges and remain resilient.

Institutional leadership is critical to the success of business enterprises like plantations and blocks. In the 1970s and 1980s, some semi-literate entrepreneurs like Noiya Se'e and Kisan Pau succeeded in business. Institutional leadership from the state and parastatal agencies especially advisory services were effective in assisting Se'e and Pau's enterprises to be successful. Although, Se'e and Pau had limited understanding of business imperatives, state agencies supported them to comply with modern business practices. However, when institutional leadership from management agencies and lead partners began to weaken in the late 1980s and 1990s, many plantations and blocks had to fend for themselves and ran into management problems. Etawa Coffee, for example, began to face financial difficulties from 2000 onwards where the owner earned coffee revenue but failed to spend according to a planned budget, which affected operations. The Akai Coffee Plantation exemplifies the need for institutional leaders to assist plantations in crafting policies, structures, training and mentoring of business managers and owners. This would enhance the management capacities of plantations and blocks when partners exit. As a result of poor advisory services and declining contact, plantations ran into problems and were struggling or abandoned while blocks were subdivided into smallholdings.

The early growth and success of OK Corporation was attributable to the leadership skills of Pau, a transitional leader. Under his leadership, innovative policies that were considerate of the indigenous economy were developed and implemented. These policies assisted in consolidating shareholders' interests and also minimised negative influences of non-market systems on the operations of the company. However, when corrupt modern leaders began to join the board and management, problems arose that were likely to destroy the company. Also, the undermining of the company's rule to

recruit shareholders has led to dissent amongst factions of the shareholders. If OK Corporation had retained its policy of not recruiting shareholders, then many of its present problems may have been averted.

Prior business experience and effective community engagement are important for business success. Bebes' experience as assistant manager in a private company and managing family stores prepared him to make a smooth transition into the coffee business. Bebes and Bill Gardner were effective in their community relations efforts which were based on their local knowledge that enabled them to earn the 'social licence' to operate their plantations. Thus, Bebes and Gardner's better understanding of indigenous economy and its influences on the modern market economy has placed them in a strong position to effectively manage their businesses. Bebes demonstrates that plantations can be resilient and operate successfully with minimal problems, as did OK Corporation for many years. In group-owned plantations, internal conflicts between factions can undermine businesses. In individual-owned plantations, they do not have many problems but may be still faced with poor management problems like Etawa coffee.

This chapter shed some light to the query of Finney (1993) about the prospects for third generation business leaders. Although some of the third generation business leaders have avoided the demands of the indigenous economy by moving their enterprises to other provinces, Bebes and Max Kumabong have managed to straddle both traditional and modern market economies to remain respected in their locality. Bebes and Kumabong are typical of hybrid business leaders or "transitional business leaders," who have better business knowledge, can effectively manage non-market and modern market systems and are always looking for new business opportunities. Furthermore, Bebes who was equipped with business knowledge was able to negotiate contracts in his favour successfully. Being business savvy, he kept a lookout for business opportunities that enabled him to realise his vision of becoming a coffee exporter. Bebes' former exporter could not assist so he partnered with a new company to export three containers of coffee in 2015. Thus, Bebes exemplifies a third generation business leader who is successful in his own locality.

In Chapter 8, I present the results of case studies of smallholder cooperatives and discuss some advances that have been made in value chain partnerships among coffee growers and their partners.

Notes

1. Elias Menta is an in-law of Akai villagers and resides at Akai village.
2. Kui Kopi Ltd was publicly tendered for leasing at the time of my visit in March 2014.
3. OK Corporation's shareholder committees provide feedback to the board in which shareholder grievances are communicated to the board or vice versa. Sixteen subcommittees consist of shareholders, and each committee has six members. The 16 chairmen of the subcommittees form the core committee chaired by the company secretary and the three company directors.
4. Mortuary assistance is to pay for coffin, iron sheet, gravel and cement for the tombstone.
5. The late Paul Koi provided most of the information on OK Corporation. He passed away in 2015 in a tragic car accident at Kalanga, Banz, Jiwaka Province. May His Soul Rest in Peace.

Chapter 8

Is there Potential in Reviving the PNG Coffee Industry?

Introduction

Chapter 8 builds on Chapters 6 and 7 by showing how smallholder farmers who are members of cooperatives, blocks, and plantations can become linked with chain leaders to develop sustainable value chains for markets that are mutually beneficial. The chapter discusses collective action of smallholders and value chain partnerships. As outlined in Chapter 1, since the mid-1960s, smallholders have dominated coffee production. However, they produce poor quality coffee and as a result they receive low prices. With the decline of the plantations, the plantations and their mills' ability to engage as chain leaders and partner with smallholders has also faded as the rural mills were relocated closer to urban centres. Therefore, alternative mechanisms such as cooperatives and partnerships could fill the void left by the closed plantations and their mills of the 1960s and 1970s.

This chapter addresses the question of how effectively can smallholders and chain leaders engage in productive relationships to raise production and improve the quality of coffee? In responding to this question, the chapter is divided into three parts. Firstly, the discussion begins with a brief outline of value chain partnerships. Secondly, the chapter gives insights into cooperatives as social enterprises and presents case studies that reveal the opportunities and constraints in collective action. Lastly, it identifies the benefits of partnerships among coffee growers and chain leaders, and describes potential problems that can emerge in these relationships.

Value Chain Partnerships

Since the 1990s, collaboration between the private sector, civil society organisations (CSOs), and state actors has improved in PNG. The partnership theoretical framework embeds resource use, social problems, and stakeholder management and applies it locally as well as at national and global levels (Austin, 2007; Biermann *et*

al. 2007; Bitzer *et al.* 2013). Bitzera *et al.* (2008) define a partnership as two or more parties who are involved in collaborative activities. A wide variety of terms are used for collaborations, which include global networks, cross-sector partnerships, public-private partnerships (PPP), multi-stakeholder alliances, and inter-sectoral partnerships (Glasbergen, 2007). International institutions like the World Bank are ardent proponents of the PPP concept (Loftus, 2008). Locally, policies like the farmer demand-driven extension, Productive Partnerships in Agricultural Project (see Chapter 4) and agro-nucleus setups are modelled on collective action and partnerships. Although, partners can have their own goals and aspirations, through consensus, their agendas coalesce to pursue a common goal (Glasbergen, 2007; Gray, 2007). Partnership is an institutional framework that serves the interests of participants to cooperate and address issues of mutual interest. The global agri-food value chain partnerships derive from North-South relationships. The global value chain involves production structures, spatial networks and relationships, and institutional frameworks (Daviron and Ponte, 2005). The institutional framework sanctions lead agencies like chain leaders with expertise in marketing to collaborate with subordinate partners like farmer groups at the production level. In the coffee industry, partnerships grew significantly after the collapse of the quota system of the International Coffee Agreements (ICA) in 1989. The ICA collapse reconfigured coffee policies, which meant that farmers were no longer, protected from price fluctuations therefore giving the advantage to multinational companies (Linton, 2005; Auld, 2010). In many coffee growing countries such as PNG, the state could do little to stop falling coffee prices, which opened a niche for the private sector and CSOs to intervene (Daviron and Ponte, 2005). As a result, value chain actors had to modify their social, economic and political engagement in coffee trading and production patterns that led to partnership formations.

Governance in partnerships entails rule-setting that facilitates sustainable production and the way the global coffee industry operates (Bitzer, 2012; Pattberg and Widerberg, 2016). In coffee, the governance systems can be enforced through certification processes (Linton, 2005; Auld, 2010) where coffee farmers comply with certification standards to meet the criteria for niche markets. From a development perspective, partnerships recognise development problems like the low productivity

of farmers; thus efforts such as partnerships are designed to address production problems (Bitzer, 2012).

Cooperatives as Social Enterprises

In PNG, the cooperative society movements started in the 1940s in the coastal areas, with the first Central Highlands coffee cooperative established in 1964 (Singh, 1974). However, many of the cooperatives collapsed in the 1970s (Singh, 1974). In the late 1980s, farmer mobilisation and cooperative formation became prominent again in the PNG coffee industry as a way to channel services from service organisations (Overfield, 1993; CIC, 2008a). In the 1990s and 2000s, coffee cooperatives began to decline again (e.g. Murray-Prior *et al.* 2009; Sengere, 2010). The demise of cooperatives in PNG was connected to lack of supervision, poor financial management, lack of social cohesion and weak leadership: similar to the problems that beset the plantations after independence (see Chapter 7)

Studies have highlighted two main advantages of farmer cooperatives. They include, for example:

- Smallholders produce coffee in small quantities and are dispersed, which means they have weak bargaining power. Through collective action, farmers can bargain for better prices (Ferris *et al.* 2014), overcome information deficiencies among farmers including transactions costs (Issa and Chrysostome, 2015; Wollni and Fischer, 2015) and become mediums for sourcing development services. Thus, grower groups can become a means for accessing farm inputs, extension services and training (Kolk and Lenfant, 2015).
- Cooperatives can also function as social enterprises to pursue a communitarian agenda and concurrently achieve sustainable development (Poon *et al.* 2009; Lan *et al.* 2014). Poon *et al.* (2009, p. 98-99) further argue that social entrepreneurship entails “social and institutional embeddedness” in its approach to focusing on harnessing relationships and ensuring communal benefits. Cooperatives as social enterprises ensure collective action among members to engage in economic activities.

In collective action, social capital is crucial as it ensures trust among members and encourages a shared vision, values and norms among members as they strive to achieve common objectives (Falk and Kilpatrick, 2000; Hall, 2006). However, certain local structures can erode social capital and group action. Rivalries among cooperative members have been identified amongst groups in the PNG Highlands (see Reilly and Philpot, 2002). The competition among male group members to assume leadership roles to wield influence and power over others can undermine collective action (Murray-Prior *et al.* 2009). The case studies below report on leadership and governance aspects in grower groups and their influences on social capital and group cohesion.

Case Studies of Coffee Cooperatives

Focus group discussions were held with members of the two cooperatives: the Neknasi group (Morobe) and the Korofeigu group (EHP) (Chapter 3). The focus group discussions formed the basis of the two case studies.

The Neknasi group case study (Box 8.1) gives insights into the dynamics of collective action in a cohesive group that is able to collaborate with partners to lift coffee production.

Box 8.1: Neknasi Coffee Growers Cooperative Society

Background

The Neknasi group initially consisted of farmers from four subgroups (villages). It was formed in 2008 in the Wain area of Nawae District, in Morobe Province. The Wain area is in the Sarawaged Ranges and is relatively accessible to markets. The group was formalised through a modified version of participatory rural appraisal planning. The CIC having initiated the Neknasi group began at its inception providing support services. Since 2008 eight other subgroups have joined, totalling 12 by 2015. One of the new subgroups comes from the Markham electorate, in Morobe Province. The member farmers cultivate coffee at an altitude of 903-1,384 m asl (Table 1).

The Neknasi group aims to work collectively to produce good quality coffee that fetches better prices for its members. The group also envisioned that other services that the members desired could be sourced through the group. Villagers realised that through group work, they could mobilise their resources and jointly pursue economic goals.

Neknasi members received good prices of K300/bag¹ (K5.00/kg) from their first

sales in 2009. However, coffee prices earned in later years averaged K120/bag² except for 2011 when global prices were at a record high. The group earned K2.4 million from coffee sales from 2009 to 2015 (Table 2). On average, a member earned K764.66/yr from 2009 to 2014 from coffee sales³. With additional members joining in 2015, the quantity of coffee sold has increased. Farmers received farm tools and training from partners and this has boosted their production capacities. Productivity is relatively high among farmers at 876 kg gb/ha.

Table 1: The participating villages, number of farmers and coffee trees, and area under coffee cultivation.

Village	No. of farmers	No. of trees	Area under coffee (ha)
Bandong	97	100,824	39
Konex*	57	74,756	29
Sikilan	36	51,429	20
Warup*	47	29,286	11
Bosagen	45	29,050	11
Napinots*	40	29,411	11
Kasin	67	69,398	27
Kwasi	37	30,320	12
Munengan	39	32,721	13
Nifau	93	55,485	22
Wasin	62	35,538	14
Buaso	54	43,470	17
Total	674	581,688	226

*Subgroups that joined the Neknasi group in 2014.

Table 2: Quantity of green bean sold by the cooperative and income earned from 2009 to 2015.

Year	Quantity sold (60 kg gb bags)	Amount earned (PGK)
2009	550	252,000
2010	820	533,034
2011	760	533,034
2012	1,092	393,964
2013	640	316,038
2014	320	105,324
2015	537	221,916
Total	4,719	2,355,310

2009-2011 - unreported records held by the cooperative, 2012-2015 - company records.

Productive partnerships

Niugini Coffee Tea and Spice (NCTS), now Agmark, based in Lae originally partnered with the Neknasi group in 2008. Yosh Reilly, a former NCTS general manager, gave a contract to the group to supply parchment coffee. Yosh challenged the group to supply 500 parchment bags and if they did, he would assist farmers in building their coffee production capacity. A week later, the group delivered 1,000 parchment bags to NCTS. Yosh was so impressed that he invited Fair Trade, through the Secretariat of the Pacific Community (SPC), to visit the

Neknasi group and organise their certification. Since then, the group has attracted several other partners to support their coffee work including initiating community projects in the area (Table 3). In October 2015, the group received an eco-pulper from the CIC, which is to be used for processing cherries from members.

Table 3: Partners of the Neknasi group and interventions these partners have provided since 2009.

Partner	Interventions	Value of intervention
NCTS	Invited Fair Trade to visit Neknasi group	Fair Trade certificate issued
	Purchases group coffee	Income for group and farmers
Fair Trade	Certification, training on producing Fair Trade coffee	Good clean parchment coffee is produced, enhanced productivity
	Payment for surveillance audit	
	Premium payments for community development	To establish water supply and other community projects
	Gave a solar panel	Used in group office
CIC	Extension services, training on coffee husbandry, processing, and marketing	Good clean parchment is produced, increased productivity
	Provision of farm tools	Improved production capacity
	Eco-pulper	For central wet processing
Morobe Provincial Government	Financed farmer training	Upgraded farm productivity
	Supplied fuel to CIC vehicle	Received extension services
	Financial support	Contributed finance to build coffee mill
District administration	Built access road to Sikilan Village and beyond	Built road access to coffee farmers
PNGSDP*	Allocated financial help	Contributed finance to build coffee mill
SPC	Training on bookkeeping and organic farming	Small business activities like trade store, poultry, and sewing
	Fair Trade first audit was paid	
NDB	Conducted awareness on banking products and services	Awareness of credit services it offers for clients
ADRA**	Conducted feasibility study for a water supply project	Cost estimates for water supply
Micro Bank	Facilitates banking services	Farmers able to save
Local parliamentarian	Financial support	Contributed finance to build coffee mill
	Leadership	Negotiated land to build a mill
Morobe Mining	Donated two Tuffa tanks	Improved water supply

*PNGSDP - PNG Sustainable Development Project, **ADRA - Adventist Development and Relief Agency

The group attained Fair Trade certificate in 2011. Certification allowed the group to access premiums totalling K87,000 of which K17,000 was spent on a feasibility study for a water supply project and the purchase of a motorbike for the group's extension officer. In October 2015, the group spent an additional K10,000 to re-establish a reticulated water supply to villages in the Neknasi group. A large

proportion of farmers do not have water access in their coffee gardens where the pulping of cherry occurs.

In 2010, the Neknasi group successfully sought financial help from partners to build a coffee mill (Table 4). Group members contributed K400,000 (K860/farmer, excluding members that joined in 2015). The farmers' contributions came from the income they received from selling coffee. In 2014, the CIC issued an export license to the group. The local Parliamentarian planned to establish an agricultural centre where other mills including a dry coffee mill were to be located. The mill is intended to serve other coffee farmers in the electorate. Finances have been available since 2011 and the groundbreaking ceremony to build the mill was held in March 2015. Physical planning of the site has not been completed and the construction of the mill has not started. The politician's involvement has delayed the factory construction.

Table 4: Financial support from partners to build coffee mill.

No.	Partners	Amount (PGK)
1	Neknasi Coffee Growers Cooperative Society	400,000
2	Morobe Provincial Government	400,000
3	PNGSDP	500,000
4	Local Parliamentarian	300,000
Total		1,600,000

Source: Neknasi profile submitted to PNGSDP for funding.

Enterprising group

The Neknasi group has two businesses in addition to coffee sales. These businesses are undertaken as part of the Fair Trade conditions⁴ to engage in commercial activities. Firstly, the group has a fleet of vehicles: two trucks and two land cruisers. The trucks are named 'Dirty Finger 1 and Dirty Finger 2' signifying that the money collected to purchase the trucks came from hard work. The trucks offer transport services for members and non-members between Wain area and Lae. The village women use the trucks to transport vegetables to Lae for selling. I observed during my stay at Sikilan Village that women ferried vegetables to Lae from Mondays to Saturdays. The fare is K15 for each passenger for a one-way trip (K30 return). To transport members' coffee, K0.30/kg is charged. Parchment buying is the second enterprise, and one of the land cruisers travels to nearby areas to purchase coffee. When members sell parchment to the group, they receive a premium of K0.10/kg on top of the prevailing market price. The other land cruiser assists with the administrative functions of the group.

The Neknasi group is advancing by diversifying into other income generating activities for its farmers. In 2014, the group's extension manager introduced three honey hive boxes and plans to introduce more in the future. A member of the group has four large fish ponds (32 m x 12 m) built in 2009 and began selling tilapia fish (*Oreochromis* sp.) in 2012.

Governance systems

There are clear cases of group members exercising their delegated duties, which are facilitated by Fair Trade's compulsory governance system (see Fairtrade

Labelling Organizations International, 2005). Each of the 12 sub-groups of the Neknasi group has a chairman who ensures group cohesiveness prevails among subgroup members⁵. Some farmers operate as extension officers for the group. Other members are assigned specific tasks like being a crewmember for the group's public motor vehicle (PMV) trucks. The group members respect their leaders. During individual interviews and in casual conversations, they rarely uttered negative commentary about their group leaders even when I asked specifically about leadership problems. Instead, they digressed to discuss other topics. However, in the focus group discussions, a few members remarked on some leadership problems.

Leadership problems

The cooperative began with much excitement because it was believed that the group would be managed competently. The Neknasi group complied with advice from key partners in the early life of its existence. However, during my fieldwork in March 2014, it was evident that the Neknasi group had some problems with their board directors. In discussions, farmers furnished the following responses to support their claims:

- Some leaders were undermining group laws by not observing the rules they had set for themselves. For example, there is a rule that group vehicles after use each day are to be parked at the office, but some leaders are not adhering to this policy.
- Leaders after attending national and international events on behalf of the Neknasi group were failing to report back to group members in a timely manner.
- Members' concerns that have been passed at annual general meetings as resolutions were not actioned.

The above problems farmers raised have weakened their motivation to work collectively as a group. However, in my second fieldwork period in March 2015, there was an air of excitement as they had acquired a second truck and additional subgroups had joined the original group.

Socio-economic aspects

The communal undertaking of community projects, coffee farming, and socio-cultural activities are entwined in the Neknasi group (Chapter 6). Farmers exchange assistance with labour, cash, and food during periods of need such as mortuary and church activities. These reciprocal arrangements extend to coffee farming activities in which extended family members assist relatives during harvesting and grass cutting activities. Focus group attendees admitted that participation in village social events impact negatively on coffee production but they were able to manage labour demands for coffee tasks.

Successes and problems

After the group was formed, the Neknasi group was able to achieve some successes but also encountered problems (Table 5). See also some successes listed in Table 3.

Table 5: The Neknasi group's successes and problems.

Successes	Problems
<ul style="list-style-type: none"> • Heightened collaborations between the group and partners • Obtained Fair Trade certification • Sourced funding to build coffee mill • Possess a fleet of vehicles • Received premiums for social development from Fair Trade • Received export license • Increased number of group members • Obtained eco-pulper from the CIC 	<ul style="list-style-type: none"> • Leaders fail to communicate and report to members • Leaders abuse group rules • Chain leader delays processing group parchment coffee • Delays in building coffee factory as a result of the involvement of local politician • Lack of access to water for processing coffee • Poor institutional leadership • Delayed payments to member farmers

Conclusion

The success of the Neknasi group is derived from its partnership with collaborators, which has delivered support services to farmers. Regular contacts and interactions with partners through meetings, training, and extension services have developed into long-term relationships. The coffee productivity of the group farmers is high, and they produce superior quality parchment. The Fair Trade certification conditions are positively influencing the group governance systems. The group's high social capital has led them to diversify into other entrepreneurial activities. However, the group also has challenges such as some leaders continuing to thwart group rules and delayed payments from coffee sales are causing anxiety among members.

The Korofeigu group has progressed to forge alliances with development partners and this has enabled group members to boost their coffee production capacities (Box 8.2). However, social capital and group cohesion remain low in the group.

Box 8.2: Korofeigu Organic Coffee Farmers

Background

The Korofeigu cooperative is located in the Korofeigu area, Unggai/Bena District which is approximately 5 km east of Goroka, EHP. The Okuk Highway passes through some of the villages of the participating farmers. The Korofeigu area is relatively dry and prone to prolonged droughts. The primary vegetation in the area is savannah grassland. Farmers cultivate coffee in the low-lying valleys. Most of the farmers' coffee gardens are heavily shaded under *Albizia* spp. Members of the Korofeigu group cultivate coffee at altitudes of 1,391 to 1,511 m asl.

Group formation

Agriculture graduate, Steven Asilala, initiated the group's formation. Asilala is from Beneveto Village and had previously worked in Kimbe until his return in 2007. Seeing the need for farmers to work together rather than being fragmented in coffee

production, he collaborated with village leaders and conducted awareness among the villagers to improve the process. Meetings were held in late 2008 to consolidate the group. In mid-2010, the group established a board, appointed executives, and village representatives to manage the affairs of the group with Asilala leading as interim manager.

The Korofeigu group received its registered cooperative certificate in 2011. The group envisioned that through collective action, members could reap benefits from collaborating with development partners. Also, the group planned to participate in the differentiated markets and attain premium prices, which they could not achieve as individual producers. The group now has registered members from seven villages: Beneveto, Nagamito, Bush Bata, Namaro, Nupasafa, Sozugu, and Upegu (Table 1).

Table 1: The participating villages, number of farmers and coffee trees, and area under coffee cultivation.

Village	No. of farmers	No. of trees	Area under coffee (ha)
Sozugu	41	90,504	35
Beneveto	30	117,030	46
Bush Bata	8	27,135	11
Nagamito	7	34,075	13
Namaro	7	21,714	8
Nupasafa	3	4,886	2
Upegu	1	2,981	1
Total	97	298,325	116

Coffee is a major source of income for these farmers while some earn money from citrus and vegetables. Other sources of revenue are from small-scale business activities like trade-stores, poultry, and firewood sales. The income from coffee including those from small-scale businesses meets the farmers' livelihood needs, savings, school fees and social obligations.

Achievements

Since 2013, the Korofeigu group has sold all of its coffee to New Guinea Highlands Coffee Exports (NGHCE). The exporter transports the group's parchment from the village to its mill and hulls it into green bean. Although the first coffee sale was made in 2013, record of sale was unavailable. In 2014, 22.7 tonnes of green bean was sold and earned a total net income of K188,597. In 2015, 64 tonnes of green bean was sold, and it netted K439,444. The group also has a bank account under which K0.05-0.10/kg green bean is deducted from group sales to build the financial capacity of the group. Korofeigu group is in a high market access area and some farmers also side-sell their coffee.

Productive partnerships

The partners of the Korofeigu group assisted in developing coffee production capacities of the farmers (Table 2). For instance, NGHCE organized NASAA auditors to visit the Korofeigu group in 2013 to conduct an audit for organic certification; a selected sample of coffee gardens was inspected. The NASAA employed the following criteria to assess farmers' gardens: a) no chemical inputs

used in coffee plots; b) no ‘parallel production’⁶ is practised; c) activities carried out in the coffee gardens are consistent with sustainable agricultural practices, and d) record keeping is carried out for farm activities. The NASAA Organic issued the group’s certificate in July 2014, and Korofeigu farmers are now producing coffee under the NASAA Organic label. The NASAA Organic imposed governance system through its certification is weak and not as rigid as the Fair Trade certification system. The NASAA certification only considers sustainable production systems and prohibits child labour. It pays little attention to the economic and social welfare of participating farmers.

Table 2: Partners’ support to Korofeigu group since 2010.

Partner	Intervention	Value of intervention
NGHCE	Organised certification	Participate in differentiated market
	Hulls and buys the group’s coffee	Market access is ensured
	Provides extension services	Built farmer’s capacities to produce
CIC	Provided training on coffee husbandry practices, processing and marketing	Good quality coffee is produced, and improved productivity
	Supplied farm inputs like tools, pulpers and knapsacks	Capacity of farmers to produce coffee advanced
NAASA Organic	Issued NASAA organic certificate	To participate in the high-value market
PNGSDP	Funded K300,000 for water supply project	Water access for coffee farmers
NASFUND	Conducted awareness on banking products and services	A farmer has savings account with NASFUND
ADRA	Constructed the water supply project for the community	Water access for coffee farmers to process coffee
EHP Governor	Funded K350,000 for water supply project	Water access for coffee farmers to process coffee
Local Parliamentarian	Supplied coffee pulpers	Upgrade capacity of farmers to produce quality coffee
	Gave K350,000 for water supply project	Water access for coffee farmers

In 2013, ADRA collaborated with a local community based organisation in the area to establish water supplies in Beneveto, Nagamito, Bush Bata, and Nupasafa villages. Villagers, including the Korofeigu group farmers, contributed K13 per head towards the project. The PNGSDP and politicians also made substantial monetary contributions to the project. The water supply project was completed in July 2014, and farmers now have access to safe, clean water.

Other partners of the Korofeigu group provided training, farm tools, and conducted awareness workshops on the kinds of services they can offer to farmers. The farmers received training from CIC in coffee production, processing, and marketing. The farmers were impressed to see that after implementing the training on coffee rehabilitation⁷, their coffee gardens were transformed. Observations made in March 2014 revealed that rehabilitated coffee trees were healthy, and yields were high.

Leadership and communication problems

Asilala as manager of the group ensured that the group established linkages with partners from 2010 to 2013. In mid-2013, Asilala took up a permanent job in Goroka and concurrently was the cooperative manager. In February 2015, Asilala relinquished the managerial position and Papsy Kanipa took over to manage the group. Asilala planned to mentor Kanipa but since February 2015 has been residing in Port Moresby.

Since 2014, no meetings have been held, and communication has become less regular among members. A group member said, “we realize that there is no longer regular communication between members and the executive” (SH #16, 04/04/14). The group has cooperative representatives in each of the participating villages. However, their roles are vague, and they are inactive in group activities. It was reported that “the village representatives only meet when the group collects coffee from members for group sales, and it occurs once a year.” Kanipa performs most of the group duties and there is little delegation of tasks among the members. In 2015, the chairman of the group resigned and requested the group to relocate the group’s office, which was currently on his land. Kanipa informed me in January 2016 that the former chairman had some differences with Asilala and did not want to be a member anymore. Kanipa had identified a place where the office will be relocated.

Successes and problems

After forming the Korofeigu group, the cooperative was able to generate some success but, it also encountered problems (Table 3). See also some successes listed in Table 2.

Table 3: Successes and problems the Korofeigu group encountered since it was established in 2010.

Successes	Problems
<ul style="list-style-type: none">• Increased partnerships with collaborators• Engaged in community projects e.g. water supply project• Gained NASAA Organic certification• Improved production capacity of farmers	<ul style="list-style-type: none">• Poor leadership since 2014• Lack of delegation of responsibilities• Poor group governance systems• No regular group meetings

Conclusion

At the community level, the cooperative is successful in attracting services from partners. The partners of the group have developed the coffee production capacities of the farmers through training, accessing farm inputs and the coffee gardens were certified. Subsequently, farmers attained higher coffee productivity. The NASAA Organic certification has lifted the morale of farmers as they are participating in differentiated markets that should pay better prices. The quantity of coffee sold through the group has increased by almost 65% in 2015. Since mid-2013, the group has experienced unsteady leadership, and there is a lack of delegation of group tasks among the members. Also, the NASAA certification governance system imposed on the grower group is not rigid and quite weak; as a result their level of social capital is low.

Summary of case studies

The two case studies illustrate that formal groups can form successful long-term relationships with chain leaders and lead partners. For farmers to participate in grower groups, there are pecuniary and non-pecuniary benefits including the organisation of production systems to function more efficiently (see Wollni and Brümmer, 2012; Murray-Prior, 2011; 2013). The case studies demonstrate that through collective action, farmers are able to access services from a range of organisations that include chain leaders, politicians, CSOs, and state actors and in this, the two groups have been successful.

Four positive aspects of formal grower groups are highlighted by the case studies, which include:

Firstly, the relatively good governance systems enabled the Neknasi group to accumulate social capital which subsequently created opportunities for entrepreneurship in three ways:

- The Fair Trade certification at the Neknasi group bolstered the group's institutional capacities with sanctioned meetings and the delegation of responsibilities among members. The improved governance system helped overcome some of the inadequacies of the Neknasi group leaders and further strengthened their accountability through regular meetings. Importantly, the institutional leadership from partners by maintaining regular contacts ensured members and leaders comply with group by-laws, and that group activities are conducted transparently.
- The enhanced governance systems also raised trust levels and cohesion among the Neknasi group members further elevating social capital levels. This study affirms Batt *et al.* (2009) and Hernandez-Aguilera's (2015) findings in PNG and Columbia respectively that Fair Trade-supported smallholder groups have high levels of social capital and trust.
- The governance structures enforced through certification in the Neknasi group has enabled business activities for the group to flourish. Krupka (2012) and Ruben and Fort's (2012) assertion that Fair Trade partnerships with farmers encourages business activities among farmer groups and intensifies long-term

business relations with partners appear true. For instance, the Neknasi group has ventured into new enterprises in addition to the group coffee sales.

Secondly, partners can assist with building the production capacities of farmers to increase productivity and improve the quality of coffee (Table 8.1). Productivity is higher in value chain relationships as cooperative farmers participate in social learning and are more likely to adopt innovations (see Hartwich *et al.* 2010; Murray-Prior *et al.* 2011; Murray-Prior, 2013). The support for farmers in the two groups was in the form of training, premiums (Fair Trade only), financial aid, farm inputs, extension services, freighting of coffee and improved market access. This support has enabled farmers from the Neknasi (876 kg gb/ha) and Korofeigu (610 kg gb/ha) groups to attain an average productivity of 747 kg gb/ha. This is almost double the average productivity of smallholders recorded in other parts of the Central Highlands (UniQuest, 2013). Issa and Chrysostome’s (2015) study among Rwandan cooperative coffee farmers also shows that member farmers achieved significantly higher productivity levels (759 kg gb/ha) than independent coffee farmers (635 kg gb/ha). Other studies show increased productivity among smallholders who are participating in certification schemes (e.g. Rao, 2010; Beuchelt and Zeller, 2011, Hernandez-Aguilera *et al.* 2015).

Table 8.1: Timeline of major achievements for the Neknasi and Korofeigu groups.

Year	Group achievements	
	Neknasi	Korofeigu
2008	<ul style="list-style-type: none"> • Group established 	
2009	<ul style="list-style-type: none"> • Sold coffee as a group • A member introduced fish farming 	<ul style="list-style-type: none"> • Had meetings to form the cooperative group
2010	<ul style="list-style-type: none"> • Partners and Neknasi farmers contributed K1.6 million to build dry mill 	<ul style="list-style-type: none"> • Group established
2011	<ul style="list-style-type: none"> • The first truck was purchased • Obtained Fair Trade certificate 	<ul style="list-style-type: none"> • Cooperative certificate issued to group
2012	<ul style="list-style-type: none"> • First land cruiser was purchased 	<ul style="list-style-type: none"> • CIC conducted training on coffee husbandry practices
2013	<ul style="list-style-type: none"> • Purchased second land cruiser 	<ul style="list-style-type: none"> • First group coffee sales to NGHCE • Training conducted on marketing
2014	<ul style="list-style-type: none"> • Three new sub-groups joined • Received export license • A second truck was purchased 	<ul style="list-style-type: none"> • Water supply established • Obtained NASAA Organic certificate
2015	<ul style="list-style-type: none"> • Received eco-pulper from CIC 	

Thirdly, group work and partnerships have also brought new marketing opportunities and established novel social networks to the benefit of smallholders, who participate in grower groups as shown with the Neknasi and Korofeigu cooperatives. For instance, international certification agencies through local-based partners are able to certify the coffee gardens of farmers, which then gives smallholders access to higher value differentiated markets.

Fourthly, another positive outcome from collective action and collaborations with partners was the production of high quality coffee by smallholders. van Rijsbergen *et al.* (2016) confirm that smallholders participating in certification schemes produce better quality coffee. Hartwich *et al.* (2010, p. 239) further expound that the type of communication flow in a value chain is about ‘upgrading’, which is derived from improved information transfers from the private sector to farmers. For example, the overall physical and cup quality of coffees from the Neknasi and Korofeigu groups were of very good quality (82%) and near-plantation standards. The Neknasi group farmers in particular were producing much bigger size beans than farmers in the Korofeigu area, although the latter were still producing better than standard smallholder coffee (Table 8.2). Also, social learning at the Neknasi group has resulted in several farmers beginning to introduce apiculture into coffee gardens which has the potential to raise productivity (Plate 8.1). Ricketts (2004) points out in a study in Costa Rica that bees are known to increase coffee yield by 10-50% in coffee groves.

Table 8.2: Physical and cup qualities of coffee from the Neknasi and Korofeigu groups.

Coffee quality	Grower groups	
	Neknasi cooperative	Korofeigu cooperative
Parchment	Even coloured, very clear bright, clean and odour free sample	Even coloured parchment (pale yellow)
Green bean	Looks very good, less defects. Higher percentage of larger beans: screen size of 17-18 mm	Had both medium and large sized beans: screen sizes of 15-18 mm, variation in bean sizes
Cup quality	Aroma of coffee stood out, producing sharp acidity that can be felt but it’s a bit lacking in body	Medium body with citric acidity and generally good clean cup quality
Overall rating (%)	82	82

(Source: CIC coffee quality assessment reports)



Plate 8.1: A farmer with bee hive boxes in his coffee garden in the Wain area (Neknasi group).

The two case studies also reveal several challenges formal grower groups can encounter. They include:

- Collective action can be challenging as reported in other studies of coffee cooperatives in PNG (Murray-Prior, 2008; Murray-Prior *et al.* 2009). The two case studies exemplify this phenomenon where poor leadership and lack of communication is prevalent in the groups, thus demonstrates the potential to impair social capital and lead to eventual demise of groups. Furthermore, the poor performances of past coffee cooperatives in PNG mean that partners' inputs are vital for building cohesive groups. Sengere (2010) asserts in a study on coffee grower groups in PNG that building the trust and confidence of members by regular contacts with farmers and monitoring group activities will help create stable and cohesiveness groups. Thus, regular contact with partners and nurturing farmer-chain leader linkages will help alleviate some of the challenges in grower groups to ensure groups are sustainable.
- In the Korofeigu group, organic certification criteria focuses on sustainable production of coffee but does not address the social welfare of farmers. The

only social aspect of organic certification is that it disallows child labour (NASAA Australia Ltd, 2004), which is a generic criterion for many certification organisations. NASAA Organic certification does not enforce rigid governance systems in grower groups to the same extent as Fair Trade. Thus, social capital is lower in the Korofeigu group than the Neknasi group.

Present Value Chain Partnerships

In this section, the advantages and disadvantages of commercially driven partnerships are provided from the perspective of chain leaders and partners. Thirteen chain leaders and a lead partner were interviewed (Table 8.3).

Through value chain partnerships, farmers have improved their capacity to produce quality coffee and as a result are able to attain better prices. This is because smallholders are producing coffee according to production and quality standards that chain leaders impose. Typically, a single chain leader had an average of three partnerships with individual smallholders, grower groups and or blocks (Plate 8.2). This suggests that the chain leaders are using partnerships with growers to source coffee.

Table 8.3: Partnership characteristics.

Chain leader/lead partner	Average no. of partnerships	Total no. of farmers	Average total no. of years of relationships	Ongoing partnerships (Yes/No)	Types of growers
1	1	n.d.	2	Yes	Smallholders
	3	n.d.	4	Yes	Smallholders
	2	n.d.	4	No	Smallholders
2	8	439	10	Yes	Smallholders
3	1	100	14	Yes	Smallholders
4	1	80	10	Yes	Smallholders
	1	30	3	Yes	Smallholders
5	2	3,000	11	Yes	Smallholders
	1	n.d.	4	No	Smallholders
6	1	70	2	Yes	Block holders
	1	70	2	Yes	Smallholders
7	1	500	11	Yes	Smallholders
	1	n.d.	11	Yes	Smallholders/ Block holders
8	13	1,000	4	Yes	Smallholders
9	1	1	n.d.	Yes	Block holder
	2	2	n.d.	No	Block holders
10	1	300	4	Yes	Smallholders
11	9	9	n.d.	No	Block holders
12	2	2	4	Yes	Block holders



Plate 8.2: Leaders of farmer groups in a meeting with a partner chain leader in Banz, Jiwaka Province.

Longevity of partnerships

Some of the productive partnerships between grower groups and chain leaders that were examined as part of this study were long-term relationships. However, Batt *et al.* (2009) report on relationship difficulties between coffee farmers and chain leaders, like distrust among value chain actors and the inconsistent supply of good coffee. These problems can be minimised through establishing efficient supply chain linkages between individual farmers or grower groups and chain leaders. In this study, partnership periods ranged from 1.5 to 14 years. Interestingly, the four long-term partnerships that have been in place for 10 to 14 years were all participating in differentiated markets. Shorter-term partnerships of 1.5 to 6 years were mostly for cherry delivery to coffee mills, with farmers receiving farm inputs, cash advances and extension services from the chain leaders.

Agro-services in partnerships

Partners provide a range of agro-services to coffee farmers by organising markets, and providing farm inputs, cash advances, extension, and savings services. In promoting partnerships, Best *et al.* (2015, p. 1) argue that agro-services can “stimulate demand for technical and social innovations.” Agro-services can create opportunities for mutual relationships between farmers and chain leaders to advance in the coffee industry. In the rest of this chapter, I shall focus on the 12 chain leaders interviewed who are profit-driven and engage in these partnerships.

In the 1960s and 1970s, some European planters in consultation with landowners created local companies to engage in productive partnerships. The landowners contributed labour and cash toward the establishment of central wet mills and planters organised the processing and marketing of villagers’ coffee. Box 8.3 provides examples of European planter and landowner associations.

Box 8.3: European planter and landowner partnerships in EHP

In 1966, Ian Downs of Korfena Coffee Plantation in EHP organised the formation of the Upper Asaro Coffee Community Ltd (UACC) and built a wet mill so that he, the chain leader, would have quality control over the villagers’ coffee. He processed farmers’ parchment into green bean, and the UACC Ltd charged a processing fee to farmers, which met the running costs of Korfena Ltd. Downs used his contacts overseas to sell the coffee as an equivalent to his own, and shipped coffee to the same clients but in separate contracts. Downs had registered the trademark ‘Korfena’, and it attracted favourable remarks and interest in Hamburg, Germany. His coffee volume was small. If he could sell the UACC marked bags giving an assurance that the coffee was equivalent to Korfena, then the UACC shareholders would receive a good price, and his clients overseas would know that they could obtain a certain volume from Downs. Later Downs started Coffee International Ltd, an exporting company, and the Korfena, UACC coffee, and other coffee were marketed. Downs would send a truck to the UACC buying points in the valley to collect cherry from the UACC shareholders (Downs, 1986).

In the 1960s, John Wells of Hobe Plantation, at Kotuni and Bob Frame of Lapegu Plantation, both near Goroka organised similar setups. The landowners that Wells and Frame registered had their own wet mills, which were built separately from the plantation’s processing facilities. The partner villagers would bring in their cherry coffee, which company employees would process to parchment and after drying, would hull into green bean. The shareholders’ coffee was sold through the companies of Wells and Frame. Both plantation owners organised management for the villagers’ coffee by keeping records and after sales income was disbursed to farmers. At the same time, like Downs, Wells and Frame ensured the quality was

up to the same standard as the plantations. The coffee was sold as equivalent to their own plantation coffee.

European planters used local labour during the coffee season as pickers without the need to bring in people from outside the area. In each case above, planters worked out a schedule so that the villagers would harvest their own coffee for their wet mill on a day or days that did not conflict with the plantation harvesting scheduled days. This allowed the plantation to employ villagers to earn some extra cash by harvesting the plantation crop. This suited both plantation owners and villagers, as all the coffee was picked, and the locals received wages as well as income from their own coffee (*CIE # 1, 02/06/14*).

The collaborations outlined in Box 8.3 illustrate the European planters' efforts to organise and support landowner groups and local villagers ensured improved quality coffee was maintained and supply was consistent from the 1960s to the 1970s. The European planters organised villagers and processed their coffee to the same or almost the same as plantation standard coffee and exported it. Because of the associations that existed between villagers and European planters, local labour for harvesting and other menial tasks on the plantation was readily available. Also, it created a safe environment for European planters because of the amicable relationship many planters had with surrounding villagers.

Partnerships between villagers and European planters also extended to assisting villagers to expand their coffee gardens. In the 1980s, European planter, Fred Leahy of Foinda Coffee in Daulo, EHP, assisted locals to plant coffee with financial support from THDS. He supplied the local 'big men' with seedlings, pig fencing wire and gave cash to establish larger coffee gardens. Some of the 'big men' farmers were well educated and were either employees of Fred Leahy's company, entrepreneurs or community leaders. One of the beneficiaries, Raisis Klink, reported that:

Fred Leahy assisted the Baiyango brothers Paul and Gono and myself of Korfena Village, Sowa Gunia of Korepa area, Mondawe Wobo of Lunumbe Village and Paul Asaro of Gimisave Village to plant larger coffee gardens. Fred wanted us to earn income from coffee, and become living examples [coffee entrepreneurs] to local villagers. (*CIE #14, 14/03/14*)

These 'big men' farmers are influential leaders in their own areas and one later became a Parliamentarian in the 1990s. These 'big men' farmers encouraged other

villagers to plant larger coffee gardens. Fred Leahy also initiated a local company, which was owned by Daulo LIG; the company ensured that most of the access roads in the district were operational (Sinclair, 1995). Accessible roads enabled local people to farm coffee as an enterprise and ensured they had access to decent roads for freighting coffee and service delivery to the communities.

With the demise of the plantations, most rural coffee mills were relocated near urban centres. Several of these mills took the initiative to partner with individual growers or farmer groups to source coffee. Some of these chain leaders who were interviewed reported that they could produce good quality coffee from smallholder cherry at their mills as had happened in the past. The desire of chain leaders to purchase cherry is because very little or nothing can be done to upgrade the quality of parchment purchased from smallholders, as the quality of the coffee is determined during the wet processing stage (see Chapter 5). However, with the wet processing of cherries, the desired quality of coffee can be achieved. For instance, a processor in Jiwaka Province purchases cherry from smallholders, processes it and sells the coffee to high-value markets (*CIE #20, 06/04/14*). The processor uses a variety of processing techniques to process the cherry, and eventually cup tastes the quality and produces quality assessments of each batch. He then directly liaises with potential buyers. When an overseas buyer registers an interest for one of his products, he tailors his wet processing to meet the market demand. He sells some of his coffee to Starbucks.

Additionally, individual farmers and grower groups who have long-term relationships with chain leaders tend to regularly deliver superior quality coffee. An exporter reported that “organised groups were producing good quality coffee and had done this consistently” since the partnership began in 2002 (*CL #5, 04/02/14*). A processor also claimed that his farmers knew the kind of product that needed to be delivered to the mill (*CL #7, 04/02/14*). This confirms Imbun’s (2014) finding that farmer groups who partnered with chain leaders tend to produce good quality coffee. Two chain leaders in this study have been facilitating sales of grower groups’ coffee to differentiated markets, and farmers had been receiving good prices. Similarly, Hartwich *et al.* (2010) points out chain leaders in Honduras have purposely organised relations with coffee farmers to obtain quality coffee. Another processor reported that although they purchased better quality coffee, sometimes supply was

inconsistent (*CL #1, 08/02/14*). This chain leader does not invest in building the production capacity of farmers by providing farm inputs and extension services.

Chain leaders also reported that they provided interest-free cash advances ranging from K500-100,000 to coffee buyers, blocks, plantations and smallholders with large gardens. For these growers, the advances are either given in the form of farm inputs or as cash. Four of the chain leaders interviewed offered cash advances to coffee buyers who operate as middlemen and purchase coffee for chain leaders. Coffee buyers receive a commission on their purchases. The chain leaders recoup the cash advances when growers and coffee buyers bring in coffee. However, some chain leaders have refrained from providing cash advances because it has been difficult to recover their monies. A few growers and buyers misused the cash advances, and coffee was not delivered.

The 12 chain leaders interviewed reported that they provide extension services such as advisory services and training to smallholders and some plantations and blocks. Furthermore, a processor near Goroka taught the smallholders the importance of budgeting and saving and deducts K0.05-0.10/kg of coffee that his farmers sell to his mill as savings for them. The savings are kept and accessed by the farmers when they have a need for cash.

Certification and premium prices in partnership

Partnerships also give farmers access to coffee certification programs. Several chain leaders interviewed either assisted individual farmers or grower groups to have their coffee gardens certified. The certification schemes under which PNG farmers participate include Fair Trade, Tree Kangaroo (KT), Common Code for the Coffee Community (4C), Fair Trade Organic, Utz, and Rainforest Alliance, while the high-value coffees are Organic A, Organic X and AX (Figure 8.1). Some of these certification schemes come under the category of sustainability, and cover three broad areas: a) the economic viability of coffee farming; b) environment-friendly production systems; and c) ensuring coffee farmers' social welfares are catered for in the coffee business. However, a limitation of participating in the Fair Trade scheme in particular is that it can sell 30-60% of a group's produce while the balance is sold

in conventional markets (Valkila, 2009). This also happens with farmers in PNG selling Fair Trade coffee.

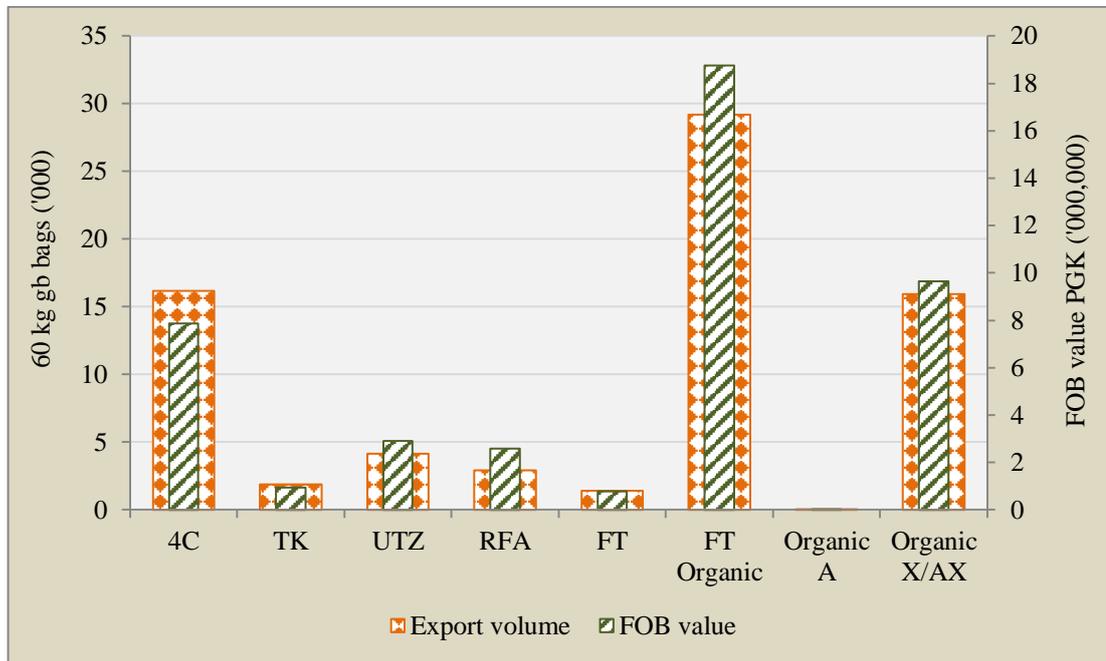


Figure 8.1: The quantity of differentiated coffee exported and foreign exchange earnings for PNG in 2015 (Source: CIC data).

Another benefit of individual farmers and grower groups partnering with chain leaders is it enables smallholders to access the growing differentiated coffee markets. Differentiated coffee accounts for 9-12% of total global coffee transactions (Lewin *et al.* 2004). Globally, the consumption of differentiated coffee is increasing while consumption of regular blends remains steady (Daviron and Ponte, 2005). Since 2003, PNG exports to differentiated markets have been growing steadily. In 2015, PNG exported almost 10% of differentiated coffee (Figure 8.2). Coffee bought from growers that possess certified farms is destined for differentiated markets, and chain leaders pay the above-market price to farmers that supply coffee consistently. Thus, potential remains to increase the share of exports to differentiated markets.

Individual growers or farmer groups that produce coffee under certification regimes earn premiums on the coffee they sell to chain leaders. For cherries purchased from certified farms, growers earn higher premiums of K0.20-0.50/kg from partner chain leaders. However, several chain leaders interviewed also paid price premiums to partner farmers from uncertified gardens, which ranged from K0.10-0.20/kg on top

of the usual market price for cherries. The price premiums act as an incentive for farmers to supply coffee to the same mill consistently.

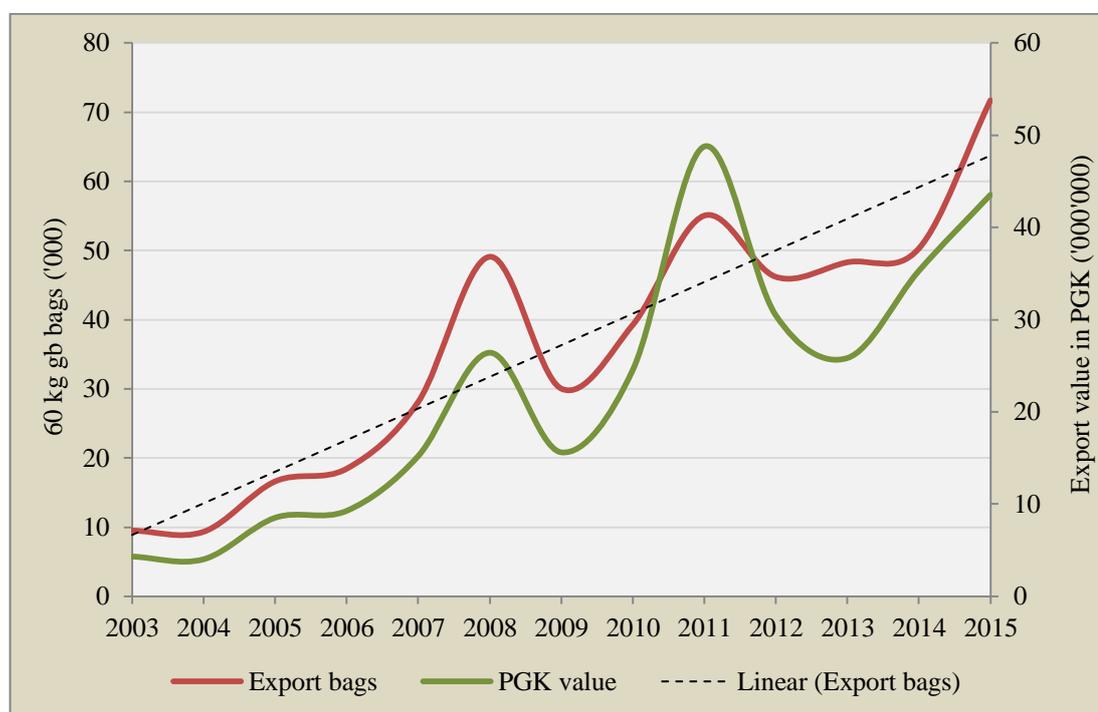


Figure 8.2: The growth of coffee exports in the differentiated markets from 2003 to 2015 (Source: CIC data).

Also, farmers earn better returns on cherry than on parchment coffee. Coffee farmers' return on selling cherry is 34% higher than parchment; farmers make savings on labour and time in pulping, fermenting, washing, drying and providing security for coffee (Batt *et al.* 2009). The 34% return on cherry price relates to an equivalent of a parchment coffee that a farmer would forgo if sold as parchment. Elsewhere, Rao (2010) shows that when a Fair Trade farmer group in India began to deliver cherries to a central mill, the coffee prices farmers received increased by 251% (Rupiah 25-35/kg to 123/kg). The lower prices that Indian farmers previously received were based on the lower quality of coffee they sold. The Indian farmers applied their own methods to process and trade coffee as independent farmers.

Another example of good quality coffee emerging through a smallholder and chain leader partnership comes from a district in the Central Highlands. The local coffee mill that used to organise agro-services to farmers has led to recipient farmers

continuing to sell quality coffee to the factory. Box 8.4 outlines how the chain leader modified its buying tactics to purchase good quality parchment from smallholders.

Box 8.4: Adjusting value chain relationships to accommodate changes with farmers

The ‘Nenge Specialty Coffee’ was a product of a partnership project among Lulume, Kofi Roast International, local villagers and the CIC to create a specialty coffee, which began in 2000. Villagers surrounding the mill volunteered to participate in producing the specialty coffee. The project ensured smallholder coffee gardens were rehabilitated, and the farmers supplied parchment to the mill. Lulume conducted training for farmers on coffee husbandry and postharvest practices. Initially, the company invested finance as an upfront credit in assisting farmers to purchase canvases to dry their parchment, and to subsidize the acquisition of hand pulpers. Farmers were taught to build elevated drying beds and trained in the use of proper postharvest practices to ensure production of clean good quality parchment coffee.

The arrangement was an informal mutual agreement. In 2005, some of the participating farmers began to make unrealistic demands on the company. Farmers requested the company supply all farm inputs such as farm tools, pulpers, and canvasses. The excessive demands were not met, and Lulume was forced to change its mode of operation to produce the Nenge Specialty Coffee.

The new strategy employed by the company was price-driven. If a farmer wished to obtain a better price, they had to produce good quality coffee. If the company was satisfied with the quality by assessing the physical appearance of parchment coffee, it paid the farmer a premium at the factory. A company employee said that “The company did not have formal agreements with the farmers, and the farmers did not have any obligation to the company. The informal relationship was the exchange of parchment coffee for cash. The farmers were satisfied with the price received which was K0.50-0.60/kg on top of the factory door price (FDP).” The highest price premium paid was K1.00/kg for parchment, so if the FDP was K3.00, then the premium price was K4.00.

In 2011, Lulume scrapped the above payment strategy. Introducing a new approach, the company enforced more stringent quality control measures and began to evaluate the cup quality, which had not previously been undertaken and also continued to analyse the physical appearance of the beans. Based on the results, the company offered premiums on a sliding scale; the minimum price premium was a K0.30 premium. Only in exceptional cases, did farmers receive K1 price premium. The informal partnership is currently in operation (CL #4, 14/02/14).

Note: Pseudonyms were used for names of some of the companies.

Box 8.4 shows that the company reduced its agro-services because of excessive demands from farmers. However, farmers who participated in the earlier investment program continued to sell parchment coffee to the chain leader. Lulume made adjustments to the pricing and support service strategies to accommodate the changing perceptions of the partner farmers. By doing so, the company was able to continue to produce the specialty product. The main strength of the company was the potential for farmers to receive the highest premium of K1 on a kilogram of parchment coffee delivered. Furthermore, the initial investment in farmer education and the appropriate processing facilities helped to influence the mindsets of farmers about the quality of coffee that the mill demands (e.g. Murekezi *et al.* 2012). Although, the mill buys parchment from a multitude of farmers, the product is sold in the differentiated markets. This is unusual because smallholders are known for producing inconsistent and poor quality coffee. However, Box 8.4 demonstrates that with the right effort and training, high-quality parchment coffee can be produced by smallholders, as is also demonstrated by the Neknasi group case study (Box 8.1).

Partnership problems among value chain actors

As outlined above, partnerships among value chain actors have merit, but they also have their own challenges. Some of the challenges include: delayed payments to grower groups, demands on partners and leadership problems in grower groups.

Delayed payments to grower groups

One of the major constraints found among cooperatives was the problem of delayed payments for coffee. In collective marketing, delayed payments and volatile prices can be a disincentive for farmers to produce coffee. The delayed payments for group marketing can be as long as 4-6 months for Neknasi group farmers. A few Neknasi group farmers believe that the chain leader deliberately delayed the processing of their coffee so that he could purchase their coffee when the price was low. This erroneous view is demonstrated in the comments of a member of the focus group:

... here at the production base, we bulk our coffee and transport it to Lae where the processor delays the hulling and thus it affects the final quality of our coffee. ... the processor also delays the buying of our coffee and when prices fall, he buys our coffee. (24/02/14)

While the above quote cannot be substantiated, it exemplifies the distrust that persists among farmers and chain leaders. Farmers believe they are not receiving a fair price when delays occur in processing and payments. Murray-Prior *et al.* (2008) report of farmers perceiving that chain leaders were responsible for the low prices they received for their coffee. As for exporters, they have forward contracts; therefore, in many cases short-term price fluctuations in the markets do not affect their margins. However, the delayed payments result in farmers reluctantly contributing their coffee for group marketing. In the Neknasi group, there is a slight decline in members contributing coffee for group marketing. For Korofeigu farmers, an exporter in Goroka that hulls and purchases the group's coffee did not issue the quality report for coffee sales in 2013. The exporter failed to explain the costs of hulling and freighting so farmers were not satisfied and believed that the sale of their coffee to the exporter was not carried out transparently.

Demands on partners

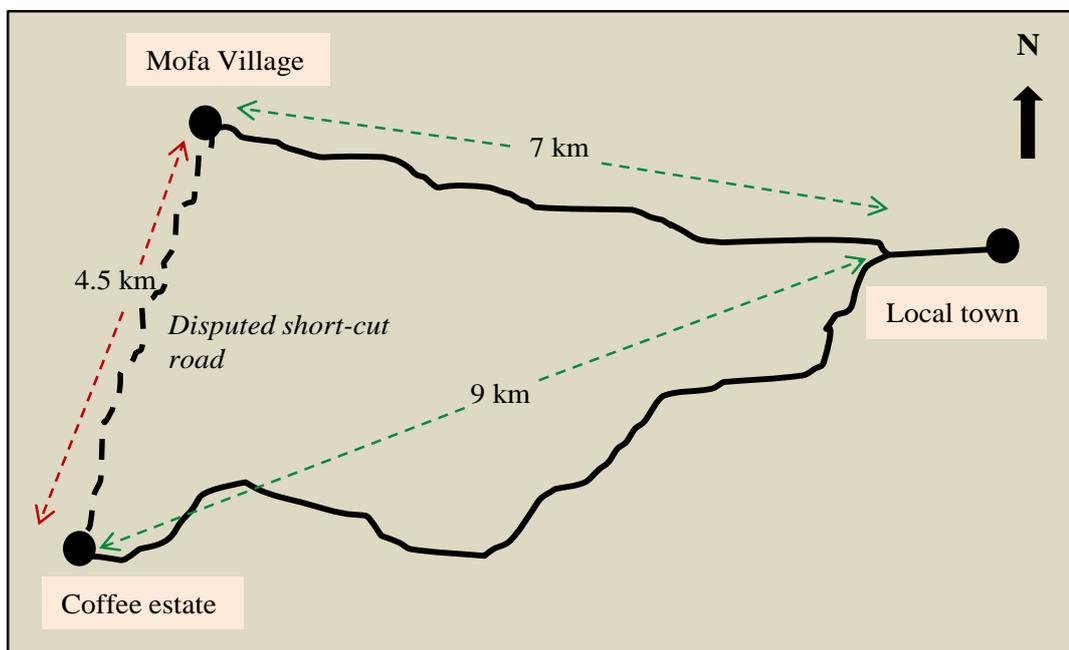
Partnerships can be difficult to maintain for long periods because of the unrealistic demands placed on chain leaders by farmers and local villagers (e.g. Box 8.4). Some grower group leaders think that their chain leaders should offer loans and other benefits. A processor near Goroka was frequently asked for cash advances from farmers that supplied cherries to his mill (*CL #3, 04/02/14*). Another chain leader⁸ gave an account of how local villagers reneged on an agreement (Box 8.5).

Box 8.5: The importance of being conscious of local villagers' attitudes

The current owner of Ka'u Coffee is a son of a pioneer European planter who was born on the plantation. The present owner and his son manage their plantation and their mill. In 2005, there was a need for road access to bring coffee to the factory so the chain leader had about six meetings with local villagers who would be affected by the road construction. In the final meeting villagers agreed that no compensation would be paid for road construction. The villagers said "we do not care about the land, we need services." That being the case, the chain leader confirmed he would build a short-cut road from the mill to Mofa Village (Figure below). This short-cut road would save time for the Mofa Village farmers and others travelling to the nearby town and coming to the estate, by reducing the travel distance by 11.5 km. The villagers agreed, and after shaking hands, a meal was shared among them with the chain leader - symbolically celebrating the proposed new road. The company began to build the road, but as soon as the grader reached Mofa Village, villagers chopped trees across the road to block it and threatened the grader operator. They told the operator that payment for the

road had not been made.

The company requested that the local police address the situation, but they failed to attend. The company was forced to retrieve its grader at its own peril. The villagers demanded K500,000 for the land affected by the road-works. The company mediated for some time but no compromise was reached, consequently, the coffee farmers were informed that their cherries would not be collected. The disgruntled villagers had their own meeting and invited the chain leader, but the chain leader did not attend. The villagers decided to reduce the demand to K50,000. The villagers informed the chain leader about the reduced amount, but he refused to pay them. The chain leader asked the villagers if anyone was paying the company to construct the road. The villagers replied that the company would make money from the cherry purchased from them by using the new road, so he had to compensate them.



The villagers had another meeting and decided to reduce the claim to K5,000 and the chain leader agreed. The chain leader invited the local district administrator, the police and in their presence the company paid K5,000 to the villagers. After a year, the villagers came and demanded K150,000. The chain leader repudiated the villagers' request. The villagers dug trenches and placed stones to block the road. The villagers held another meeting without the involvement of the chain leader and decided that the company should pay another K5,000. The company declined the demand, so villagers dug more trenches on the road. When the coffee season began, the company did not buy the cherries. Farmers had to carry their coffee from their gardens and travel to the coffee mill. The affected farmers requested the company to negotiate with the disgruntled group, but the chain leader refused. After some time, the villagers realized that the chain leader was not budging, so they repaired the dug trenches, removed the stones and allowed the vehicles to pass through. The company is now using the road. In the end, the company had paid K5,000 to the villagers for the road (CL #1, 31/02/14).

Note: Pseudonyms were used for names of the company and the village.

Box 8.5 illuminates the challenges facing rural-based chain leaders as they negotiate partnerships with coffee farmers. The villagers who gave the undertaking for the road construction had hidden motives to extract payments from the company. If the villagers' demand was genuine, they could have permanently closed the access road or demanded compensation at the initial meetings. Because the villagers reneged on their promise with the chain leader, delivery of coffee to the mill was delayed thus negatively affecting coffee farmers. Also, the policing effort during the dispute was lacking, making business impossible to operate. In this case, the chain leader who has excellent local knowledge was able to mitigate some of the hostile behaviour that challenged his operations and was able to finally address the problem amicably. The excessive demands by farmers on chain leaders as highlighted in Case 8.5 illustrate why some partnerships are short-lived.

In other cases, some plantations, blocks and smallholders with large gardens sell their coffee elsewhere in breach of the agreements they had entered into with chain leaders to supply coffee. These agreements can either be formal or informal. When these 'wayward' growers encounter problems, they return to the original partner for assistance. In such cases, most chain leaders refuse to assist unless amends are made on the prior commitments. For this reason some chain leaders stressed the importance of maintaining good relationships with growers over a couple of years before interest-free credit or other farm assistance is offered to them (*CL #6, 06/04/14*).

Leadership problems in grower groups

A further problem in grower groups can occur when leaders use their positions to gain benefits for themselves instead of their groups as was the case with business leaders in group-owned plantations and blocks (see Chapter 7). Unscrupulous smallholder group leaders requested agrochemicals, tools and equipment for their own use instead of their groups. Others have received cash advances from chain leaders on behalf of their groups and have then disappeared and left the groups. These leaders lack moral and ethical values and use the partnership opportunities to advance their own interests.

Poor leadership has led to the demise of many farmer groups in PNG. A former CIC employee informed me in an interview that leadership was no longer visible in many rural villages (CL #4, 14/02/14). Some studies in the Highlands conclude that lack of trust in leaders by members has contributed to the decline in grower groups (Murray-Prior, 2008; Murray-Prior *et al.* 2009; Sengere, 2010). The social aspects of many societies including the absence of a shared vision have created differences in opinions and social divisions, which have badly impacted on social capital and group cohesion in coffee cooperatives.

Conclusion

The partnership framework has merits for resource sharing among collaborators in which individual smallholders, blocks, farmer groups, chain leaders and lead partners can mutually benefit. The plantations and their mills of the 1960s thrived because chain leaders partnered with village coffee farmers, which ensured high coffee production and quality: PNG coffee was renowned for its quality in overseas markets. The demise of plantations and their mills have created new opportunities for current coffee stakeholders to engage in innovative value chain linkages to produce coffee. This chapter shows that some of the present value chain partnerships and collective action in grower groups have improved coffee productivity, quality and incomes. The relationships have benefited smallholders to increase productivity and earn premiums, while chain leaders are guaranteed delivery of consistently high quality coffee.

The two case studies on grower groups demonstrate that groups attracted agro-services from development partners in which partners offer support services, provide farm inputs, certify farmers' gardens, facilitate savings and credit access, organise marketing and arrange freighting services. Thus, extension efforts from chain leaders delivered through value chain partnerships and grower groups are beneficial and have resulted in increased productivity and the consistent supply of quality coffee.

Grower groups' partnerships with chain leaders have also facilitated linking farmers directly with the expanding differentiated markets. Participation in certification schemes has advanced long-term partnerships between partners. Certification further creates opportunities for farmers to earn premiums and to become conscious of

quality requirements of differentiated markets. The close collaboration facilitates the exchange of information and thus quality products are expected to be produced which meet the demands of the differentiated market.

Transparent and accountable leadership and delegation of responsibilities among group members can heighten trust, cohesion, and social capital formation in grower groups. The high levels of social capital in the Neknasi group have led to members producing good quality coffee, and their productivity levels are high compared with other smallholders in the Highlands. Fair Trade certification has strengthened governance systems in the Neknasi group by ensuring leaders are accountable through the conduct of regular meetings. These governance systems have helped the Neknasi group to diversify into other entrepreneurial activities. Also, cooperatives as social enterprises have allowed members to actively participate in group activities to establish a communitarian agenda to improve their livelihoods. However, in the Korofeigu group, NASAA Organic certification lacks stringent governance system. Poor leadership and governance in the Korofeigu group has resulted in lower levels of trust and poor social capital. Therefore, Fair Trade imposed governance systems in grower groups facilitates the creation of sustainable groups with high social capital levels and group cohesion.

Certain barriers to partnerships and collective action endure. Unrealistic demands from farmers on chain leaders can stifle relationships. Also, lingering distrust between farmers and chain leaders can undermine collaboration. In grower groups, delays in payments of coffee sold in group marketing can be a disincentive and undermine collective action as seen in the Neknasi group.

In Chapter 9, I bring together the discussions from the earlier chapters to highlight the weaknesses of partnerships and constraints that were causing the decline of the coffee industry. In Chapter 10, strategies to revive the coffee industry are outlined.

Notes

1. Farmers indicated a range of K200 to K400 as good prices for a 50-60 kg of parchment coffee.
2. Farmers indicated that prices below K160 were poor for a 50-60 kg of parchment coffee.
3. The average income received excludes the three subgroups that joined the Neknasi group in 2015.
4. As part of Fair Trade certification, the Neknasi group has social, economic, environment and labour committees. The labour committee ensures child labour is prohibited in coffee production; the economic committee ensures the cooperative operates as a social enterprise; the environment committee ensures sustainable practices are employed in coffee production; and the social committee ensures the welfare of farmers is catered for in group work.
5. Subgroup leaders are second tier leaders who are leaders of each subgroup as per Fair Trade criteria. A subgroup will include one or two villages.
6. Producing exactly the same crop on an organic and non-organic farm by the same farmer (NASAA Australia Ltd, 2004).
7. Coffee rehabilitation includes pruning, digging new drains or maintaining old drains and shade control.
8. The chain leader was a recipient of an Award from the CIC in 2008 for grading feeder roads in his community.

Chapter 9

Challenges in the PNG Coffee Industry

Introduction

The previous chapter outlined the opportunities and challenges in collective action of smallholder farmers and value chain partnerships. This chapter brings together and summarises the challenges discussed in Chapters 5 to 8, which currently impede the PNG coffee industry. As outlined, the coffee industry is beset with a range of problems that have impacted negatively on the performance of the industry. In the early stages of coffee development in PNG, the thriving European-owned plantations established a solid rural infrastructure, which provided easy access to markets, goods and services for smallholder coffee farmers. However, with the decline of the plantations, many of these support services in the rural areas collapsed. The key findings in this thesis are summarised in two parts. Firstly, the specific challenges causing the long-term decline of the managed subsector are discussed as well as the reasons for smallholder farmers' low productivity and supply of poor quality coffee to the market. In the second part of the chapter, the broader institutional context and external factors, which constrain or pose threats to the PNG coffee industry, are summarised.

Figure 9.1 shows how the various interacting factors (socio-economic, institutional, external, management and socio-political) caused the decline of the managed subsector and the problems in smallholder coffee production. If the current decline continues, the remaining struggling coffee plantations and blocks may convert to smallholdings or to other uses. However, smallholders and block and plantation owners and business managers who are able to mitigate the challenges confronting them can survive and thrive. Some strategies successful coffee growers deploy to be resilient under the present socio-economic and political context are outlined in Chapter 10.

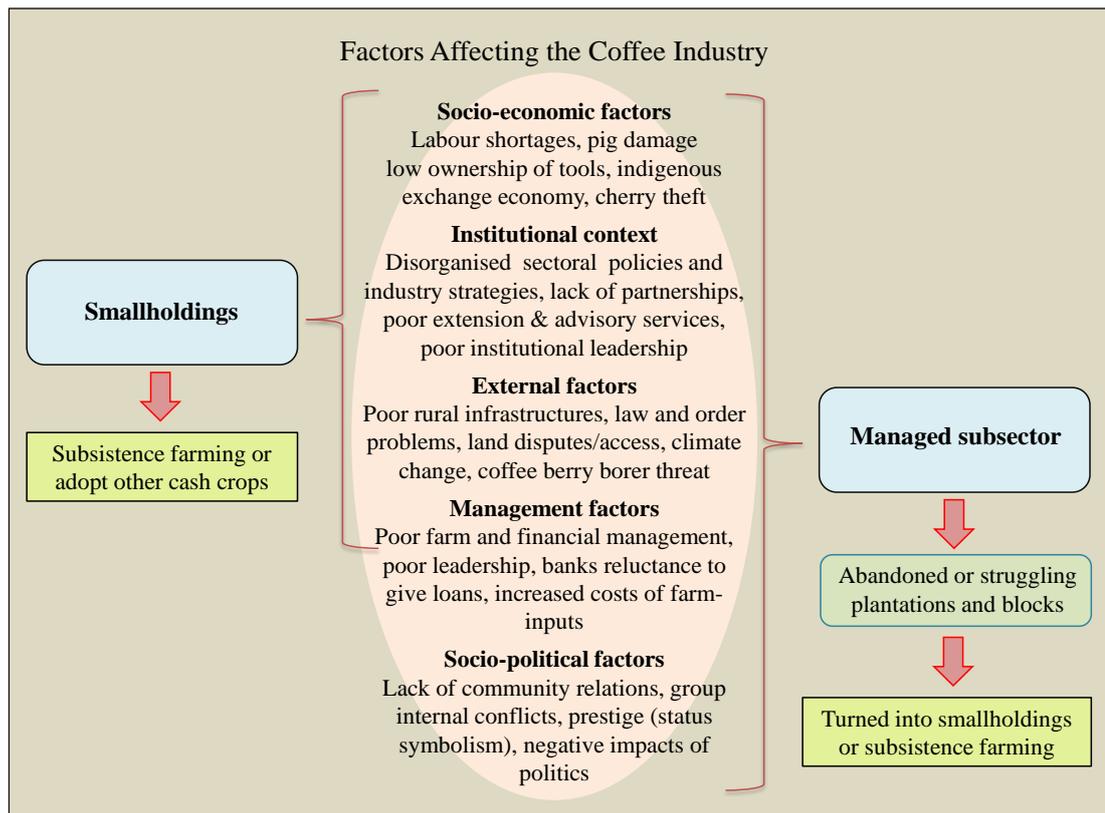


Figure 9.1: Key factors contributing to the poor performance of PNG coffee industry.

Managing indigenous and modern market economies

The non-market system has a significant influence on social and economic activity in rural communities and does not appear to be diminishing under the influence of modernization and the expansion of the modern market economy. Smallholder farmers and entrepreneurs have to tread a careful path to ensure indigenous values do not override fundamental modern market imperatives in managing their coffee gardens, blocks, and plantations. As discussed in Chapters 2, 6 and 7, the traditional relational economy has both beneficial and negative aspects. Traditional labour exchange is beneficial for the modern market economy, where households can recruit labour through reciprocal exchange relationships for coffee farming tasks. However, for some plantation and block business managers and owners, they can invest too much cash and in-kind support in non-market systems, which can be detrimental to the operation of their businesses. Thus, block and plantation business managers, owners and smallholders must be conscious of the subtle influences of the indigenous economy.

Managed Subsector's Problems

Plantation productivity in the 1980s averaged 2,000 kg gb/ha. However, from 2000 to 2006, plantation productivity declined to 600 kg gb/ha, a fall of almost three quarters (Chapter 5). In my study, the productivities of two operating plantations were 217-326 kg gb/ha for Etawa Coffee (Box 7.2) and 432 kg gb/ha for Beser Coffee (Box 7.4), which are dismal by plantation standards (Table 9.1).

Table 9.1: Plantation productivities of this study.

Plantation	Productivity (kg gb/ha)	Year of operation
Akai	1,633	1990s
Etawa	217-326	2014
Beser	432	2016

This section highlights some of the difficulties faced by the managed subsector which have contributed to very low productivity. The problems identified in this chapter include: failures in state support; management factors; lack of community engagement; and poor leadership.

Government interventions in the coffee industry have brought both positive and negative results. The Plantation Redistribution Scheme (PRS) and Twenty Hectare Development Scheme (THDS) were poorly conceived and implemented. The PRS, in particular, was driven by a political agenda to appease customary landowners of plantations by returning their land to them. Similar problems have occurred in many former colonial countries. The guidelines for the purchase of plantations failed to uphold proper business protocols. For instance, many landowner groups who were to provide equity contributions towards the total purchase price as initial deposits paid much less, and the state had to subsidise the acquisitions heavily (Chapter 5). Therefore, plantations were given as 'gifts' to landowners.

Another factor that has led to the decline of the managed subsector was the management problems that persist today and which were prevalent in the decades from the 1980s to 2000s. Chapters 5 and 7 exemplified the financial mismanagement, poor farm practices and abuse of company assets like coffee income and vehicles, which together have been responsible for the decline of the subsector. Poor management often originated from a limited understanding of

business imperatives. In fact, many business managers and owners lacked the knowledge of business values and skills to run their commercial operations prudently. Many business managers underestimated the efforts that were required in managing a high input-high output system of coffee production. For instance, without the guidance of a budget, Noiya Se'e diverted most of his coffee income, which came from his plantation, into building a dry coffee factory (Box 7.2). Consequently, Se'e was unable to purchase farm inputs to maintain his plantation. Lacking in knowledge of coffee husbandry practices Se'e's coffee trees became overgrown making it difficult to harvest ripe cherries, thereby increasing the labour costs for the plantation. Se'e's problems are akin to the situation of many nationally-owned plantations and blocks.

The rising costs of agricultural inputs have also made plantation ownership an unattractive enterprise. The higher costs of fertilisers, herbicides, farm tools and equipment as discussed in Chapter 5 have reduced the ability of plantations and blocks to operate profitably. Additionally, the recent wage determination in 2014 has increased rural minimum wages for plantation labourers by 35% (Imbun, 2015). Therefore, many plantations and blocks are unable to meet the higher costs of farm inputs and the new wage rates.

Another problem contributing to the decline of the subsector is the reluctance of banks to lend finance to the managed subsector. Commercial banks are no longer offering loans to the subsector because of non-repayments on past arrears (Chapter 5). Also, lawlessness in rural areas where most of the plantations and blocks are located has deterred bank investments in the sector. Sero Bebes, a plantation owner, attempted to secure a commercial loan, but his bank was unwilling to provide the loan (Box 7.4). The bank claimed that his plantation was situated in a rural area and, thus, was unsafe to invest in. Also, the bank refused to accept Bebes' assets as collateral, which included the land title of his plantation and personal savings.

The lack of community involvement of plantations in their neighbouring communities has compounded problems further for the subsector (Chapters 5 and 7). In the 1960s and 1970s, the European planter-landowner partnerships enhanced community relations. However, the slide in community engagements began in the

1980s when most of the plantations were acquired by landowner business groups or local corporations. The new owners were unable to replicate the success of early European planters who had harmonious relationships with local village farmers to produce coffee (Box 8.3). The new owners believed that the plantations, which became locally owned had no need for community relations. Furthermore, the local business managers who were in charge did not maintain cordial relationships with shareholders, which also exacerbated internal conflicts in group-owned businesses.

A related problem has been the poor leadership provided by egocentric business leaders, especially in group-owned plantations and blocks. Group business leaders, directors, and business managers have applied group-owned resources to advance their personal ambitions to the detriment of the coffee businesses (Chapter 7). Sometimes dishonest business leaders lack expertise in leadership, and have ulterior motives to embezzle company finances and assets when they enter into positions of influence in the company. They at times exclude shareholders from participating in management roles so that they can assume total control of the business. Some modern business leaders or shareholder-business managers assume total management control and make decisions, which sometimes results in internal conflicts among shareholders. Shareholders' dissatisfaction can be expressed through cherry theft, harassing of company workers and land claims to plantation land.

As for blocks, non-sharing of dividends led to disputes and the subdivision of coffee blocks. The group leaders in block development projects failed to share company profits fairly, which angered shareholders who were mainly family or clan members. In other cases, block leaders failed to involve shareholders in the management of the coffee blocks and as a result, shareholders reclaimed their land portions with coffee trees and began managing them as smallholdings. Therefore, many coffee blocks ceased operation.

Another important factor was the waning of institutional leadership from lead partners like the CIC. The lack of institutional leadership created spaces for corrupt practices to emerge and harm business operations. This study revealed the inadequacies of state institutions to support, train, mentor, and build the management capacities of coffee business groups and individual entrepreneurs in the subsector.

This led to many plantations and blocks struggling or failing to sustain their operations (Chapter 7). The banks as fund managers of the PRS and the THDS, and the government as financier failed to monitor the execution of funded-projects. The banks and the state did not appraise the performance of the management agencies who managed the PRS and THDS funded-projects, which led to very poor services being delivered. The CIC attempted to provide advisory services, but its services to the subsector were inadequate. The inconsistent and lack of support services from CIC resulted in business managers and owners of plantations and blocks not receiving advisory services. Consequently, business managers and owners were demoralised and were ineffective in managing their plantations and blocks. Also, they did not know where to seek assistance when they had management problems. For instance, when the managing partner departed from Akai Plantation as shown in Box 7.1, it operated for only two years and later collapsed as a result of internal conflicts among clan leaders. There was no state agency available to assume the role of institutional leader and assist the Akai Plantation.

Challenges in Smallholder Production

Smallholder farmers continue to dominate coffee production and will continue to do so in the years to come. However, their productivity is now lower than their average productivity between 1970 to the mid-1990s with a decline of around 60% in 2013 (Allen *et al.* 2009; UniQuest, 2013). Moreover, smallholders produce inferior quality coffee and their supply to market is also inconsistent (Murray-Prior and Batt, 2007; Murray-Prior *et al.* 2008). Smallholders are part-time farmers and producing coffee is one of a range of livelihood strategies. Their other livelihood activities draw part of their resources away from being invested in coffee, which may include labour, land, money and farm inputs (Chapters 5 and 6).

Coffee production constraints among smallholders for both independent farmers and members of grower groups that continue to persist include: old tree stock; poor credit access; cherry theft; lack of clean water to pulp and wash fermented coffee; land shortage; lack of pulpers; and, volatile coffee prices (Chapters 5 and 6). Four major problems, identified in this study, in smallholder production that resulted in low productivity and production of poor coffee quality were: labour constraints; poor extension services; unsustainable grower groups and lack of partnerships.

Labour constraints in smallholder production

Labour shortages are widespread among smallholders, which include independent farmers and grower group farmers and are a major obstacle to coffee production (Chapters 5 and 6). The larger the coffee garden sizes, the more labour farmers require undertaking coffee farming and processing tasks. Sometimes family labour may be insufficient to maintain a large garden. Several reasons for labour shortages of households include: school-aged children in boarding schools; adult children being married or migrating elsewhere; and, household heads becoming too old to maintain their coffee gardens. Furthermore, the unequal sharing of coffee income can affect labour supply. In the Korofeigu group, the wives spent less time in coffee production because of their perception that they were underpaid. Therefore, the group's productivity was lower than farmers in the Neknasi group (Chapter 6).

Poor extension and training programs

In the PNG coffee industry, the marked decline in farmer contact with extension officers began in the late 1990s when numerous staff retrenchments were carried out to reduce overhead costs in the CIC. The ratio of the CIC extension officers to farmers is one to almost 15,000 households (Chapter 5). Mauro (2010, p. 24) further identifies other institutional problems like “unpredictable budgetary support, poor governance, corruption and misappropriation of funds” as undermining extension services in the industry.

A review of past extension services show that extension programs were rarely completed when priorities change as a result of management change at the CIC (Chapter 5). Typically, in the CIC, a ‘new’ management team embarks on new initiatives and sets aside existing programs. The decision to set aside ongoing programs is carried out in haste without proper evaluations of past and present programs. Thus, their programs have an uncertain future. The frequent changes to programs suggest that most extension initiatives are short to medium term and therefore lack consistency in the delivery of long-term goals to sustainably grow the industry.

Unsustainable grower groups

Several challenges relating to poor group leadership persisting in grower groups have contributed to the demise of many cooperatives. Deficiencies in group leadership impeded the build-up of social capital and trust levels in some grower groups. As a result, attempts to establish cooperatives, especially in the PNG Highlands, have been largely unsuccessful (Chapter 8). Three problems were identified relating to poor group leadership:

- Leaders often failed to comply with group rules. For instance, some leaders from the Neknasi group did not abide by the rules that they had set for themselves and group members to follow (Box 8.1).
- Group leaders use groups as a means to solicit materials and farm inputs from partners for their own use. Such actions, when the partners become aware of them, strain the partners' relationships with groups.
- Often, leaders do not command the respect of community members as before. One of the reasons for the lack of respect for leaders is because they use grower group leadership as a route into politics. As a consequence, divisions often appear in the grower group.

Poor institutional leadership from chain leaders and lead partners also resulted in uncooperativeness among group members and the subsequent demise of grower groups. The lack of regular contact of institutional leaders with grower groups can demotivate smallholders from working in their coffee gardens, and farmers are likely to adopt other crops to cultivate. Farmers in the Neknasi and Korofeigu groups explained that the lack of contact with partners like the CIC served as a disincentive to cultivate coffee (Chapter 8). Also, the decline in contact can result in group leaders and members failing to uphold the tenets of good governance such as the conduct of regular group meetings.

Poor governance systems in grower groups can undermine collective action. Many grower groups do not have group by-laws, which can be used to guide group activities. Also, the lack of regular group meetings at which members are kept informed of group activities can lead to poor governance. Furthermore, the reluctance of leaders to delegate group tasks to members of the group often undermines effective participation of members in the group. For example, the

Korofeigu group lacked social capital because tasks were not delegated to members and group meetings were hardly held to report on the group's activities.

Lack of partnerships

The performance of the coffee industry has been negatively impacted by the lack of partnerships among value chain actors, which have contributed to the decline in production and coffee quality. The decline of the plantations has resulted in the inconsistent supply of poor quality coffee to international markets, with farmers therefore receiving discounted prices (Chapters 5 and 8). In the 1960s and 1970s, the European-planters organised landowners and processed their coffee and exported it for them (Box 8.3). The centralised processing led to higher quality coffee. However, when the plantations were sold to landowner business groups in the 1970s, most of the support services that European planters provided ceased. Farmers used a variety of sub-standard processing techniques that produced lower-quality coffee (Chapter 5). The handling of coffee from harvesting to parchment is a major determinant of the difference between Y-grade coffee and some of the Plantation A-grade coffees sold as top quality coffee (Murray-Prior and Batt, 2007). Thus, the argument that the lack of partnerships with plantations and their mills led to low coffee quality is valid.

Another problem in partnerships was the failure of cooperatives to supply parchment coffee consistently to chain leaders. In the late 1980s and 1990s, grower groups were promoted in the PNG coffee industry to undertake collective marketing. Many cooperatives delivered inconsistent quantity and coffee quality (Chapter 8), and chain leaders paid prices equivalent to those offered in conventional markets, which also discouraged groups from maintaining the relationship. This also affected the morale of farmers to continue participating in the group and thus many cooperatives disintegrated. These chain leaders did not provide agro-services for the grower groups but made transport available to ferry parchment coffee to the mill. Most of these relationships were informal and therefore many of them collapsed.

Furthermore, partnership arrangements with different tiers of governments, resource companies, and civil society organisations to promote coffee development among smallholders have partially achieved their intents (Chapter 5). The monitoring and evaluation of these partnerships were lacking because partners did not cooperate to

assess their progress. Minimal results were achieved in these partnerships and therefore the productivity and production of smallholder farmers remains low.

Institutional Context

Development policies and strategies framed on Western models have underperformed in transitional economies like PNG because of the influences of non-market systems. In the agriculture sector and the PNG coffee industry, poor institutional frameworks have undermined their success and growth. Policymakers did not consider the influence of non-market factors as well as modern market signals to craft policies to facilitate sustainable development. Because of policymakers' failures to take account of prevailing socio-economic and political realities, numerous policies and strategies, which were implemented produced mixed results (Chapter 2). Problems associated with localised political economy and industry strategies are further examined below.

Localised political economy

A form of localized political economy is also unfolding in transitional economies like PNG, where elites who are coordinating and executing national policies are at times involved in malpractices. As a result, the rural population including coffee growers are not benefiting from policy initiatives, and development is stalled (Chapter 5). The level of corrupt practices among educated modern leaders holding senior positions in the public sector is significant; they employ relational networks in modern governance systems to embezzle public funds (Chapters 2 and 7). The traditional and transitional leaders also engage in corrupt activities but at a smaller scale. Furthermore, institutionalised systems of syphoning public funds like the NADP by politicians and elites have resulted in public funds not reaching coffee farmers. This and other examples provided in Chapters 5 and 7 have caused many sectoral policies to fail, or many of their targets not to be met.

Industry strategies

The coffee industry strategies developed and implemented over the years were intended to raise coffee production, while others were designed to arrest the decline of production, which had begun in the late 1980s. Many industry strategies that the CIC implemented were short to medium term and also produced mixed results. In the

past, the government provided loans as price support and a certain percentage was paid to farmers when coffee prices were low. However, many argue that farmers gained very little as chain leaders tended to reap most of the benefits (Chapter 5). Moreover, the approaches taken in implementing the village coffee rehabilitation and the nursery projects were unsustainable. In coffee rehabilitation, money was spent on activities like walkathons, which had no direct bearing on coffee productivity. In the case of nurseries, instead of outsourcing nursery projects to schools and coffee cooperatives, the CIC is managing most of the nurseries, which was undermining priority programs like coffee research. Also, there was a prevalence of project managers failing to keep proper records of expenditures and inventories in industry projects (Chapters 4 and 5). There have been instances in the coffee industry where monitoring and evaluation, which were normally undertaken to ensure projects were carried out with due diligence, were sometimes poorly executed if at all so that problems or abuses were not detected early enough for corrective actions to be taken.

Some of the institutional reforms carried out in the CIC have also produced mixed results. The merger of the Coffee Research Institute (CRI) with the CIC in 1991, resulted in research activities not being funded adequately, and became heavily reliant on donor funds. The under-funding of the CRI has incapacitated its ability to generate innovations and technologies through research for coffee growers. Furthermore, restructures in the CIC were not planned properly, and this negatively affected the delivery of extension services to smallholders (Chapter 5).

External Factors

Furthermore, external factors adversely affect smallholders, blocks and plantations. These factors include: poor rural infrastructure and market access; land disputes; lawlessness; climate change and the threat of coffee berry borer (CBB).

Poor rural infrastructure negatively affects the coffee industry through reduced market access for smallholders and owners of blocks and plantations (Chapter 5). Additionally, poor rural infrastructure also adversely affects the potential income coffee growers can earn. Coffee growers spend more money and labour to transport coffee and sometimes they become victims of robberies in their efforts to reach market. Coffee is grown in rural and remote areas where feeder roads are sometimes

impassable or no longer in use. In addition, many plantations and blocks have been abandoned because of difficulties in sourcing farm inputs and recruiting harvesting labour during the coffee season. For these reasons, business managers and owners have to spend more money, which inflates their production costs, often making rural businesses unviable.

These problems are further accentuated by rising lawlessness in rural areas which makes coffee production costly as shown in Chapter 7. The state's inability to enforce the rule of law has put the lives of plantation business managers, owners and farm workers in danger. Cherry theft occurs on plantations, blocks and smallholder gardens, which sometimes lead to tribal feuds when thieves are caught (Box 7.3). These skirmishes have contributed to plantations and blocks being abandoned while coffee trees in smallholder gardens have been chopped down. Thus, the business climate in rural areas is often not conducive to coffee production.

Added to this is that many plantations and blocks have been abandoned because of land disputes. It is common for customary landowners to believe that they have ongoing residual rights to the land that was sold legally (Chapter 7). Customary landowners expect certain benefits from plantation owners, and if the latter refuse to assist in socio-cultural activities, hostile responses from the customary landowners towards the plantation can be provoked (Chapter 5). Customary landowners often express their frustrations through cherry theft or harassing company workers to communicate to the company that some of the profits from the plantation should be channelled through community engagement to them so they also benefit (e.g. Boxes 7.3 and 8.5). Additionally, many of the land disputes arise from the manner in which European planters made the initial land 'purchase'. For example, the customary landowners were not correctly identified and compensated properly at the time the land was acquired to develop plantations and therefore their children are disputing ownership (Chapter 5).

A further factor adversely affecting the coffee industry is the decline in the supply of land to farm coffee in high market access areas. This is the result of three main factors. First, population growth has exerted pressure on the household to restructure their livelihoods; thus coffee may not feature as prominently when they allocate

more land for food production. Second, some smallholders who have released their land to relatives through the relational economy in the past have retrieved their land for other purposes. As shown in Chapter 6, a couple of farmers have returned land with mature coffee to customary landowners. Third, in high market access areas, competition from high-return crops like vegetable production is competing with coffee for land. Some farmers have uprooted coffee to plant vegetables, which generates returns quickly (Chapter 5). Although, land is available in remote areas, market access hinders growth in these areas.

Alongside these external factors currently affecting coffee production, two growing threats to the future sustainability of the industry are climate change and CBB. Coffee production is undergoing dramatic changes to accommodate the effects of climate change. Rainfall patterns have changed with some areas receiving more rain while other regions are experiencing prolonged droughts. Moreover, temperature fluctuations can impact on coffee flowering and bean development. Davis *et al.* (2012) confirm that the Arabica variety, the main export coffee of PNG, is sensitive to fluctuations in temperature and rainfall. Others predict that production of the Arabica variety is likely to decline as a consequence of increases in temperature (Zullo *et al.* 2011; Wallengren, 2012; Bunn *et al.* 2015; Ovalle-Rivera *et al.* 2015). Haggar (2008) shows that the income of Nicaraguan coffee farmers was reduced by 75% (from US\$2300 to US\$600) as a result of climate change. Noticeably in PNG, flowering is occurring throughout the year in some areas, so seasonal production is becoming less marked. Thus, continuous production can impose stress on coffee and nutrition availability which can reduce yield and quality.

Climate change is also imposing changes in coffee production spaces, which may also lead to socio-economic and political upheavals. Areas that were once conducive to growing coffee are becoming less suitable while regions that used to be cooler and unsuitable for coffee can now grow the crop (Haggar and Scepp, 2012; Jaramillo *et al.* 2013; The Climate Institute, 2016). The recommended altitudes for coffee growing are changing, and this may continue into the future. The changes in farming spaces will exert pressure on land use; thus, livelihood strategies will have to modify, thereby causing social instability. Consequently, some farmers will be forced to abandon coffee and adopt new cash crops, or will have to migrate, depending on land

availability, into new locations. Regions where land access is limited could experience social conflict as a result of migration. Furthermore, climate change is intensifying the incidence of pests and diseases and thus negatively affecting coffee production.

Finally, PNG is one of a few coffee-producing countries in the world that does not yet have the CBB. The CBB occurred at the PNG border (PNG-Indonesia) area in 2009, however, it was successfully eradicated. Since PNG shares the same landmass with Indonesia, the CBB will intrude again in the foreseeable future. With recent increases in diurnal temperatures, the life cycle of the CBB has risen from 5 to 10 per cycle of Arabica coffee production (Jaramillo *et al.* 2011). The CBB completes its life cycle in the bean and can therefore destroy the saleable bean. Its presence in PNG will have a devastating impact on the lives of many thousands of coffee growers. PNG smallholders' low input-low output system of coffee farming will facilitate the spread of the pest because it thrives in poorly managed farms.

Conclusion

In this chapter, it is argued that the managed subsector's future is bleak. Poor management, lack of community engagement, poor leadership including the broader institutional context and external factors have all contributed to the long-term decline of the subsector. Business leaders, managers and owners are not conscious of the effects of the indigenous economy on plantation and block operations. Company resources have been diverted into the pursuit of the 'big men' status, which is counterproductive to business operations. Also, tyrannical business leaders and managers have corruptly manoeuvred company resources to promote their private interests in group-owned businesses. Because of mismanagement, internal conflicts are common in many group-owned plantations and blocks. Moreover, the lack of institutional leadership to train and mentor business managers and owners has also adversely affected plantation operations.

Smallholders do not fully realise their potential to attain higher productivity and so continue to produce poor quality coffee because of the numerous constraints that they encounter in coffee production. The diversity of livelihood strategies smallholders pursue has sometimes caused them to divert labour to other activities,

which can undermine coffee production. This study showed that labour shortages for coffee harvesting and weeding are universal among smallholders. Also, inconsistent extension services and the approaches employed to provide these services have been inefficient and erratic. Extension services that the CIC provides or perceives as vital are in many cases not consistent with market demands. Although, farmers can possess technical knowledge on production, without market linkages extension services have little value (e.g. Poulton *et al.* 2010). Moreover, attempts to develop sustainable grower groups as a means to organise production and marketing have not worked well, especially in the Highlands of PNG.

Institutional factors such as policy failures in the coffee industry have also contributed to the decline of the coffee industry. Political demands drove policies like the PRS, so it was not a well thought out plan. During PRS implementation, it became apparent that its procedures to access the fund lacked prudent guidelines, which later affected loan repayments. Also, industry strategies performed poorly or were mismanaged because of the absence of rigorous auditing, monitoring and evaluation, and this led to abuse and corrupt practices. Moreover, the lack of partnerships among value chain actors contributed to low productivity and poor coffee quality. One reason for the lack of partnership is the distrust that prevails among chain leaders and coffee growers, which undermines partnership development and thus requires further investigation.

Finally, the global phenomenon of climate change is altering coffee farming spaces in many countries, including PNG. Regions known for coffee cultivation have become unsuitable due to increases in temperature. The warmer climate is also leading to increases in the incidences of pests and diseases.

Chapter 10 discusses the strategies to revitalise the PNG coffee industry.

Chapter 10

Strategies to Revive the PNG Coffee Industry

Introduction

After discussing the challenges confronting the coffee industry in Chapter 9, this chapter outlines the strategies to arrest the present decline of the PNG coffee industry. This thesis took a very broad perspective to investigate the PNG coffee industry and analysed past and present contexts to formulate strategies for the industry. There are lessons to be learned from the experiences and successes of the early growth of the coffee industry and from the isolated cases of successes today that can be used to formulate appropriate strategies to revive and advance the coffee industry. The strategies suggested in this chapter are based on the data and discussions in Chapters 4, 6, 7 and 8. The strategies are discussed below in the following categories: governance systems; the managed subsector; smallholder sector; and supply chain linkages in the coffee industry.

The development and greater acceptance of the modern cash economy is modifying the livelihood strategies of smallholders, plantations and block owners as they become more active participants in the modern market economy. The current crop of smallholder farmers, plantation and block owners, and business managers desire to learn more about how they can control their incomes from coffee to sustain their lives and businesses.

Governance Systems

Good governance is vital for effective implementation of policies and strategies. In developing policies and strategies for the agriculture sector and the coffee industry, policymakers should also recognise and accommodate the role of socio-economic factors so that policies correspond with the realities of economic activity in PNG. Also, when implementing sectoral policies and industry strategies, audit mechanisms must be put in place to ensure business leaders and project managers are accountable

to the financiers who provide project funds so as to avert corruption. Regular auditing, monitoring and evaluation will be more likely to assist in ensuring finances are spent on stipulated activities, which will result in sectoral policies and industry strategies achieving their intents. Institutional leadership is vital to the success of commercial enterprises like plantations and blocks. If institutional and external problems like those discussed in Chapter 9 are addressed, incentives can be created for the managed subsector and smallholder sector to engage meaningfully in the modern market economy. Policies and strategies such as extension services, proper supply chain linkages, freight subsidies and price support can generate favourable conditions to encourage coffee growers to produce more and better quality coffee. For instance, a more sustainable approach for price support from the government would be to subsidise the costs of farm inputs rather than price subsidies. This intervention would have a direct bearing on farm productivity.

Strategies for the Managed Subsector

Several strategies were identified in this thesis which have the potential to revitalise the managed subsector which, as explained in Chapter 7, is in long-term decline. The strategies for the plantations include improving community engagement, an adequate understanding of business concepts and transparent leadership.

Effective community engagement

Good community relations are paramount for trouble-free operations for businesses like plantations and blocks in the rural areas of PNG. A few plantations that are currently operating with some success have active community relations activities and therefore are socially embedded and more resilient. Business managers or owners' efforts to engage local people in farm-work or to participate in local socio-cultural activities can generate a greater level of acceptance of plantations by their host communities. Also, honest and transparent use of farm and company assets by business managers is likely to gain the favour and support of landowners. Chapter 7 discussed the efforts of Sero Bebes and Bill Gardner, who equipped with local knowledge were able to undertake community relations activities and interact effectively with local villagers resulting in their plantations encountering fewer problems. Bebes reported that when he took over Akwitana Plantation, he undertook active community engagement, which assisted in minimising cherry theft (Box 7.4).

Furthermore, businesses require company rules to guide them in providing support to the community and can act as a buffer against unnecessary demands.

Adequate business knowledge and skills

Another strategy to revitalise the managed subsector is for business managers and owners to possess a greater understanding of business principles to manage their plantations and blocks as commercial entities. Moreover, institutional leadership from the CIC could strengthen the management capabilities of business managers and owners. Advisory services must include provisions for mentoring and training business managers and owners on financial and farm management. Also, business managers and owners who grew up in towns without rural experience require a better understanding of the indigenous economy and its influence on modern business operations.

Furthermore, education and exposure to modern market values as pointed out by Finney (1973; 1993), which this thesis also confirms, are valuable factors that positively impact on those venturing into business activities. Chapter 7 showed that Bebes was knowledgeable of business practices and procedures which equipped him to manage his plantation successfully. Bebes, as a prudent entrepreneur, sought new business opportunities which enabled him to export coffee in 2015. He also led by example and worked on the farm, unlike many plantation business managers and owners who were struggling or failed because they spent less time on their farms supervising their labourers.

Transparent leadership

Accountable and transparent leadership can promote the growth of businesses. Business leaders who are credible, financially prudent and possess sound industry knowledge can enhance the growth of their businesses. Business leaders with social networks, who are knowledgeable about indigenous economies, are honest and who are morally principled, will help ensure communal-owned enterprises prosper, and that profits are equitably distributed among shareholders. Such actions will reduce discontentment and rivalry, which have undermined many group-owned businesses. However, there are minimal problems associated with individually owned businesses. Thus, opportunities to revive the managed subsector will prevail with

individual-owned coffee plantations and blocks. This study showed that community members have more respect for plantations and blocks that are individually-owned than group-owned.

Embracing transitional leadership

For leaders involved in group-owned coffee plantations and blocks or other business activities, the PNG context requires business leaders, including individual entrepreneurs, to straddle traditional and modern styles of leadership if they are to be successful (Figure 2.2). Kisan Pau's leadership roles and experiences gained in traditional socio-cultural ceremonies were effectively utilised to perform a leadership role in modern business (Box 7.3). This thesis argued that leadership that embraces both traditional and modern leadership is the hybrid transitional leadership style. Transitional leaders deployed non-market structures and relations to garner resources to engage in the modern market economy. For rural entrepreneurs, it is essential for them to take a deft approach to entrepreneurship and ensure that indigenous values do not overshadow modern market values, which may undermine the successes of business.

Many transitional leaders are second generation business leaders who are mostly involved in group-owned enterprises (Chapters 2 and 7). Third generation business leaders tend to be better educated and pursue individualistic approaches to business more strongly than second generation business leaders. Finney (1993) points out that some third generation business leaders relocated their enterprises to other provinces to avoid meeting social obligations, which might undermine their businesses. However, if third generation business leaders are to be successful in commercial businesses in rural areas of PNG, they need to embrace the transitional leadership values while pursuing a more individualistic approach to business. In this study, a few third generation business leaders like Bebes and Max Kumabong portrayed the hybrid transitional leadership style. These leaders were able to manage their businesses successfully by managing the demands of the indigenous economy in their communities effectively. Bebes and Kumabong qualify as 'transitional business leaders' which embodies attributes of second and third generation business leaders (see Figure 2.2).

Strategies for Smallholder Production

Smallholder farmers have the potential to improve productivity and coffee quality. One of the factors that has influenced the coffee productivity of farmers is their educational level. Higher levels of literacy in farmers correlate with their ability to improve productivity and coffee quality (Chapter 6). Also, the potential for literate farmers to increase their incomes from coffee has encouraged them to access the up-to-date information and adopt technologies that enhance coffee production. Additionally, this study demonstrates that investing in improving the production capacity of smallholders has translated into increased productivity and production of better quality coffee thus improving returns on investment (Chapter 8). The strategies to improve productivity and production include smallholder labour mobilisation, improved extension services, incentives for smallholders and developing sustainable grower groups.

Strategies for mobilising labour

A strategy to improve the supply of labour prevails in the indigenous exchange system. The indigenous exchange is an integral part of traditional socio-economic life in transitional economies like PNG, and can positively influence the operation of the modern market system at the local level (e.g. Finney, 1987; Lummani, 2006; Inu, 2015). Chapter 6 argued that exchanges often involve reciprocity of labour in subsistence production, which has been extended to the sourcing of labour for coffee production. Labour exchange arrangements for harvesting and weeding in the Neknasi and Korofeigu groups were universal among smallholders. To maintain the relational economy, coffee farmers constantly invest in socio-cultural obligations with their relatives who regularly assist them by providing labour for coffee tasks (Figure 6.6). Smallholders with larger coffee gardens recruit relatives and paid labourers to undertake some of their coffee tasks. The modes of 'payment' to relatives for providing labour include cash as a gift rather than a wage, cherry coffee and food which are sometimes 'paid' in combination. Hired labourers are paid in cash at market rates. When farmers with bigger gardens engage relatives, the amount of money and in-kind 'payments' transacted in the relational economy are much higher than is the case with typical smallholders being paid as wage labour.

Innovative extension services

Extension services are critical to enhancing the skills and knowledge levels of coffee growers. As shown in Chapter 6, the regular contacts and presence of coffee extension officers in coffee growing areas in the late 1980s and early 1990s led to farmers in the two smallholder study sites planting more coffee in the 1990s (Figure 6.2). To boost smallholder production requires innovative and sustainable extension approaches that are complementary to each other for effectiveness in service delivery (e.g. Poulton *et al.* 2010; Ferris *et al.* 2014). For efficient smallholder extension, strategies should include:

- The FDDE method as discussed in Chapters 4 and 5 which seek to involve committed farmers who embrace coffee as one of their priority crops that meets their livelihood needs. This FDDE approach targets grower groups where a large number of farmers are easily contacted, and therefore the approach is cost-effective.
- The CIC projects delivered through groups or partnerships can serve as incentives. If projects such as the village coffee rehabilitation project were channelled through grower groups, it would build the production capacities of smallholders with the supply of farm tools and nursery materials. Also, the CIC can partner with schools through the coffee curriculum and schools can raise coffee seedlings.
- Extension services should be channelled through grower groups, where information can be communicated to and exchanged between many farmers. Farmers from the Neknasi and Korofeigu groups reported that they had improved their farming knowledge and skills through collective action (Chapter 8).

Incentives for smallholders

Providing incentives for smallholders can raise productivity, improve coffee quality and boost farmers' morale so that they are likely to allocate more labour and time to coffee production. Chapters 6 and 8 demonstrated that with correct incentives provided by chain leaders and lead partners, smallholders can improve their production capacities. Some interventions that offer incentives for smallholders include cherry trading, participation in differentiated markets, freighting coffee from remote areas, and institutional partners' support.

Selling cherry

Trading of cherry provides incentives for farmers because they can make more income and also save labour and time than if they processed coffee to the parchment stage. The saved labour and time can then be deployed in other priority household activities. By selling ripe cherries, farmers would be relieved from pulping coffee, washing fermented beans, drying beans in the sun and providing security during the fermentation and drying periods. In Chapter 8, several chain leaders preferred to purchase cherries rather than parchment. These chain leaders confirmed that by buying cherry they were able to produce high-quality green bean at their central mills, which they cannot achieve with parchment beans bought from smallholders.

Participating in differentiated markets

Differentiated markets offer coffee farmers an alternative approach to capturing the long-term value of sustainability in the coffee value chain. There has been a steady growth since 2003 in exports to differentiated markets in PNG (Figure 8.2), although some report that prices were only slightly above conventional market prices (e.g. Powae, 2009; Ruben and Fort, 2012). However, participating in differentiated markets has other advantages. Coffee sold in differentiated markets is less affected by price fluctuations because prices in these markets are fixed in agreements and so they are more stable during periods of falling prices (Valkila and Nygren, 2009). For example, Fair Trade sets a floor price where a minimum price is paid to growers that covers the average cost of production and also pays a price premium for social development (Dragusanu *et al.* 2014). Furthermore, farmers participating in Fair Trade schemes produce good quality coffee and earn better margins (Chapter 8).

This study established that interventions derived from market demands through certification had raised productivity, and farmers earned price premiums, which motivated them to continue producing coffee. The study further illustrates that the assistance of chain leaders to farmers is a targeted investment derived from the demands of the differentiated coffee markets. Because of targeted extension services, chain leaders received good quality coffee (Chapter 8). For instance, a chain leader in the Central Highlands purchased good quality parchment from smallholders and processed it to green bean, which was then sold to high-value markets (Box 8.4). The

success of the chain leader stems from the previous capacity building of farmers over several years and the price premium it offered to its farmers.

Market-focused support services such as coffee extension services associated with certification have ensured that the relationship between partners and growers is long term. The enduring partnerships have resulted in farmers delivering consistent quantity and quality of coffee to chain leaders (Chapter 8). The chain leaders are prompted to invest more by delivering farm inputs to growers, which further motivates growers to increase coffee production and address the quality problem. Thus, certification focuses on coordination of coffee production and targets differentiated markets.

Freighting coffee from remote areas

Coffee farmers who have poor access to markets can participate in the cash economy through the Freight Surety Scheme. The scheme is funded by the CIC and the state to airlift coffee of remote farmers, who are reliant on coffee as their major source of income (Chapters 4 and 5). The freight scheme has successfully put money into the pockets of disadvantaged farmers from isolated areas and has acted as an incentive for them to continue to produce coffee. The freight scheme is a community service for disadvantaged coffee farmers to access modern goods and services from coffee income and actively participate in the modern market system.

Institutional partner support

The farm inputs and training received from chain leaders and lead partners have created incentives for farmers to invest more resources in coffee farming (Chapters 6 and 8). In this study, chain leaders, lead partners, and local politicians, assisted farmers to improve their capacities to produce coffee. Lead partners were active in mobilising farmers to form grower groups. They then provided training on coffee husbandry practices, processing and bookkeeping to build up the knowledge of the farmers. Chain leaders organised extension services, savings services, targeted training and offered cash advances to partner growers. During extension services and training sessions, chain leaders trained farmers on how to produce better quality coffee that targeted specific markets. Thus, farmers learnt what kind of coffee quality they should be aiming for and were motivated to do so (e.g. Box 8.4). This was

evident in the high-quality and large-sized coffee beans farmers produced in the Neknasi group as a result of the incentives they received (Chapter 8).

Partnerships involving smallholder cooperatives with chain leaders and lead partners have a direct impact on raising coffee quality and the productivity of farmers. The grower groups in Chapter 6 revealed an average of 747 kg gb/ha, an increase of 96% in productivity, which was almost double the productivity of 382 kg gb/ha of the Central Highlands (UniQuest, 2013). Partnerships have helped coffee farmers in the Neknasi and Korofeigu groups to access support services like farm inputs, training, advisory services, market information and certification for their farms.

Developing sustainable grower groups

Institutional frameworks provide internal governance systems that are necessary for effective management of grower groups and undergird their sustainability. In the Neknasi group, compliance to Fair Trade imposed structures and regulations have aided leaders and members to pursue collective goals (Chapter 8). The group's by-laws and rules ensure the accountability of leaders and members alike, which are critical for successful group work (e.g. Stockbridge *et al.* 2003; Markelova *et al.* 2009). The Fair Trade rules in the Neknasi group encompassed overall management of the group, however, for assets management, the group developed its own management rules which assisted them in effectively controlling their group assets (Box 8.1).

Partners that provided institutional leadership by way of advisory services through training and mentoring of group leaders strengthened governance systems and sustained the cohesiveness of the cooperatives. Improved group governance systems assisted groups to remain cohesive in the face of declining contact with partners, as was the case with the Neknasi group (Chapter 8). Chain leaders and lead partners can curtail the undesirable attitudes of group leaders by insisting on the enforcement of group by-laws. For example, institutional support offered to groups can be attached to conditions so that group leaders and members conform to and observe group by-laws.

Grower group mobilisation

Partners' involvement in the early stages of group mobilisation to form cooperatives is needed, as villagers are often unable to mobilise other villagers and form groups without external support. The teamwork concept based on democratic processes is often not well understood, and villagers may not have the social networks with other villagers and development partners to establish farmer groups. External inputs from lead partners and chain leaders can either initiate or formalise groups that have expressed an interest in engaging in collective action.

To avoid prolonged dependence on lead partners, it is desirable that lead partners reduce the amount of support gradually over time so that grower groups can conduct their operations as independent commercial entities. Grower groups would then be guided from a distance rather than in a close supervisory relationship. As part of an exit strategy, lead partners can train and advise groups to keep proper records and comply with group meeting resolutions. Similarly, allowing for linkages with grower groups and chain leaders to grow and mature is likely to be sustained as market imperatives drive the relationship. The case study of the Neknasi group showed that when lead partners began to reduce their support gradually to the group, the group focused on consolidating their membership and eventually acquired a truck as part of this process (Box 8.1).

Collective action in grower groups

Collective action in grower groups offers more advantages to coffee farmers than if they were to operate independently, especially if they reside in remote areas in PNG (see Batt *et al.* 2009; Wollni and Brümmer, 2012). Some advantages of collective action include: reduced transaction costs; strong quality control systems; improved access to extension services and farm inputs; strengthened bargaining power; and, groups enabled to participate in differentiated coffee markets as discussed in Chapter 8. Also, grower groups can advance and engage in social entrepreneurial activities as is the case with the Neknasi group (Box 8.1). Social entrepreneurship can accomplish short-term goals, which can manifest in the long-term positive transformation of rural communities (Chapter 8).

The higher levels of social capital and group cohesion are usually associated with a group performing well (Figure 10.1). At the group mobilisation stage, the level of social capital would be low, and the group would lack cohesiveness and, so, it would be immature. As the group begins to have regular interaction with partners and conduct scheduled meetings, social capital levels start to rise. A group with high levels of social capital, independent, operating several businesses like the Neknasi group, and commencing to export coffee to overseas markets would indicate that the group is reaching maturity.

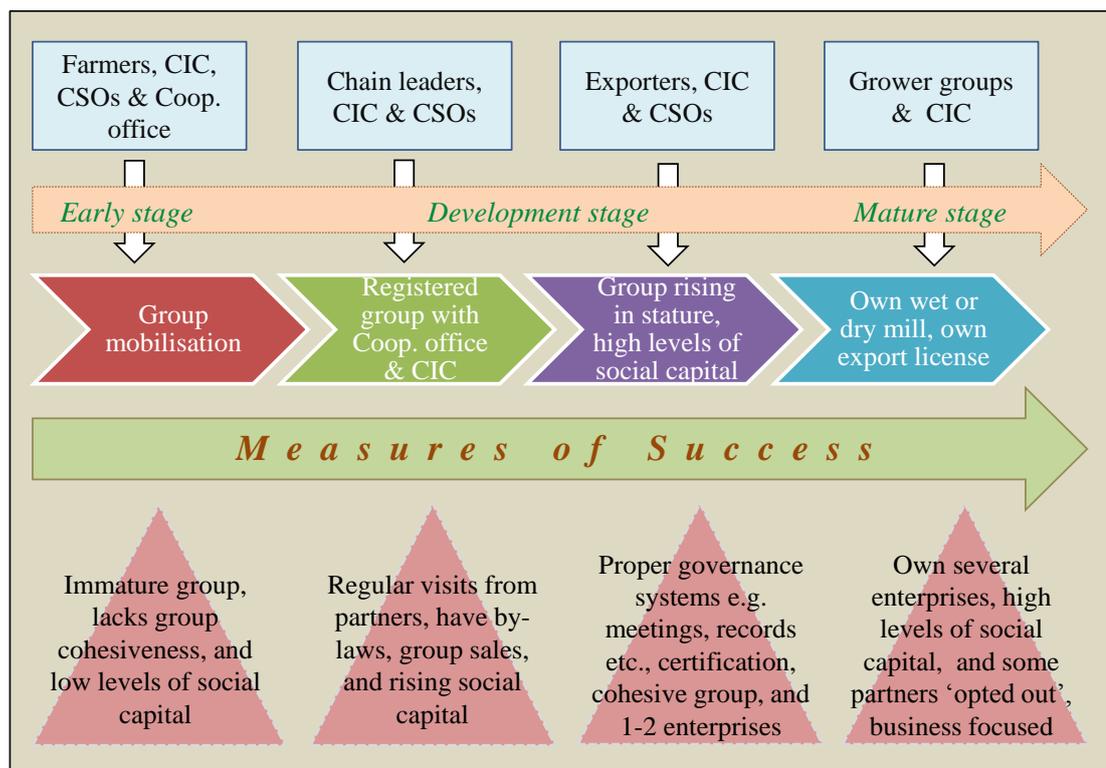


Figure 10.1: Schematic representation of various stages of transition of grower groups from immature to mature groups (Source: Tom Kukhang, original idea).

Transparent and accountable leadership in grower groups can improve social capital and member cohesion, thereby providing a foundation on which collective action can be built and sustained. The quality of group leadership and levels of trust amongst members varies between the Neknasi and Korofeigu groups. Chapter 8 showed that the Neknasi group had a higher degree of social capital and group cohesion than the Korofeigu group. This finding concurs with previous work in the PNG Highlands by Murray-Prior (2008) who argues that there was the likelihood of trust problems in cooperatives. However, the Neknasi group’s regular contact and interaction with

partners elevated trust levels with partners (Table 9.2). The cohesiveness of the group was also derived from the Fair Trade regulations on how the Neknasi group was to be organised and managed. Although there were failures among some leaders to conform to some of the rules governing the use of group assets, members had little to say publicly about the inadequacies of their leaders. At the village level, the subgroup leaders maintained a high degree of trust with their members that led to a cohesive group at the broader level and confidence levels were high. Also, the Neknasi group had four long-term partners, several businesses and a high degree of delegation of duties among members, all of which have developed higher levels of social capital (Table 10.1).

Table 10.1: Achievements of the Neknasi and Korofeigu groups.

Achievements		Grower group	
		Neknasi	Korofeigu
Leadership		Motivated and focused, delegate responsibilities to members	Not motivated, lack of delegation
Social capital		High level	Low level
Social cohesion		High level	Medium level
Certification		Fair Trade	NAASA Organic
Office		Semi-permanent	Semi-permanent
Partners	Long-term	CIC, Morobe Provincial Govt., local Parliamentarian, AgMark	New Guinea Highlands Coffee Exports & CIC
	Short-term	Secretariat of the Pacific Community, PNG Sustainable Development Project (PNGSDP)	PNGSDP & local Parliamentarian
Business enterprises		Own four vehicles	Nil
		Export license issued to group in 2014	
		Has K1.6 million to build a coffee mill. Contributions from farmers and partners	
Community development		Established reticulated water supplies with premium income from Fair Trade in 2015	Established reticulated water supplies in 2014

Supply Chain Linkages

Partnerships in the coffee industry between farmers and chain leaders have generated mutual benefits. This thesis demonstrated that partnerships between European-owned plantations and village farmers existed in the past (Box 8.3). Effective linkages among coffee value chain actors can fill the void left by the departure of the early European planters. Productivity can be raised in the coffee industry when efficient supply chain linkages exist among value chain actors. Smallholders lack the

technical expertise and the resources to increase productivity and produce better quality coffee. Smallholders need the support of chain leaders and lead partners, which was formerly provided by the European plantation planters. Also, smallholder farmers participating in partnerships receive price premiums from chain leaders as shown in Chapter 8. Thus, a systems perspective approach based on value chain partnerships facilitates efficiency in production systems, enhances profits and ensures collaborating partners mutually benefit.

Chain leaders who are mostly located in urban centres need to engage actively in supply chain linkages, which this study has confirmed as an emerging trend (Chapter 8). Some chain leaders have already instituted partnerships with growers and smallholder groups. For instance, the Productive Partnership in Agriculture Project (PPAP) is promoting the partnership concept among chain leaders, lead partners and coffee growers which must be encouraged further in the coffee industry. One of PPAP's premises is to ensure that partner farmers and chain leaders appreciate that coffee enterprises are commercial entities. The industry would prosper when value chain actors including successful plantations are involved in supply chain linkages with farmers. This study showed three types of supply chain collaborations that can positively influence coffee production. They are chain leader-farmer partnerships, lead partner-farmer linkages and agro-nucleus setups (Figure 10.2).

Coffee farmers have the potential to partner with chain leaders and lead partners, and to become involved in agro-nucleus setups. In Figure 10.2, the thick to the thin coloured arrows illustrate relationships that are likely to range from more sustainable to less sustainable. When support services are delivered through grower groups, partnerships or agro-nucleus setups, farmers operating as individuals will begin to align themselves with either cooperatives or agro-nucleus setups, with the intention to source support services and to benefit from them. The chain leader-driven partnerships and agro-nucleus setups would be sustainable and in many cases these partnerships ensure cost-effectiveness and are profit-driven. However, lead partners have a function to ensure the interests of growers are upheld, facilitate supply chain linkages, support chain leaders and agro-nucleus centres in extension delivery, and continue to serve coffee farmers in low market access areas. Low market accessible areas are regions where chain leaders cannot reach, because it is unprofitable for

them to operate in these remote locations. In high market access areas, infrastructures such as good roads exist thus chain leaders are able to maintain regular contact with partner farmers. Moreover, successful plantations can also assume the role of chain leaders or agro-nucleus centres by providing centralised processing facilities and agro-services to villagers surrounding the plantation, as was the case with early European planters (Box 8.3).

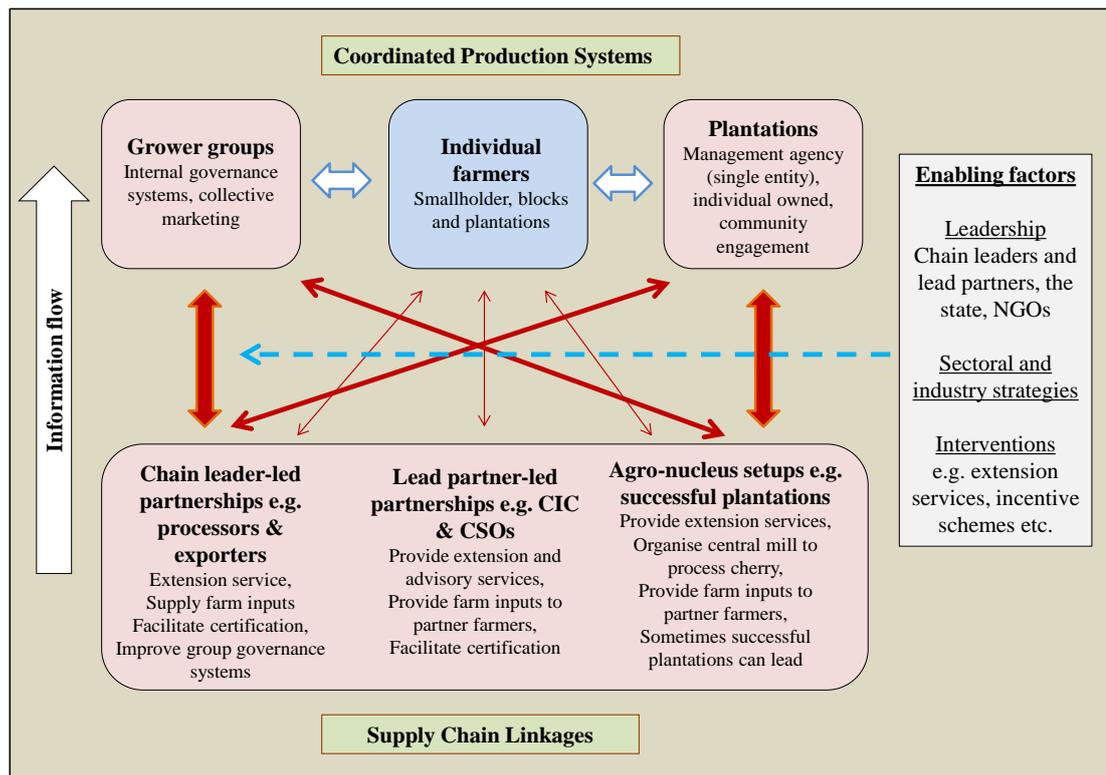


Figure 10.2: Coordinated coffee production system for PNG.

Plantations and blocks that are struggling because of financial problems or labour constraints should be subdivided and portions subleased to settlers and villagers in partnership arrangements through formal agreements. The plantation or block owners can facilitate extension services and organise farm inputs with their partner farmers. The partner farmers in return would sell coffee to the plantation or block owner. Importantly, subdivision ensures an adequate labour supply from leasees and minimises cherry theft. As for the owner, there is an expectation that quality cherry coffee will be obtained from the leasees as illustrated in some of the present partnerships discussed in Chapter 8. The once abandoned or struggling plantations and blocks will be in production again.

Conclusion

Honest and transparent leadership is critical to the revival of the managed subsector. To be successful in business, the capacity to be a leader in the indigenous or relational economy as well as the modern market economy appears to be vital to group business success. Through the indigenous socio-economy, shareholders' varied socio-economic interests are met, while through the modern market economy, enterprises are managed according to business imperatives. Business managers and owners also need to manage their farms prudently, make sound investment decisions and pursue community engagements to succeed. Some plantations are successful because they have judiciously managed their farm's income while engaging in community relation activities.

This chapter argued that collective action in grower groups and partnerships with chain leaders have proven to benefit coffee growers regarding improved productivity, better coffee quality and higher incomes. Through collective action and partnerships, farmers developed coffee production capacities and participated in differentiated markets. Also, developing the capacity of farmer groups has helped in transforming them into community institutions where learning and information exchange among member farmers can occur. Moreover, other interventions received from development partners have also bolstered collective action. The European planter-landowner relationships during the early formative years of the coffee industry to maintain coffee quality was a good illustration of the mutual benefits that can be achieved through partnerships.

Alternative approaches to providing extension services are needed as current programs intended for farmers are inconsistent, and their focus is short-term. This study pointed out that the entry points for extension services should include grower groups, partnerships and agro-nucleus models that involve farmers. The services chain leaders are providing are driven by market imperatives and, thus, the support they extend to coffee farmers are market-driven and cost-effective.

In the next chapter, I provide conclusions for the thesis, make recommendations as a way forward for the PNG coffee industry and propose areas for future research.

Chapter 11

Conclusions, Recommendations and Future Research Areas

Introduction

After discussing the factors causing the decline in coffee production and strategies to revive the PNG coffee industry in Chapters 9 and 10 respectively, this chapter concludes the thesis and makes some recommendations. The coffee industry grew rapidly in the 1960s and 1970s, creating the backdrop for a thriving coffee plantation sector with mills which were accessible to smallholder farmers in the Highlands of rural PNG. While plantations were developed on alienated land, coffee cultivation among villagers grew swiftly on customary land outpacing plantation production by the mid-1960s. The sheer enthusiasm to attain wealth and the dream of replicating the modern lifestyles that the early European planters appeared to enjoy in their midst encouraged subsistence villagers to embrace coffee and adopt it into their agrarian system.

This chapter summarises the influences of leadership, development dilemmas, commercial businesses in the transitional economy, the potential of smallholders to increase coffee production and the contribution of this study to current knowledge. Also, interventions are recommended to arrest the decline and facilitate the revival of the PNG coffee industry. Finally, areas for future research are also suggested.

Development Dilemma

Development theorists whose assumptions are drawn from Western models of development failed to appreciate the influences of non-market systems that prevail in transitional economies like PNG. Thus, many development initiatives mimicking Western models of development did not succeed in transitional economies. This implies that modern market values are sometimes not consistent with indigenous structures, practices, and values, which seem to have an enduring influence in many developing countries. Social embeddedness theory offers a better explanation and

insight into the dilemmas of development in transitional economies because it considers traditional social, economic and political values and practices and their influence on the modern market economy. Also, through the hybridization lens, it reveals the potential economic opportunities arising from the coalescing of indigenous and modern market economic practices.

The managed subsector is in long-term decline as local business managers, and/or owners are unable to pursue modern market imperatives to manage their plantations and blocks efficiently. The high input-high output plantation system of production is market-based, which is alien to the way locals practise agrarian subsistence production. Consequently, many local business managers and owners are unable to merge adequately capitalist production systems with local socio-economies. Thus, many coffee plantation business managers and owners in particular, use their plantations to accumulate 'prestige' capital by diverting coffee income into the relational economy (Chapter 7). In doing so, they fail to reinvest sufficient recurrent income in their plantations and blocks to maintain viability. The customary land tenure system in PNG also undermines collective action in group-owned plantations and blocks, which sometimes leads to internal conflicts among shareholders. Furthermore, the customary landowners believe that 'purchasers' of their land must share some of the company profits with them (Chapter 7). Plantation business managers and owners who are reluctant to participate in socio-cultural events in the community are likely to encounter reprisals such as cherry theft and harassing of plantation workers by local customary landowners.

The social and economic activities of smallholder coffee farmers in the Highlands of PNG are socially embedded. Thus, smallholders pursue multiple livelihood strategies to sustain their way of life, and coffee production is one of them. In transitional societies, socio-cultural activities determine the household allocation of resources. The diverse livelihood strategies of farmers sometimes draw away resources, including labour, from being invested in coffee production into other areas (Chapters 5 and 6). Also, smallholders concurrently engage in simple commodity production and subsistence farming on customary land, and, if land is short, this also affects the amount of land that can be allocated to coffee production.

Leadership

The rapid growth in the early stages of coffee development in the PNG Highlands was associated with the institutional leadership provided by the pioneer European planters. The European planters provided support services to surrounding village coffee farmers, which facilitated the growth of the industry. Also, the European planters were conscious of market demands and their support to village farmers was aimed at producing a product that met the requirements of the target markets (Chapters 8 and 10). The partnership between European planters and smallholders ensured the production of high-quality coffee. As a result, PNG built its reputation with overseas importers and coffee connoisseurs as producer of high-quality coffee. Moreover, many of the European planters recognised the need to maintain harmonious relationships with landowners and local villagers, thus they often had mutually beneficial partnership arrangements with landowners and local villagers to produce coffee. The alliances with landowners and villagers ensured relatively trouble-free plantation operations and enabled European planters to access labour for plantation tasks from the neighbouring communities.

Moreover, pre- and post-independence local political leaders genuinely wanted citizens to engage in commercial activities and thus introduced the Plantation Redistribution Scheme and Twenty Hectare Development Scheme policies (Chapter 4). In the 1970s and early 1980s, government funds earmarked for development purposes reached the intended recipients like coffee growers. However, more recently, funds such as NADP earmarked for farmers are not reaching them as a consequence of corrupt practices perpetrated by elites and politicians (Chapters 2, 5 and 9). Local business leaders, managers and owners who manage their businesses transparently, and who possess sound local knowledge were factors required for success in entrepreneurial activities.

Business Enterprises in the Transitional Economy

The social and the economic aspects of commercial businesses are blurred and inseparable in rural PNG society. When one probes deeply into operational facets of businesses such as plantations and blocks, the underlying difficulties for market enterprises arise from values and practices that local people hold dear but which contradict modern market imperatives. However, successful plantation business

managers and owners with an adequate understanding of the indigenous economy and its influence on the modern cash economy are able to engage effectively in the market, while keeping their business sustainable (Chapters 2 and 10). Thus, resilient and successful plantations are deploying non-market values to enhance their modern market enterprises. This study found that the heightened level of community engagement associated with successful plantations was directly in response to meeting certain social obligations and demands (Chapter 7). However, the level of support accorded to original landowners of plantation land should be guided by a set of company rules to determine who is eligible to participate in these exchanges. It should also be ensured that the customary demands on the business do not become excessive to the point of undermining the viability of the firm. Businesses that are considerate of the indigenous socio-economy are deemed as ‘indigenous businesses’. Indigenous businesses are managed by ‘transitional business leaders’ who incorporate non-market and modern market values in their operations and thus are hybrid entrepreneurs and are more likely to succeed in rural areas of PNG (Figure 11.1). This is illustrated by the early successes of OK Corporation (Box 7.3) and the present growth in Beser Coffee (Box 7.4).

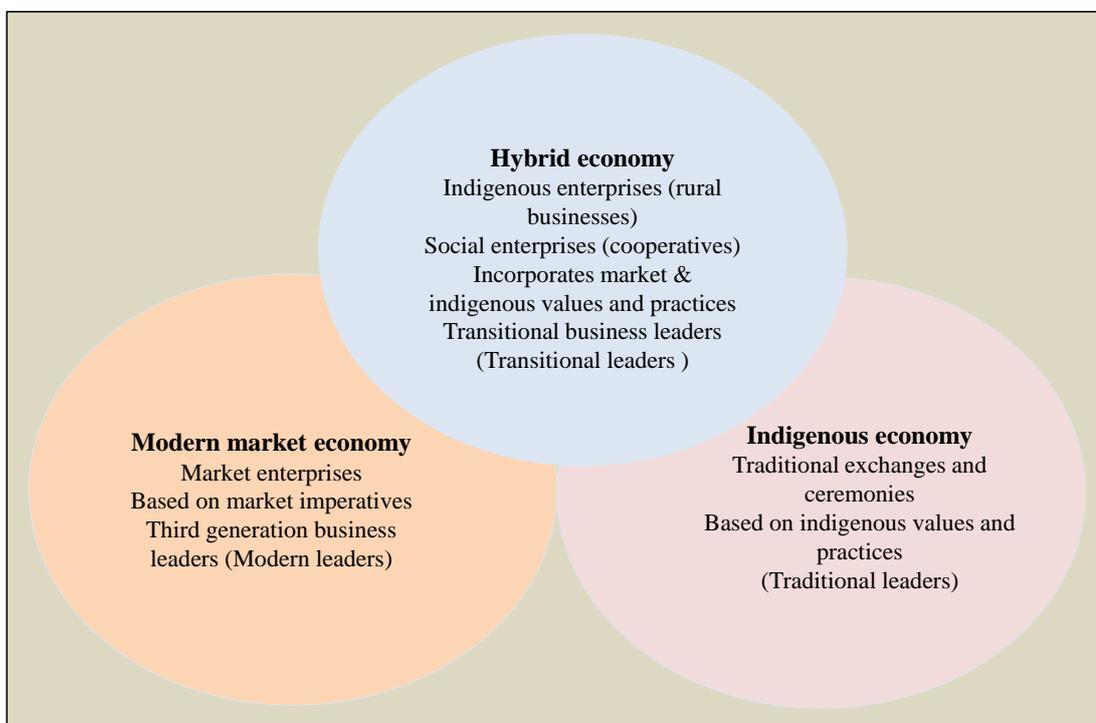


Figure 11.1: Types of PNG business enterprises in the modern, hybrid and indigenous economies.

Potential Among Smallholders

Smallholder farmers have adapted coffee into their agrarian farming systems, as pointed out earlier. In essence, the PNG smallholders have harmonised the production of an introduced cash crop by employing non-market systems to produce coffee (Chapter 4). Smallholder farmers have extended indigenous labour exchange practices to coffee production to mobilise labour when they encounter labour shortages (Chapter 6). The social dimension of the society enables the production of commodity crops like coffee that are destined for modern markets. Moreover, the smallholder coffee production system is able to be accommodated by customary land tenure.

Grower groups in PNG are socially embedded institutions, and so they are social enterprises (Chapter 8). Both traditional socio-cultural and modern demands on livelihoods can be achieved through collective action. Collective action is beneficial for the smallholder sector in ensuring production at the primary level is organised, enhances economies of scale and establishes entry points for extension services and other support services from partner organisations. Grower groups have attracted development partners who have helped smallholders to improve their coffee production capacities. Consequently, the productivity and quality of coffee from farmers in grower groups is better than that of independent farmers. Collective action has enabled grower groups to become mediums for the facilitation of other community development initiatives.

Globalisation has given rise to partnerships through the expansion of formal markets. Partnerships enhance institutional collaboration which has mutually benefited chain leaders and smallholders, especially in high market accessible areas (Chapter 8). Chain leaders and lead partners are willing to collaborate with grower groups and improve the competitiveness of supply chain linkages among partners. These relationships are likely to be sustainable as the focus of the intervention from chain leaders is driven by market imperatives (Chapter 10). However, lead partners like the CIC have a role to ensure smallholders in remote areas are provided with extension services and can participate in incentive schemes such as the Freight Surety Scheme.

Research Contribution to Current Knowledge

This study adds to the knowledge of how the social embeddedness of livelihoods such as coffee farming influences coffee productivity and production, both positively as well as negatively. Thus, it affirms that the social embeddedness theoretical framework provides a better approach to investigating socio-economic problems in the coffee industry in PNG. My study further establishes that ‘transitional business leaders’ who are able to participate in the local socio-economy while prudently managing their businesses like plantations and blocks can be resilient and successful in their own communities in rural PNG. This study also made contributions in the areas of group action and value chain partnerships as strategies to raise productivity and ensure the consistent supply of improved coffee quality from smallholders. Collective action and partnerships have filled the vacuum created by the demise of plantations and their mills, which used to provide support services to smallholders in their vicinity. This thesis has recommended strategies to revitalise the PNG coffee industry, and these strategies are relevant and applicable to other agricultural sectors in PNG such as cocoa.

Recommendations

The recommendations generated from the thesis are categorised into two depending on whether the industry or the state should intervene. Their interventions are likely to produce positive outcomes on coffee productivity and production.

Industry support

1. The grower group approach is cost-effective and has a direct influence on improved productivity and coffee quality and should be the focus of extension services. Thus, institutional projects such as freight surety and others targeting smallholders should be channelled through groups and partnerships so that these interventions act as incentives for farmers and acts as a glue to hold the members together in the group.
2. Training events for smallholder farmers should also incorporate financial literacy as well as traditional topics relating to coffee husbandry techniques.
3. Through licensing, processors and exporters should be encouraged to partner with smallholders or grower groups.

4. A single management agency should be created to administer advisory services to the managed subsector and attached to a commercial bank or the CIC, so that its activities are supervised and monitored. Business managers, owners and shareholders of plantations and blocks require leadership and management training and the CIC can facilitate this. Also, successful plantations should be supported to assist smallholders, other struggling or abandoned plantations and blocks in their locality by providing agro-nucleus services.
5. The managed subsector survey that the CIC was supposed to conduct should be revived as there is a lack of information on the plantations and blocks.

State support

1. Credit access should be facilitated through partnerships and agro-nucleus setups.
2. The payments made for plantation land acquisition in the past was facilitated by traditional leaders, and customary landowners benefited very little from the proceeds. Professional social mapping should be conducted to identify customary landowners and allow them to become business partners with potential investors to revive some of the plantations.
3. The government should rehabilitate rural roads, bridges and airstrips to enable coffee to reach markets. The state should also address lawlessness.
4. Local entrepreneurs with social networks from within the localities should be allowed to acquire nearby plantations; this may help solve some of the land disputes on plantations.

Future research areas

1. This study shows the value of a social embeddedness perspective on economic practices in transitional societies like PNG which influences coffee production. Future studies embracing a social embeddedness approach are suitable in socio-economic studies where the productivity of smallholder farmers is affected by indigenous values and economic practices.
2. More studies on smallholder groups or cooperatives should be conducted in other sites, which this study has not covered. There is limited information on grower groups' performances.

3. Studies are required to identify why coffee growers distrust chain leaders.
Distrust that prevails among chain actors undermines advances in partnerships.

References

- Aba, L. A., Aipi, B., & Irau, T. (2012). Supply response of coffee in Papua New Guinea. *Working Paper BPNGWP2012/01*. Port Moresby: Bank of Papua New Guinea.
- Adams, K. M. (1997). Constructing and contesting chiefly authority in contemporary Tana Toraja, Indonesia. In G. M. White & L. Lindstrom (Eds.), *Chiefs today: Traditional Pacific leadership and the postcolonial state* (pp. 264-275). California: Stanford University Press.
- Adams, M. A., & Ghaly, A. E. (2006). An integral framework for sustainability assessment in agro-industries: Application to the Costa Rican coffee industry. *The International Journal of Sustainable Development and World Ecology*, 13(2), 83-102. <http://dx.doi.org/10.1080/13504500609469664>.
- Afflick, I. (1981). A commercial bank: Papua New Guinea Banking Corporation. In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 85-90). Boroko, PNG: Institute of Applied Social and Economic Research.
- Allen, B. (2009). Agricultural development, policies and governance: Rural development projects. In R. M. Bourke & T. Harwood (Eds.), *Food and agriculture in Papua New Guinea* (pp. 473-476). Canberra: ANU E-Press.
- Allen, B., Bourke, R. M., & McGregor, A. (2009). Cash income from agriculture: Coffee. In R. M. Bourke & T. Harwood (Eds.), *Food and agriculture in Papua New Guinea* (pp. 306-314). Canberra: ANU E-Press.
- Anderson, D. (1977). *An economic survey of smallholder coffee producers - 1976*. Port Moresby: Department of Primary Industry.
- Anderson, R., & Connolly, B., (Directors and Producers). (1992). *Black harvest*. Australia: Arundel Productions Pty Ltd.
- Api, F., Murray-Prior, R., Aroga, L., & Batt, P. (2009). Establishing partnerships between private sector and government to deliver extension and training to smallholder farmers in the PNG coffee industry. *Acta Horticulturae*, 832, 33-41. <http://dx.doi.org/10.17660/ActaHortic.2009.832.4>.
- Appleton, S., & Balihuta, A. (1996). *Education and agricultural productivity: Evidence from Uganda*. University of Oxford, Centre for the Study of African Economies.
- Auld, G. (2010). Assessing certification as governance: Effects and broader consequences for coffee. *The Journal of Environment & Development*, 19(2), 215-241. <http://dx.doi.org/10.1177/1070496510368506>.

- Austin, J. E. (2007). Sustainability through partnering: Conceptualising partnerships between businesses and NGOs. In P. Glasbergen, F. Biermann & A. P. J. Mol (Eds.), *Partnerships, governance and sustainable development: Reflections on theory and practice* (pp. 49-68). Cheltenham, UK: Edward Elgar.
- Australian Centre for International Agricultural Research. (1987a). *Papua New Guinea export tree crop study: Largeholder coffee summary report*. Canberra.
- Australian Centre for International Agricultural Research. (1987b). *Papua New Guinea export tree crop study: Volume 1 - Largeholder coffee*. Canberra.
- Babin, N. (2012). *Agrarian change, agroecological transformation and the coffee crisis in Costa Rica (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 3521740)
- Bainton, N. A. (2010). The Lihir destiny cultural responses to mining in Melanesia. *Asia-Pacific Environment Monograph (Vol. 5)*. Canberra, Australian: ANU.
- Bainton, N. A., & Macintyre, M. (2013). "My land my work": Business development and large-scale mining in Papua New Guinea. In F. McCormack & K. Barclay (Eds.), *Engaging with capitalism: Cases from Oceania* (Vol. 33, pp. 139-165). Bingley, UK: Emerald Group Publishing.
- Ballantyne, A. O. (1985). Subsistence production - What comes next? *Agricultural Administration*, 20(3), 139-152.
[http://dx.doi.org/10.1016/0309-586X\(85\)90019-6](http://dx.doi.org/10.1016/0309-586X(85)90019-6).
- Bank of Papua New Guinea. (2016). QEB Statistical Tables. Port Moresby, PNG: Retrieved from <http://www.bankpng.gov.pg/statistics/quarterly-economic-bulletin-statistical-tables/>. Accessed: 2nd May 2016.
- Banks, G. (1999). Business as usual. In C. Filer (Ed.), *Dilemmas of development: The social and economic impact of the Porgera Gold Mine 1989-1994* (pp. 222-259). Canberra: ANU.
- Banks, G. (2014). *2014 National human development report, from wealth to wellbeing: Translating resource revenue into sustainable human development Papua New Guinea*. Port Moresby, PNG: UNDP. Retrieved from http://hdr.undp.org/sites/default/files/2014_png_national_human_development_report.pdf.
- Batt, P. J., Murray-Prior, R., Dambui, C., Api, F., & Aroga, L. K. (2009). *Assessing and extending schemes to enhance the profitability of the PNG coffee industry via price premiums for quality*. Canberra, ACT: Australian Centre for International Agricultural Research.

- Batt, P. J., & Murray-Prior, R. (2011, July). *Quality and ethical sourcing among smallholder coffee producers in Papua New Guinea*. Paper presented at the 12th International Conference of the Society for Global Business & Economic Development, Singapore. Retrieved from <http://espace.library.curtin.edu.au/webclient/StreamGate>.
- Berg, B. L., & Lune, H. (2012). *Qualitative research methods for the social sciences* (8th ed.). New Jersey, USA: Pearson.
- Best, R., Ferris, S., & Wheatley, C. (2015). *A guide to strengthening business development services in rural areas*. Baltimore, USA: Catholic Relief Services.
- Beuchelt, T. D., & Zeller, M. (2011). Profits and poverty: Certification's troubled link for Nicaragua's organic and fairtrade coffee producers. *Ecological Economics*, 70(7), 1316-1324.
<http://dx.doi.org/10.1016/j.ecolecon.2011.01.005>.
- Biermann, F., Mol, A. P. J., & Glasbergen, P. (2007). Conclusion: Partnerships for sustainability - reflections on a future research agenda. In P. Glasbergen, F. Biermann & A. P. J. Mol (Eds.), *Partnerships, governance and sustainable development: Reflections on theory and practice* (pp. 288-299). Cheltenham, UK: Edward Elgar.
- Binns, T. (2008). Dualistic and unilinear concepts of development. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 81-86). Abingdon, Oxon: Routledge.
- Bitzera, V., Franckenb, M., & Glasbergena, P. (2008). Intersectoral partnerships for a sustainable coffee chain: Really addressing sustainability or just picking (coffee) cherries? *Global Environmental Change*, 18, 271-284.
<http://dx.doi.org/10.1016/j.gloenvcha.2008.01.002>.
- Bitzer, V. (2012). Partnering for change in chains: The capacity of partnerships to promote sustainable change in global agrifood chains. *International Food and Agribusiness Management Review*, 15, 13-38. Retrieved from <http://ageconsearch.umn.edu/bitstream/142277/2/20120049.pdf>.
- Bitzer, V., Glasbergen, P., & Arts, B. (2013). Exploring the potential of intersectoral partnerships to improve the position of farmers in global agrifood chains: Findings from the coffee sector in Peru. *Journal of the Agriculture, Food, and Human Values Society*, 30(1), 5-20. Retrieved from <http://ageconsearch.umn.edu/bitstream/142277/2/20120049.pdf>.
- Block, F., & Polanyi, K. (2003). Karl Polanyi and the writing of the great transformation. *Theory and Society*, 32(3), 275-306. Retrieved from <http://download.springer.com/static/pdf/761/>.
- Bodman, P. M., & Jolly, L. O. (1987). *Commodity price stabilisation in Papua New Guinea*. Goroka, PNG: Coffee Industry Board.

- Borrella, I., Mataix, C., & Carrasco-Gallego, R. (2015). Smallholder farmers in the speciality coffee industry: Opportunities, constraints and the businesses that are making it possible. *IDS Bulletin*, 46(3), 29-44. Retrieved from <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/>.
- Bourke, R. M. (1986). Village coffee in the Eastern Highlands of Papua New Guinea: Early beginnings. *The Journal of Pacific History*, 21(2), 100-103. <http://dx.doi.org/10.1080/00223348608572531>.
- Bourke, R. M. (2009). History of Agriculture in Papua New Guinea. In R. M. Bourke & T. Harwood (Eds.), *Food and agriculture in Papua New Guinea* (pp. 10-26). Canberra: ANU E Press.
- Boyd, D. J. (2013). Creating an alternative modernity in rural Papua New Guinea: The Irakia Awa case. In F. MaCormack & K. Barclay (Eds.), *Engaging with capitalism: Cases from Oceania* (Vol. 33, pp. 303-334). Bingley, UK: Emerald Group Publishing.
- Brannen, J., & Moss, G. (2012). Critical issues in designing mixed methods policy research. *American Behavioral Scientist*, 56(6), 789-801. <http://dx.doi.org/10.1177/0002764211433796>.
- Brown, P. (1972). *The Chimbu: A study of change in the New Guinea Highlands*. Cambridge, Massachusetts: Schenkman Publishing Company Inc.
- Brown, P. (1995). *Beyond a mountain valley: The Simbu of Papua New Guinea*. Honolulu: University of Hawaii Press.
- Brown, P., & Ploeg, A. (1997). Introduction: Change and conflict in Papua New Guinea land and resource rights. *Anthropological Forum*, 7(4), 507-527. <http://dx.doi.org/10.1080/00664677.1997.9967472>.
- Bunn, C., Läderach, P., Ovalle Rivera, O., & Kirschke, D. (2015). A bitter cup: Climate change profile of global production of Arabica and Robusta coffee. *Climatic Change*, 129(1), 89-101. <http://dx.doi.org/10.1007/s10584-014-1306-x>.
- Cahn, M. (2008). Indigenous entrepreneurship, culture and microenterprise in the Pacific islands: Case studies from Samoa. *Entrepreneurship & Regional Development*, 20(1), 1-18. <http://dx.doi.org/10.1080/08985620701552413>
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81-105. Retrieved from http://psych.colorado.edu/~willcutt/pdfs/Campbell_1959.pdf.
- Cartledge, I. A. (1978). *History of the coffee industry in Papua New Guinea: From inception to the end of 1975*: PNG Marketing Board.

- Coffee buyers out of cash: Goroka dealer. (2016, 17 June). *The National*. Retrieved from <http://www.thenational.com.pg/?q=node/109994>. Accessed: 17th June 2016
- Coffee Industry Corporation. (1996). Technical management advisory services review report to the 23rd Coffee Research Advisory Committee. Goroka, PNG.
- Coffee Industry Corporation. (1997). *1997 annual report*. Goroka, PNG.
- Coffee Industry Corporation. (2000). *Coffee research & advisory committee meeting reports*. Aiyura, EHP, PNG.
- Coffee Industry Corporation. (2005a). Smallholder agriculture credit scheme third quarter progressive report. Goroka, PNG.
- Coffee Industry Corporation. (2005b). *Research & grower services division 2003 annual report*. Aiyura, EHP, PNG.
- Coffee Industry Corporation. (2005c). *Coffee research & advisory committee meeting reports*. Aiyura, EHP, PNG.
- Coffee Industry Corporation. (2006). *Research & grower services division 2004 annual report*. Aiyura, EHP, PNG.
- Coffee Industry Corporation. (2008a). *Papua New Guinea coffee industry strategic plan 2008 - 2018*. Goroka, PNG.
- Coffee Industry Corporation. (2008b). *Research & grower services division 2005 annual report*. Aiyura, EHP, PNG.
- Coffee Industry Corporation. (2009). *2009 annual report*. Goroka, PNG.
- Coffee Industry Corporation. (2010). *2010 annual report*. Goroka, PNG.
- Coffee Industry Corporation. (2014). *Papua New Guinea coffee industry strategic plan 2013 - 2018*. Goroka, PNG.
- Collett, G. N. (1992). *Coffee, capitalism and constraints to agrarian transition: A case study of smallholder coffee production in the Highlands of Papua New Guinea* (Unpublished Master's thesis). Flinders University, South Australia.
- Conway, D., & Heynen, N. (2008). Dependency theories: From ELCA to Andre Gunder Frank and beyond. In V. Desai & R. B. Potter. (Eds.), *The companion to development studies* (2nd ed., pp. 92-95). Abingdon, Oxon: Routledge.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). California: Sage Publication Inc.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches*. Thousand Oaks, California: Sage Publications Inc.

- Crocombe, R. G. (1964). Communal cash cropping among the Orokaiva. *New Guinea Research Unit Bulletin No. 4*. Canberra: ANU.
- Crocombe, R. G. (1965). The M'buke Cooperative plantation. *New Guinea Research Unit Bulletin No. 7*. Canberra: ANU.
- Crocombe, R. G., Langmore, J., Dostermeyer, W. J., & Gray, J. (1967). Papua entrepreneurs: Four Orokaiva cash croppers. *New Guinea Research Unit Bulletin No. 16*. Canberra: ANU.
- Curry, G. N. (1992). *Kin and kina: A study of emerging inequalities in a rural lowland society in Papua New Guinea* (Unpublished Doctorate thesis). University of New England.
- Curry, G. (1999). Markets, social embeddedness and pre-capitalist societies: The case of village trade stores in Papua New Guinea. *Geoforum*, 30, 285-298. [http://dx.doi.org/dbgw.lis.curtin.edu.au/10.1016/S0016-7185\(99\)00020-2](http://dx.doi.org/dbgw.lis.curtin.edu.au/10.1016/S0016-7185(99)00020-2).
- Curry, G. N. (2003). Moving beyond post-development: Facilitating indigenous alternatives for "development." *Economic Geography*, 79(4), 405-423. Retrieved from <http://www.jstor.org/dbgw.lis.curtin.edu.au/stable/pdf/30032946.pdf>.
- Curry, G. N. (2005). Doing "business" in Papua New Guinea: The social embeddedness of small business enterprises. *Journal of Small Business and Entrepreneurship*, 18(2), 231-246. <http://dx.doi.org/10.1080/08276331.2005.10593343>.
- Curry, G. N., Koczberski, G., Omuru, E., & Nailina, R. S. (2007a). *Farming or foraging? Household labour and livelihood strategies amongst smallholder cocoa growers in Papua New Guinea*. Perth: Black Swan Press.
- Curry, G. N., Koczberski, G., Omuru, E., Duigu, J., Yala, C., & Imbun, B. (2007b). Social assessment of the smallholder agriculture development project. Report prepared for the World Bank, Curtin University of Technology, Perth.
- Curry, G. N., & Koczberski, G. (2012). Relational economies, social embeddedness and valuing labour in agrarian change: An example from the developing world. *Geographical Research*, 50(4), 377-392. <http://dx.doi.org/10.1111/j.1745-5871.2011.00733.x>.
- Curry, G. N., & Koczberski, G. (2013). Development implications of the engagement with capitalism: Improving the social returns of development. In F. McCormack & K. Barclay (Eds.), *Engaging with capitalism: Cases from Oceania* (Vol. 33, pp. 335-352). Bingley, UK: Emerald Group Publishing.
- Curry *et al.* (2016). Improving livelihoods of smallholder families through increased productivity of coffee-based farming systems in the Highlands of Papua New Guinea (Unpublished).

- Daviron, B., & Ponte, S. (2005). *The coffee paradox: Global markets, commodity trade and the elusive promise of development*. New York: Zed Books Ltd.
- Davis, A., Gole, T. W., Baena, S., & Moat, J. (2012). The impact of climate change on indigenous Arabica coffee (*Coffea arabica*): Predicting future trends and identifying priorities. *PLoS ONE*, 7, e47981.
<http://dx.doi.org/10.1371/journal.pone.0047981>.
- Denzin, N. K. (1978). *The research act: A theoretical introduction to sociological methods*. New York: Praeger.
- Department of Agriculture and Livestock. (2007). *National Agriculture Development Plan 2007-2016: Policies and Strategies* (Vol. 1). Port Moresby.
- de Renzio, P. (2000). *Bigmen and wantoks: Social capital and group behaviour in Papua New Guinea*. Oxford: Queen Elizabeth House.
- Donaldson, M., & Good, K. (1981). The Eastern Highlands coffee and class. In D. Denoon & C. Snowden (Eds.), *A time to plant and a time to uproot* (pp. 143-169). Port Moresby, PNG: Department of Primary Industry and Institute of PNG Studies.
- Donaldson, M., & Good, K. (1988). *Articulated agricultural development: Traditional and capitalist agricultures in Papua New Guinea*. Avebury: Atheneum Press.
- Downs, I. (1986). *The last mountain: A life in Papua New Guinea*. St. Lucia, Queensland: University of Queensland Press.
- Dragusanu, R., Giovannucci, D., & Nunn, N. (2014). The economics of fair trade. *The Journal of Economic Perspectives*, 28(3), 217-236.
<http://dx.doi.org/10.1257/jep.28.3.217>
- Driscoll, D. L., Appiah-Yeboah, A., Salib, P., & Rupert, D. J. (2007). Merging qualitative and quantitative data in mixed methods research: How to and why not. *Ecological and Environmental Anthropology*, 3(1), 19-28. Retrieved from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi>.
- Dunne, M., Pryor, J., & Yates, P. (2005). *Becoming a researcher: A companion to the research process*. Maidenhead: McGraw-Hill Education.
- Dwyer, R. E. P. (1954). Coffee cultivation in Papua and New Guinea. *The Papua and New Guinea Agricultural Journal*, 9(1), 1-5.
- Eko, B. (2002). Current and future status of the managed subsector: Summary of the NRI managed subsector study. *Proceedings and recommendations of the national coffee workshop: Raising production and quality of PNG coffee in the new millenium*. NSI, Goroka: Coffee Industry Corporation.

- Ellis, F. (2006). Livelihoods approach. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 345-345). Cheltenham, UK: Edward Elgar.
- Elwood, S. (2010). Mixed methods: Thinking, doing, and asking in multiple ways. In D. DeLyser, S. Herbert, S. Aitken, M. Crang & L. McDowell (Eds.), *The sage handbook of qualitative geography* (pp. 94-115). London: SAGE Publications Ltd.
- Elworthy, G. C. (1967) New Guinea people in business and industry: Trends in the plantation industry, *New Guinea Research Unit Bulletin No. 20*. Canberra: ANU.
- Escobar, A. (2006). Post-development. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 447-451). Cheltenham, UK: Edward Elgar.
- Fairtrade Labelling Organizations International. (2005). *Fairtrade standard for small producer organizations*. Retrieved from http://www.fairtrade.net/fileadmin/user_upload/content/2009/standards/documents/2012-07-11_SPO_EN.pdf.
- Falk, I., & Kilpatrick, S. (2000). What is social capital? A study of interaction in a rural community. *Sociologia Ruralis*, 40(1), 87-110. <http://dx.doi.org/10.1111/1467-9523.00133>.
- Falk, R. (1997). Resisting 'globalisation-from-above' through 'globalisation-from-below'. *New Political Economy*, 2(1), 17-24. <http://dx.doi.org/10.1080/13563469708406281>.
- Feeny, S., Leach, M., & Scambary, J. (2012). Measuring attitudes to national identity and nation-building in Papua New Guinea. *Political Science*, 64(2), 121-144. <http://dx.doi.org/10.1177/0032318712466762>.
- Ferris, S., Robbins, P., Best, R., Seville, D., Buxton, A., Shriver, J., & Wei, E. (2014). *Linking smallholder farmers to markets and the implications for extension and advisory services*. MEAS Discussion Paper 4.
- Filer, C. (2012). Why green grabs don't work in Papua New Guinea. *The Journal of Peasant Studies*, 39(2), 599-617. <http://dx.doi.org/10.1080/03066150.2012.665891>.
- Finch, J. (1991). *Coffee, development, and inequality in the Papua New Guinea Highlands (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (UMI No. 9207073)
- Finch, J. (1997). From proletarian to entrepreneur to big man: The story of Noya. *Oceania*, 68(2), 123-133. <http://dx.doi.org/10.1002/j.1834-4461.1997.tb02654.x>.

- Fingleton, J. (1981). Comments on report by the review committee into the plantation redistribution scheme. In W. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 44-51). Boroko, PNG: Institute of Applied Social and Economic Research.
- Finney, B. R. (1968). Bigfellow man belong business in New Guinea. *Ethnology*, 7(4), 394-410. Retrieved from <http://www.jstor.org.dbgw.lis.curtin.edu.au/stable/pdf/3773017.pdf>.
- Finney, B. R. (1970). Partnership' in developing the New Guinea Highlands, 1948-1968. *The Journal of Pacific History*, 5(1), 117-134. <http://dx.doi.org.dbgw.lis.curtin.edu.au/10.1080/00223347008572168>.
- Finney, B. R. (1973). *Big-men and business: Entrepreneurship and economic growth in the New Guinea Highlands*. Canberra: ANU Press.
- Finney, B. R. (1987). *Business development in the Highlands of Papua New Guinea*. Honolulu: Pacific Island Development Program.
- Finney, B. (1993). From the stone age to the age of corporate takeovers. In V. S. Lockwood, T. G. Harding & B. J. Wallace (Eds.), *Contemporary Pacific societies: Studies in development and change* (pp. 102-116). Englewood Cliffs, NJ: Prentice-Hall.
- Fitter, R., & Kaplinsky, R. (2001). Can an agricultural 'commodity' be de-commodified, and if so who is to gain? *Discussion Paper 380*. Brighton: Institute of Development Studies.
- Fleming, E., & Anthony, G. (1993). *Strategies and policies to encourage development of the coffee industry in Papua New Guinea: A review of options*. Port Moresby, PNG.
- Freyne, D. (1991). News from the general manager's desk. *Coffee Research Institute Newsletter*. Aiyura, EHP.
- Fukuyama, F. (2007). Governance reform in Papua New Guinea. The World Bank. Retrieved from <http://documents.worldbank.org/curated/en/426851468145477761/pdf>.
- Gans, H. J. (1962). *The urban villagers: Group and class in the life of Italian-Americans*. New York: Free Press of Glencoe.
- Gardner, K., & Lewis, D. (1996). *Anthropology, development and the post-modern challenge*. London: Pluto Press.
- Gimbol, C. (1988). Group coffee development projects: A preliminary survey of the 20 hectare blocks. *DAL Discussion Paper 88/3*. Konedobu: Department of Agriculture & Livestock.

- Glasbergen, P. (2007). Setting the scene: The partnership paradigm in the making. In P. Glasbergen, F. Biermann & A. P. J. Mol (Eds.), *Partnerships, governance and sustainable development: Reflections on theory and practice* (pp. 1-25). Cheltenham, UK: Edward Elgar.
- Goldthorpe, C. C. (1985). *Why Papua New Guinea needs plantations*. Port Moresby, PNG: Institute of National Affairs.
- Gray, B. (2007). The process of partnership construction: Anticipating constraints and enhancing the likelihood of successful partnerships for sustainable development. In P. Glasbergen, F. Biermann & A. P. J. Mol. (Eds.), *Partnerships, governance, and sustainable development: Reflections on theory and practice* (pp. 27-41). Cheltenham, UK: Edward Elgar.
- Gray, B. J., Duncan, S., Kirkwood, J., & Walton, S. (2014). Encouraging sustainable entrepreneurship in climate-threatened communities: A Samoan case study. *Entrepreneurship & Regional Development*, 26(5-6), 401-430.
<http://dx.doi.org/10.1080/08985626.2014.922622>.
- Greene, J. C. (2012). Engaging critical issues in social inquiry by mixing methods. *American Behavioural Scientist*, 56(6), 755-773.
<http://dx.doi.org/10.1177/0002764211433794>.
- Grossman, L. (1981). The cultural ecology of economic development. *Annals of the Association of American Geographers*, 71(2), 220-236.
<http://dx.doi.org/10.1111/j.1467-8306.1981.tb01349.x>.
- Grossman, L. S. (1984). *Peasants, subsistence ecology and development in the Highlands of Papua New Guinea*. Princeton, New Jersey: Princeton University Press.
- Haggar, J. (2008, February). *Impact of climate change on coffee farming households in Central America and steps for adaptation in the future*. Paper presented at the Annual Conference of the Specialty Coffee Association of America (pp. 2-5).
- Haggar, J., & Scepp, K. (2012). *Coffee and climate change: Impacts and options for adaptation in Brazil, Guatemala, Tanzania and Vietnam*. NRI Working Paper Series: Climate Change, Agriculture and Natural Resources.
- Hall, A. (2006). Public-private sector partnerships in an agricultural system of innovation: Concepts and challenges. *International Journal of Technology Management & Sustainable Development*, 5(1), 3-20.
<http://dx.doi.org/10.1386/ijtm.5.1.3/1>.
- Hancock, D. R., & Algozzine, B. (2006). *Doing case study research: A practical guide for beginning researchers*. Amsterdam Avenue, NY: Teachers College Press, Columbia University.

- Handcock, M. S., & Gile, K. J. (2011). Comment: On the concept of snowball sampling. *Sociological Methodology*, 41(1), 367-371. Retrieved from <http://media.proquest.com.dbgw.lis.curtin.edu.au/media/pq/classic/doc/>.
- Harding, P. E. (1988). Rehabilitating smallholder coffee gardens in Papua New Guinea: The effects on yields during the first year following rehabilitation. *PNG Coffee*, 7(1), 79-90.
- Hare, P. G. (2006). National economic planning. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 409-414). Cheltenham, UK: Edward Elgar.
- Haro, B. V. (2010). *The impact of personal viability training on gender relations in mining communities: The case of Lihir, Papua New Guinea* (Master's thesis). Retrieved from http://mro.massey.ac.nz/xmlui/bitstream/handle/10179/1528/02_whole.pdf.
- Harrington, D. (2011, 23 March). Coffee prices 2011 - The rising price of coffee. *Gourmet Coffee Lovers*. Website: <http://www.gourmetcoffeelovers.com/coffee-prices-2011-the-rising-price-of-coffee/>. Accessed 9th May 2016
- Hartwich, F., Fromm, I., & Romero, G. (2010). Innovation trajectories in Honduras' coffee value chain. Public and private influence on the use of new knowledge and technology among coffee growers. *International Journal on Food System Dynamics*, 1(3), 237-251. <http://dx.doi.org/10.18461/ijfsd.v1i3.137>.
- Harvey-Jones, J. (1988). Plantation coffee field management and agronomic survey Part III. *PNG Coffee*, 7(2), 133-142.
- Hassall and Associates Agricultural Consultants. (1982). Review of the Papua New Guinea coffee marketing system. Final report for the Coffee Industry Corporation.
- Hay, I. (2010). *Qualitative research methods in human geography* (3rd ed.). Victoria, Australia: Oxford University Press.
- Hernandez-Aguilera, J. N., Gomez, M. I., Rodewald, A. D., Rueda, X., Anunu, C., Bennett, R., Schindelbeck, R. R., & van Es, H. M. (2015, July). *Impacts of smallholder participation in high-quality coffee markets: The relationship coffee model*. Paper presented at the Agricultural & Applied Economics Association and Western Agricultural Economics Association Annual Meeting, San Francisco, CA. Retrieved from <http://ageconsearch.umn.edu/bitstream/205650/1/RCM>.
- Hesse-Biber, S. (2015). Mixed methods research: The "thing-ness" problem. *Qualitative Health Research*, 25(6), 775-788. <http://dx.doi.org/10.1177/1049732315580558>.

- Hettne, B. (2008). The current trends and future options in development studies. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 8-11). Abingdon, Oxon: Routledge.
- Hirschman, A. O. (1958). *The strategy of economic development*. New Haven, Conn.: Yale University Press.
- Hoogvelt, A. (2001). *Globalisation and the postcolonial world: The new political economy of development* (2nd ed.). Baltimore, Maryland: The John Hopkins University Press.
- Howard, A., & Rensel, J. (1997). Ritual status and power politics in modern Rotuma. In G. M. White & L. Lindstrom (Eds.), *Chiefs today: Traditional Pacific leadership and the postcolonial state* (pp. 119-149). California: Stanford University Press.
- Howe, K. R. (1988). Against the quantitative-qualitative incompatibility thesis or, dogmas die hard. *Educational Researcher*, 17(8), 10-16.
<http://dx.doi.org/10.3102/0013189X017008010>.
- Howlett, D. R. (1962). *A decade of change in the Goroka Valley, New Guinea: Land use and development in the 1950s* (Doctorate thesis). Retrieved from <https://openresearch-repository.anu.edu.au/handle/1885/15816>
- Hunt, C., & Eko, B. (2001). *Study of coffee managed subsector*. Port Moresby: National Research Institute.
- Imbun, B. Y. (2000). Mining workers or 'opportunist' tribesmen? A tribal workforce in a Papua New Guinea mine. *Oceania*, 71(2), 129-149.
<http://dx.doi.org/10.1002/j.1834-4461.2000.tb02731.x>.
- Imbun, B. Y. (2013). Maintaining land use agreements in Papua New Guinea Mining: 'Business as usual?' *Resources Policy*, 38(3), 310-319.
<http://dx.doi.org/dbgw.lis.curtin.edu.au/10.1016/j.resourpol.2013.04.003>.
- Imbun, B. (2014). Struggling or in transition: Small household growers and the coffee industry in Papua New Guinea. *Asia Pacific Viewpoint*, 55(1), 24-37.
<http://dx.doi.org/10.1111/apv.12041>.
- Imbun, B. (2015). Minimum wage debates in a developing country setting: Evidence from Papua New Guinea. *The Economic and Labour Relations Review*, 26(1), 137-153. <http://dx.doi.org/10.1177/1035304615570807>.
- International Coffee Organisation. (2010/11). *ICO Annual Review 2010/11*. Retrieved from <http://www.ico.org/documents/annual%20review%202010-11e.pdf>.
- International Coffee Organisation. (2012/13). *ICO Annual Review 2012/13*. Retrieved from <http://www.ico.org/news/annual-review-2012-13-e.pdf>.

- International Coffee Organisation. (2015a). *Annual Review 2013-2014: Strengthening the global coffee sector through international cooperation*. Retrieved from <http://www.ico.org/documents/cy2014-15/annual-review-2013-14-electronic-e.pdf>.
- International Coffee Organisation. (2015b). *Coffee in China*. Retrieved from <http://www.ico.org/documents/cy2014-15/icc-115-7e-study-china.pdf>.
- International Coffee Organisation. (2016). *World Coffee consumption*. Retrieved from <http://www.ico.org/documents/cy2014-15/icc-115-7e-study-china.pdf>.
- Inu, S. (2009). *Economic assessment on coffee credit guarantee scheme*. Report for the Coffee Industry Corporation.
- Inu, S. M. (2015). *The influence of socio-economic factors in farm investment decisions and labour mobilisation in smallholder coffee production in Eastern Highlands Province, Papua New Guinea (Master's thesis)*. Retrieved from <http://espace.library.curtin.edu.au/cgi-bin/espace.pdf>.
- Irog, L. (1992). *Plantation survey and production costs. Coffee Discussion Paper No. 7*. Goroka, PNG: Coffee Industry Corporation.
- Issa, N., & Chrysostome, N. (2015). Determinants of farmer participation in the vertical integration of the Rwandan coffee value chain: Results from Huye District. *Journal of Agricultural Science*, 7(9), 197-211. <http://dx.doi.org/10.5539/jas.v7n9p197>.
- Itika, J. S. (2005). Institutional constraint as rules of the game: Reflections on coffee production and marketing in Moshi Rural District. *Eastern Africa Social Science Research Review*, 21(1), 39-56. <https://doi.org/10.1353/eas.2005.0003>.
- Jaramillo, J., Muchugu, E., Vega, F. E., Davis, A., Borgemeister, C., & Chabi-Olaye, A. (2011). Some like it hot: The influence and implications of climate change on coffee berry borer (*Hypothenemus hampei*) and coffee production in East Africa. *PLoS One*, 6(9), e24528. <http://dx.doi.org/10.1371/journal.pone.0024528>.
- Jaramillo, J., Setamou, M., Muchugu, E., Chabi-Olaye, A., Jaramillo, A., Mukabana, J., & Borgemeister, C. (2013). Climate change or urbanization? Impacts on a traditional coffee production system in East Africa over the last 80 years. *PLoS One*, 8(1), e51815. <http://dx.doi.org/10.1371/journal.pone.0051815>.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133. <http://dx.doi.org/10.1177/1558689806298224>.
- Joseph, J. (2015). A values-based approach to transformational leadership in the South Pacific. *Community Development*, 46(1), 2-13. <http://dx.doi.org/10.1080/15575330.2014.971037>.

- K528mil for Agro Misused [Editorial] (2013, 30 May). *The National*. Retrieved from <http://www.thenational.com.pg/?q=node/50690>. Accessed: 9th May 2016.
- Kagim Consultants Ltd. (2002). A review of the coffee stabilisation policy for Coffee Industry Corporation. Port Moresby, PNG.
- Kalinoe, L., & Kiris, J. (2010). Socio-economic changes and their implications for customary land tenure. The National Research Institute Monograph No. 42. Port Moresby.
- Kenny, M., Galea, V., & Price, T. (2012). Germination and growth of *Colletotrichum acutatum* and *Colletotrichum gloeosporioides* isolates from coffee in Papua New Guinea and their pathogenicity to coffee berries. *Australasian Plant Pathology*, 41(5), 519-528. <http://dx.doi.org/10.1007/s13313-012-0117-7>.
- Ketan, J. (2004). *The name must not go down: Political competition and state-society relations in Mount Hagen, Papua New Guinea*. Suva, Fiji: Institute of Pacific Studies, University of the South Pacific.
- Ketan, J. (2013). Political governance and service delivery in Western Highlands Province, Papua New Guinea. *SSGM Discussion Paper*. Canberra: ANU.
- Kiele, L. J. (1986). The commodity price stabilisation schemes for Papua New Guinea's major export crops - Some macroeconomic considerations. In B. Brogan, & J. Remenyi (Eds.), *Commodity Price Stabilisation in Papua New Guinea - A Work-in-Progress Seminar* (pp. 3-10). Port Moresby, PNG: Institute of National Affairs.
- Kiely, R. (2006). Modernisation theory. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 395-399). Cheltenham, UK: Edward Elgar.
- Koczberski, G., Curry, G., & Gibson, K. (2001). *Improving productivity of the smallholder oil palm sector in Papua New Guinea: A socio-economic study of the Hoskins and Popondetta schemes*. ANU.
- Koczberski, G. (2007). Loose fruit *mamas*: Creating incentives for smallholder women in oil palm production in Papua New Guinea. *World Development*, 35(7), 1172-1185. <http://dx.doi.org/dbgw.lis.curtin.edu.au/10.1016/j.worlddev.2006.10.010>.
- Koczberski, G., Curry, G. N., & Anjen, J. (2012). Changing land tenure and informal land markets in the oil palm frontier regions of Papua New Guinea: The challenge for land reform. *Australian Geographer*, 43(2), 181-196. <http://dx.doi.org/10.1080/00049182.2012.682295>.
- Kolk, A., & Lenfant, F. (2015). Cross-sector collaboration, institutional gaps, and fragility: The role of social innovation partnerships in a conflict-affected region. *Journal of Public Policy & Marketing*, 34(2), 287-303. Retrieved from <http://web.b.ebscohost.com/dbgw.lis.curtin.edu.au/ehost/pdfviewer/pdfviewer>.

- Krupka, J. (2012). *The Fair Trade coffee business model's affect on the small scale producers through the lens of the triple bottom line (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 3523485)
- Kufinale, K., & Fleming, E. M. (2002). Analysis of the technical efficiency of estate coffee production in Papua New Guinea, 1993-1995. *Coffee Discussion Paper No.27*. Goroka, PNG: Coffee Industry Corporation.
- Kurosaki, T., & Khan, H. (2006). Human capital, productivity, and stratification in rural Pakistan. *Review of Development Economics*, 10(1), 116-134.
<http://dx.doi.org/10.1111/j.1467-9361.2005.00305.x>.
- Lan, H., Zhu, Y., Ness, D., Xing, K., & Schneider, K. (2014). The role and characteristics of social entrepreneurs in contemporary rural cooperative development in China: Case studies of rural social entrepreneurship. *Asia Pacific Business Review*, 20(3), 379-400.
<http://dx.doi.org/10.1080/13602381.2014.929300>.
- Lederman, R. (2015). Big man, anthropology of. In J. D. Wright (Ed.), *International Encyclopedia of the Social & Behavioral Sciences*. (2nd ed., Vol. 2, pp. 567-573). Oxford: Elsevier.
- Letherby, G. (2013). *Objectivity and subjectivity in social research*. Los Angeles, California: SAGE.
- Lewin, B., Giovannucci, D., & Varangis, P. (2004). *Coffee markets: New paradigms in global supply and demand*. World Bank agriculture and rural development discussion paper. Retrieved from
<http://documents.worldbank.org/curated/en/>.
- Li, Z., & Ma, Y. (2015). Rural education, technological progress and productivity growth in China's agriculture. Retrieved from
<http://ageconsearch.umn.edu/bitstream/212048/2/Li>.
- Lindstrom, L., & White, G. M. (1997). [Introductions]. In G. M. White & L. Lindstrom (Eds.), *Chiefs today: Traditional Pacific leadership and the postcolonial state* (pp. 1-18). California: Stanford University Press.
- Linton, A. (2005). Partnering for sustainability: Business-NGO alliances in the coffee industry. *Development in Practice*, 15(3-4), 600-614.
<http://dx.doi.org/10.1080/09614520500075664>.
- Loftus, A. (2008). Public-private partnerships. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 543-547). Abingdon, Oxon: Routledge.

- Lummani, J. (2006). *The social influences on the economic decision-making of smallholder cocoa producers in Papua New Guinea: The case of transport and marketing* (Master's thesis). Retrieved from <http://espace.library.curtin.edu.au/webclient/StreamGate>.
- MacRae, G. (2016). Forgotten moralities of agrarian economy in Bali Production and exchange, business and friendship. *Focaal - Journal of Global and Historical Anthropology*, 75, 89-104.
- Mannan, M. A. (1976). The wantok system: Its implications for development in Papua New Guinea. *Discussion Paper*. Port Moresby: Institute of PNG Studies.
- Markelova, H., Meinzen-Dick, R., Hellin, J., & Dohrn, S. (2009). Collective action for smallholder market access. *Food Policy*, 34, 1-7. <http://dx.doi.org.dbgw.lis.curtin.edu.au/10.1016/j.foodpol.2008.10.001>.
- Martin, K. (2006). *After the volcano: Land, kastom and conflict in East New Britain* (Unpublished Doctorate thesis). University of Manchester.
- Martin, K. (2007). Your own *buai* you must buy: The ideology of possessive individualism in Papua New Guinea. *A Journal of Social Anthropology and Comparative Sociology*, 17(3), 285-298. <http://dx.doi.org/10.1080/00664670701637743>.
- Martin, K. (2009). Custom: The limits of reciprocity in village resettlement. In K. Sykes (Ed.), *Ethnographies of moral reasoning: Living paradoxes of global age* (pp. 93-116). New York: Palgrave MacMillan.
- Martin, K. (2013). *The death of the big men and the rise of the big shots: Custom and conflict in East New Britain*. New York: Berghahn Books.
- Maucourant, J., & Plociniczak, S. (2013). The institution, the economy and the Market: Karl Polanyi's institutional thought for economists. *Review of Political Economy*, 25(3), 512-531. <http://dx.doi.org/10.1080/09538259.2013.807675>.
- Mauro, J. J. (2010). *Liquidity and credit as constraints to small coffee farmers in the Highlands of Papua New Guinea* (Master's thesis). Retrieved from <http://dspace.lincoln.ac.nz/bitstream/handle/10182/2356/mauro>.
- Mauro, J., Lyne, M., & Nartea, G. (2010). Constraints to small-grower investment in coffee production in the Eastern Highlands of Papua New Guinea. *Pacific Economic Bulletin*, 25(3), 106-120. Retrieved from http://peb.anu.edu.au/pdf/PEB25_3_Mauro_Lyne_Nartea.pdf.
- Mbabu, A. N., & Hall, A. (2012). *Capacity building for agricultural research for development: Lessons from practice in Papua New Guinea*. Maastricht. The Netherlands: UNU-MERIT.

- McConaghy, C. D. (1985). *The coffee industry in the Papua New Guinea economy*. Paper presented at the Institute of National Affairs, Agricultural Seminars, held on the 22nd August Kokopo, ENBP; and 28th August, Port Moresby, PNG.
- McGavin, K. (2016). Where do you belong? Identity, New Guinea islanders, and the power of *peles*. *Oceania*, 86(1), 57-74. <http://dx.doi.org/10.1002/ocea.5112>
- McKillop, B. (1981). Managing plantations in Papua New Guinea today: Who wants to be the labourer? In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 25-32). Port Moresby, PNG: Institute of Applied Social and Economic Research.
- McWilliam, S. (1988). Smallholdings, land law and the politics of land tenure in Papua New Guinea. *The Journal of Peasant Studies*, 16(1), 77-109. <http://dx.doi.org/10.1080/03066158808438383>.
- McWilliam, S. (1996). 'Just like working for the dole': Rural households, export crops and state subsidies in Papua New Guinea. *The Journal of Peasant Studies*, 23(4), 40-78. <http://dx.doi.org/10.1080/03066159608438619>
- McWilliam, S. (2013). *Securing village life: Development in late colonial Papua New Guinea*. Canberra: ANU E-Press.
- Merlan, F., & Rumsey, A. (1991). *Ku Waru: Language and segmentary politics in the western Nebilyer Valley, Papua New Guinea*. Cambridge: Cambridge University Press.
- Mertens, D. M., and Hesse-Biber, S. (2012). Triangulation and mixed methods research: Provocative positions. *Journal of Mixed Methods Research*, 6(2), 75-79. <http://dx.doi.org/10.1177/1558689812437100>.
- Mitio, R. (1981). Papua New Guinea coffee plantations. In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 182-189). Boroko, PNG: Institute of Applied Social and Economic Research.
- Mitio, R. M. (2014). *Price support feasible now? The growers say yes, but ...* Goroka, EHP: Coffee Industry Corporation.
- Morrison, K. (2008). Indigenous entrepreneurship in Samoa in the face of neo-colonialism and globalization. *Journal of Enterprising Communities: People and Places in the Global Economy*, 2(3), 240-253. <http://dx.doi.org/10.1108/17506200810897222>.
- Mosheim, R. (2002). Organizational type and efficiency in the Costa Rican coffee processing sector. *Journal of Comparative Economics*, 30(2), 296-316. <http://dx.doi.org/10.1006/jcec.2002.1773>.
- Munnul, J. (1981). The villager's view of the Plantation Redistribution Scheme. In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 60-66). Boroko, PNG: Institute of Applied Social and Economic Research.

- Munnul, J., & Densley, D. R. J. (1977). *Agriculture in the economy: Coffee*. A series of review papers. Konedobu, PNG: Department of Primary Industry.
- Murekezi, A., Jin, S., & Loveridge, S. (2012). Do organisational forms of the coffee supply chain matter in poverty reduction? *Development in Practice*, 22(7), 962-977. <http://dx.doi.org/10.1080/09614524.2012.697127>.
- Murray-Prior, R., & Batt, P. J., (2007). Emerging possibilities and constraints to Papua New Guinean smallholder coffee producers entering the speciality coffee market. In P. J. Batt & J. Cadilhon (Eds.), *Proceedings of the international symposium on fresh produce supply chain management, Chiang Mai, Thailand*, pp. 373-389.
- Murray-Prior, R. (2008). Are farmers in the transitional economies likely to benefit from forming collaborative marketing groups? *BANWA*, 8(2), 10-21. Retrieved from <http://ojs.upmin.edu.ph/index.php/banwa-archives/article/view/40/47>
- Murray-Prior, R., Batt, P. J., Dambui, C. and Kufinale, K. (2008). Improving quality in coffee chains in Papua New Guinea. *Acta Horticulturae*, 794, 247-256. <http://dx.doi.org/10.17660/ActaHortic.2008.794.30>.
- Murray-Prior, R., Sengere, R., & Batt, P. (2009). Overcoming constraints to the establishment of collaborative marketing groups for coffee growers in the Highlands of PNG. *Acta Horticulturae*, 831, 277-284. <http://dx.doi.org/10.17660/ActaHortic.2009.831.32>.
- Murray-Prior, R. (2011, November). A participatory market-driven approach to development and extension. Paper presented at the *Innovations in Extension & Advisory Services: Linking knowledge to policy & action for food & livelihoods*, Nairobi, Kenya, pp. 15-18.
- Murray-Prior, R., Israel, F. T., Bacus, R. G., Apará, D. I., Concepcion, S. B., Montiflor, M. O., & Rola-Rubzen, M. F. (2011). Reducing poverty through participatory action learning and action research processes with smallholder vegetable farmers in Mindanao. *Extension Farming Systems Journal*, 7(2), 109-114. Retrieved from http://www.csu.edu.au/__data/assets/pdf_file/.
- Murray-Prior, R. (2013). Developing an agricultural innovation system to meet the needs of smallholder farmers in developing countries. *Extension Farming Systems Journal*, 9(1), 258-263. Retrieved from http://www.csu.edu.au/__data/assets/pdf.
- Murray-Prior, R., & Padarath, A. (2013). Evaluation of the structure and performance of the CIC extension service. Report prepared for the productive partnerships in agriculture project coffee component, Goroka, PNG.
- Myrdal, G. (1957). *Economic theory and underdeveloped regions*. London: Duckworth.

- Nalu, M. (2009, 23 September). NADP hijacked by Waigani bureaucrats: MP. *The National*. Retrieved from <http://www.thenational.com.pg/?q=node/903>
- Nanau, G. L. (2011). The wantok system as a socio-economic and political network in Melanesia. *OMNES*, 2(1), 31-55. Retrieved from <http://www.omnesjournal.org/upload/public/pdf/10/1.pdf>.
- NASAA Australia Ltd. (2004). NASAA Organic Standard. Retrieved from http://www.nasaa.com.au/data/pdfs/AAAA_NASAA_Organic_Standard_06-02-2012.pdf.
- Netting, R. (1993). *Smallholders, householders: Farm families and the ecology of intensive, sustainable agriculture*. California: Stanford University Press.
- Nhema, A. G., & Zinyama, T. (2016). Modernization, dependency and structural adjustment development theories and Africa: A critical appraisal. *International Journal of Social Science Research*, 4(1), 151-166. <http://dx.doi.org/10.5296/ijssr.v4i1.9040>.
- Nicholas-Fulmer, M. (2011, 21 October). What's behind rising coffee prices? *The Specialty Coffee Chronicle*. Website: <http://www.scaa.org/chronicle/2011/10/21/whats-behind-rising-coffee-prices/>. Accessed: 9th May 2016.
- No NADP Funds since '07. (2009, 21 October). *The National*. Retrieved from <http://www.thenational.com.pg/?q=node/1997>. Accessed: 9th May 2016.
- Numbasa, G., & Koczberski, G. (2012). Migration, informal urban settlements and non-market land transactions: A case study of Wewak, East Sepik Province, Papua New Guinea. *Australian Geographer*, 43(2), 143-161. <http://dx.doi.org/10.1080/00049182.2012.682293>.
- O'Leary, Z. (2014). *The essential guide to doing your research project* (2nd ed.): Los Angeles, California SAGE.
- Orlegge, W. T. (2010). The demise of the plantation sector in the coffee industry: An overview and alternative. *Contemporary PNG Studies*, 12, 116-125. Retrieved from <http://search.informit.com.au.dbgw.lis.curtin.edu.au/fullText>.
- Oseni, G. (2007). *Agricultural production, human capital, and rural nonfarm activities: Evidence from Nigeria* (Doctorate thesis). Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 3256960)
- Ovalle-Rivera, O., Läderach, P., Bunn, C., Obersteiner, M., & Schroth, G. (2015). Projected shifts in *Coffea arabica* suitability among major global producing regions due to climate change. *PLoS One*, 10(4):e0124155. <http://dx.doi.org/10.1371/journal.pone.0124155>.
- Overfield, D. (1993). Smallholders, and marketing groups: A successful combination? *Coffee Discussion Paper No. 13*. Goroka, PNG.

- Overfield, D. (1994). Smallholder coffee farming systems in Papua New Guinea: Household objectives and constraints to development. *Coffee Discussion Paper No. 16*. Goroka, EHP.
- Overfield, D. (1998). An investigation of the household economy: Coffee production and gender relations in Papua New Guinea. *Journal of Development Studies*, 34(5), 52-70. <http://dx.doi.org/10.1080/00220389808422536>.
- Paliau, F. (1981). Management and service. In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 96-106). Boroko, PNG: Institute of Applied Social and Economic Research.
- Pattberg, P., & Widerberg, O. (2016). Transnational multistakeholder partnerships for sustainable development: Conditions for success. *Ambio*, 45(1), 42-51. <http://dx.doi.org/10.1007/s13280-015-0684-2>.
- Peredo, A. M., & Chrisman, J. J. (2006). Toward a theory of community-based enterprise. *The Academy of Management Review*, 31(2), 309-328. Retrieved from <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid>.
- Peredo, A. M., & McLean, M. (2010). Indigenous development and the cultural captivity of entrepreneurship. *Business & Society*, 52(4), 592-620. <http://dx.doi.org/10.1177/0007650309356201>.
- Pieterse, J. N. (1994). Globalisation as hybridisation. *International Sociology*, 9(2), 168-184. <http://dx.doi.org/10.1177/026858094009002003>.
- Pieterse, J. N. (2004). *Globalisation and culture: Global mélange*. Lanham, Maryland: Rowan & Littlefield Publishers.
- Pieterse, J. N. (2013). Globalization as hybridization. In K. E. I. Smith (Ed.), *Sociology of globalization: Cultures, economies, and politics* (pp. 39-60). New York: Westview Press.
- Planning Dept should explain NADP funds. (2009, 23 September). *The National*. Retrieved from <http://www.thenational.com.pg/%E2%80>.
- Polanyi, K. (1944). *The Great Transformation: The political and economic origins of our time*. Boston: Beacon Press.
- Polanyi, K. (1977). *The livelihood of man*. New York: Academic Press.
- Pondikou, P. (1981). Training the plantation managers. In M. A. H. B. Walter (Ed.), *What do we do about plantations?* (Vol. 15, pp. 91-95). Boroko, PNG: Institute of Applied Social and Economic Research.
- Poon, P. S., Zhou, L., & Chan, T. (2009). Social entrepreneurship in a transitional economy: A critical assessment of rural Chinese entrepreneurial firms. *Journal of Management Development*, 28(2), 94-109. <http://dx.doi.org/10.1108/02621710910932061>.

- Porter, D., Allen, B., & Thompson, G. (1991). *Development in practice: Paved with good intentions*. New York: Routledge.
- Potter, R. B. (2008). Global convergence, divergence and development. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 192-196). Abingdon, Oxon: Routledge.
- Poulton, C., Dorward, A., & Kydd, J. (2010). The future of small farms: New directions for services, institutions, and intermediation. *World Development*, 38(10), 1413-1428. <http://dx.doi.org/10.1016/j.worlddev.2009.06.009>.
- Powae, W. (2009). *Fair Trade coffee supply chains in the Highlands of Papua New Guinea: Do they give higher returns to smallholders?* (Master's thesis). Retrieved from <http://researcharchive.lincoln.ac.nz/bitstream/handle/10182/1413/>.
- Probe NADP scam and prosecute offenders [Editorial]. (2013, 30 May). *Post Courier*, Port Moresby, PNG.
- Purcell, G. (2013). *Entrepreneurial assistance across the ocean: An examination of the effective of international mentoring as a support service for entrepreneurs in Samoa* (Master's thesis). Retrieved from <http://mro.massey.ac.nz/handle/10179/5613>.
- Quinn, P. T. (1981). Agriculture, land tenure and land law to 1971. In D. Denoon & C. Snowden (Eds.), *A Time to Plant and a Time to Uproot* (pp. 171-184). Port Moresby: Department of Primary Industry and Institute of PNG Studies.
- Rao, P. (2010). Fair Trade and Organic Coffee. In M. Harper (Ed.), *Inclusive value chains, Vol. 4: A pathway out of poverty* (pp. 200-222). Singapore: World Scientific Publishing.
- Reilly, B., & Phillpot, R. (2002). "Making democracy work" in Papua New Guinea: Social capital and provincial development in an ethnically fragmented society. *Asian Survey*, 42(6), 906-927. <http://dx.doi.org/10.1525/as.2002.42.6.906>
- Reilly, B. (2008). Ethnic conflict in Papua New Guinea. *Asia Pacific Viewpoint*, 49(1), 12-22. <http://dx.doi.org/10.1111/j.1467-8373.2008.00357.x>.
- Richter, R. (2015). *Essays on new institutional economics*. Switzerland: Springer International Publishing.
- Ricketts, T. H. (2004). Tropical forest fragments enhance pollinator activity in nearby coffee crops. *Conservation Biology*, 18(5), 1262-1271. <http://dx.doi.org/10.1111/j.1523-1739.2004.00227.x>.
- Rigg, J. (2007). *An everyday geography of the Global South*. London: Routledge.
- Rondinelli, D. (1993). *Development projects as policy experiments*. London: Routledge.

- Ruben, R., & Fort, R. (2012). The impact of fair trade certification for coffee farmers in Peru. *World Development*, 40(3), 570-582. <http://dx.doi.org/10.1016/j.worlddev.2011.07.030>.
- Sahlins, M. D. (1963). Poor man, rich man, big-man, chief: Political types in Melanesia and Polynesia. *Comparative Studies in Society and History*, 5(3), 285-303. <http://dx.doi.org.dbgw.lis.curtin.edu.au/10.1017/S0010417500001729>
- Sahlins, M. (1992). The economics of develop-man in the Pacific. *Anthropology and Aesthetics*, 21, 12-25. Retrieved from <http://www.jstor.org.dbgw.lis.curtin.edu.au/stable/pdf/20166839.pdf>.
- Sahlins, M. (1993). Goodbye to Tristes Tropes: Ethnography in the context of modern world history. *The Journal of Modern History*, 65(1), 1-25. Retrieved from <http://www.jstor.org.dbgw.lis.curtin.edu.au/stable/pdf/2124813.pdf>.
- Saul, J. S., & Leys, C. (2006). Dependency. In D. A. Clark. (Ed.), *The Elgar companion to development studies* (pp. 111-115). Cheltenham, UK: Edward Elgar.
- Sautet, F. (2013). Local and systemic entrepreneurship: Solving the puzzle of entrepreneurship and economic development. *Entrepreneurship Theory and Practice*, 37(2), 387-402. <http://dx.doi.org/10.1111/j.1540-6520.2011.00469.x>.
- Schaper, M. (2002). The future prospects for entrepreneurship in Papua New Guinea. *Journal of Small Business Management*, 40(1), 78-83. <http://dx.doi.org/10.1111/1540-627X.00041>.
- Schuurman, F. J. (2008). The impasse in development studies. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (pp. 12-15). Abingdon, Oxon: Routledge.
- Sengere, R. W., Susuke, W., & Allen, B. (2008). The rehabilitation of coffee plantations in Papua New Guinea: The case of Obihaka. *Pacific Economic Bulletin*, 23(1), 85-98. Retrieved from <http://peb.anu.edu.au/pdf/PEB23-1-Sengere+Susuke+Allen.pdf>
- Sengere, R. W. (2010). Group cohesiveness in coffee farmer groups in Papua New Guinea. *PNG Coffee Journal*, 14(1 & 2), 11-26.
- Seok, H. (1998). Transformation of the family farm: The case of three South Korean villages. *Development and Society*, 27(1), 33-47. Retrieved from <http://s-space.snu.ac.kr/bitstream/10371/86584/1/2>.
- Sexton, L. D. (1980). *From pigs and pearl shells to coffee and cash: Socioeconomic change and sex roles in the Daulo Region, Papua New Guinea (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 8025159)

- Sexton, L. (1988). "Eating" money in Highland Papua New Guinea. *Food and Foodways: Explorations in the History and Culture of Human Nourishment*, 3(1-2), 119-142. <http://dx.doi.org/10.1080/07409710.1988.9961940>
- Sharp, T. L. M. (2012). *Following betel nut: The making of the Highlands trade, Papua New Guinea* (Unpublished Doctorate thesis). ANU, Canberra.
- Sharp, T. L. M. (2013). *Baias, bisnis, and betel nut: The place of traders in the making of a Melanesian market*. In F. McCormack & K. Barclay (Eds.), *Engaging with capitalism: Cases from Oceania*. (Vol. 33, pp. 227-256). Bingley, UK: Emerald Group Publishing.
- Sidaway, J. D. (2008). Post development. In V. Desai, & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 16-20). Abingdon, Oxon: Routledge.
- Sillitoe, P. (2000). *Social change in Melanesia: Development and history*. Cambridge: Cambridge University Press.
- Sillitoe, P. (2016). The knowing in indigenous knowledge: Alternative ways to view development, largely from a New Guinea Highlands' perspective. In P. Meusburger, T. Freytag & L. Suarsana (Eds.), *Ethnic and cultural dimensions of knowledge* (pp. 129-163). Cham: Springer.
- Simon, D. (2008). Neoliberalism, structural adjustment and poverty reduction strategies. In V. Desai & R. B. Potter (Eds.), *The companion to development studies* (2nd ed., pp. 86-92). Abingdon, Oxon: Routledge.
- Sinclair, J. (1995). *The money tree: Coffee in Papua New Guinea*. Bathurst: Crawford House Publishing.
- Singh, S. (1974). Co-operatives in Papua New Guinea. *New Guinea Research Bulletin No. 58*. Canberra: ANU.
- Sitapai, E. C. (2012, May). *A critical analysis of agriculture extension services in Papua New Guinea: Past, present and future*. Paper presented at the CIMC National Agriculture Conference, Lae, PNG. Retrieved from http://www.inapng.com/pdf_files/.
- Sklair, L. (2006). Globalisation and development. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 200-203). Cheltenham, UK: Edward Elgar.
- Smith, D. G. V. (1992). Coffee marketing margins in Papua New Guinea. In E. Fleming & H. Coulter (Eds.), *Agricultural export marketing in the South Pacific: The future role of marketing authorities* (pp. 148-160). NCDS, Canberra.
- Stein, H. (2006). Structural adjustment. In D. A. Clark (Ed.), *The Elgar companion to development studies* (pp. 596-601). Cheltenham, UK: Edward Elgar.

- Stewart, P. J., & Strathern, A. (1998). Money, politics, persons in Papua New Guinea. *Social Analysis: The International Journal of Social and Cultural Practice*, 42(2), 132-149. Retrieved from <http://www.jstor.org/dbgw.lis.curtin.edu.au/stable/pdf/23166572.pdf>.
- Stewart, R. G. (1986). *Dialectic of underdevelopment - imperialism, class and state in the coffee industry of Papua New Guinea*. (Unpublished Doctorate thesis, Microfiche). ANU, Canberra.
- Stewart, R. G. (1992). *Coffee: The political economy of an export industry in Papua New Guinea*. Boulder: Westview Press.
- Stockbridge, M., Dorward, A., & Kydd, J. (2003). Farmer organisation for market access. United Kingdom. Retrieved from <http://r4d.dfid.gov.uk/pdf/outputs/>.
- Strathern, A. (1982a). Tribesmen or peasants? In A. Strathern (Ed.), *Inequality in New Guinea Highlands societies* (pp. 137-157). Cambridge: Cambridge University Press.
- Strathern, A. (1982b). The division of labor and processes of social change in Mount Hagen. *American Ethnologist*, 9(2), 307-319. Retrieved from <http://www.jstor.org/stable/pdf/644678.pdf>.
- Strathern, A. (1993). Violence and political change in Papua New Guinea. *Bijdragen tot de Taal-, Land- en Volkenkunde*, 149(4), 718-736. Retrieved from <http://www.jstor.org/stable/pdf/27864499.pdf>.
- Strong, T. P. (2004). *Pikosa: Loss and life in the Papua New Guinea Highlands (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 3151069)
- Suruma, E. S. (2014). *Advancing the Ugandan economy: A personal account*. Washington, D.C: Brookings Institution Press.
- Sykes, K. (2007). The moral grounds of critique: Between possessive individuals, entrepreneurs and big men in New Ireland. *Anthropological Forum*, 17(3), 255-268. <http://dx.doi.org/10.1080/00664670701637727>.
- Takahashi, R., Todo, Y., & Degefa, T. (2015). The effects of a participatory approach on the adoption of agricultural technology: Focusing on the social network structure in rural Ethiopia. *Studies in Agricultural Economics*, 117(1), 50-56. <http://dx.doi.org/10.7896/j.1504>.
- Talbot, J. M. (1997). *Grounds for agreement: The political economy of the coffee commodity chain (Doctorate thesis)*. Retrieved from ProQuest Dissertations and Theses Full Text database. (IMU No. 9803372)
- Tanas, J. K., & Audretsch, D. B. (2011). Entrepreneurship in transitional economy. *International Entrepreneurship and Management Journal*, 7, 431-442. <http://dx.doi.org/10.1007/s11365-011-0189-9>.

- Taru, J. (1995). Stabilisation strategies for the 1995/96 coffee season: Some suggested short-term options for coffee growers during a likely brief period of high prices. *Coffee Research Institute Newsletter* 2, 9-14.
- Tashakkori, A., & Teddlie, C. (Eds). (2003). *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, Calif.: SAGE Publications.
- Teare, R. (2013). Personal viability-the journey to self-reliance and financial independence. In O. Zuber-Skerritt & R. Teare (Eds.), *Lifelong action learning for community development learning and development for a better world* (pp. 99-132). Rotterdam, The Netherlands: Sense Publishers.
- The Climate Institute. (2016). *A brewing storm: The climate change risks to coffee*. Sydney, NSW. Retrieved from http://www.climateinstitute.org.au/verve/_resources/TCI_A_Brewing_Storm_FINAL_28082016_web.pdf.
- Thompson, H. (1987). Theorizing simple commodity production in Papua New Guinea. *Journal of Contemporary Asia*, 17(4), 436-455. <http://dx.doi.org/10.1080/00472338780000301>.
- Thompson, H. (1991). Economic theory and economic development in Papua New Guinea. *Journal of Contemporary Asia*, 21(1), 54-67. <http://dx.doi.org/10.1080/00472339180000061>.
- Thorpe, R., Cope, J., Ram, M., & Pedler, M. (2009). [Editorial] Leadership development in small-and medium-sized enterprises: The case for action learning. *Action Learning: Research and Practice*, 6(3), 201-208. <http://dx.doi.org/10.1080/14767330903299399>.
- Turner, M. M. (1986). Plantations, politics and policy-making in Papua New Guinea 1965-1986. *Journal de la Société des Océanistes*, 42(82), 129-138. <http://dx.doi.org/10.3406/jso.1986.2827>.
- UniQuest. (2013). *P110959: Productive Partnerships in Agriculture Project Baseline Survey Final Report*. Goroka, PNG.
- Update on Productive Partnership in Agriculture Projects [Supplement]. (2015, 21 December). *The National*.
- Valkila, J. (2009). Fair Trade organic coffee production in Nicaragua - sustainable development or a poverty trap? *Ecol. Econ.*, 68(12), 3018-3025. <http://dx.doi.org/10.1016/j.ecolecon.2009.07.002>.
- Valkila, J., & Nygren, A. (2010). Impacts of Fair Trade certification on coffee farmers, cooperatives, and labourers in Nicaragua. *Agriculture and Human Values*, 27(3), 321-333. <http://dx.doi.org/10.1007/s10460-009-9208-7>.
- van der Grijp, P. (2003). Between gifts and commodities: Commercial enterprise and the trader's dilemma on Wallis ('Uvea). *The Contemporary Pacific*, 15(2), 277-307. <https://doi.org/10.1353/cp.2003.0057>.

- van der Grijp, P. (2004). *Identity and development: Tongan culture, agriculture, and the perennality of the gift*. Leiden: KITLV Press.
- van Rijsbergen, B., Elbers, W., Ruben, R., & Njuguna, S. N. (2016). The ambivalent impact of coffee certification on farmers' welfare: A matched panel approach for cooperatives in Central Kenya. *World Development*, 77, 277-292. <http://dx.doi.org/10.1016/j.worlddev.2015.08.021>.
- Wallengren, M. (2012). Indonesia's coffee boom set to continue. *Coffee & Cocoa International*, 39, 22-23.
- Walter, M. A. H. B. (Ed.) (1981). *What do we do about plantations?* Boroko, PNG: Institute of Applied Social and Economic Research.
- Walton, G. W. (2016). Silent screams and muffled cries: The ineffectiveness of anti-corruption measures in Papua New Guinea. *Asian Education and Development Studies*, 5(2), 211-226. <http://dx.doi.org/10.1108/AEDS-01-2016-0005>.
- Warner, W., & Lunt, P. S. (1941). *The social life of a modern community*. New Haven, CT: Yale University Press.
- Webb, E. J., Campbell, D. T., Schwartz, R. D., & Sechrest, L. (1966). *Unobtrusive measures: Nonreactive research in the social sciences*. Chicago: Rand McNally.
- Weiner, J. F. (2013). The incorporated what group: Ethnographic, economic and ideological perspectives on customary land ownership in contemporary Papua New Guinea. *Anthropological Forum*, 23(1), 94-106. <http://dx.doi.org/10.1080/00664677.2012.736858>.
- West, P. (2012). *From modern production to imagined primitive: The social world of coffee from PNG*. Durham: Duke University Press.
- Winchester, H. P. M., & Rofe, M. W. (2010). Qualitative research and its place in human geography. In L. Hay (Ed.), *Qualitative research methods in human geography* (pp. 3-25). Ontario: Oxford University Press.
- Wollni, M., & Brümmer, B. (2012). Productive efficiency of specialty and conventional coffee farmers in Costa Rica: Accounting for technological heterogeneity and self-selection. *Food Policy*, 37(1), 67-76. <http://dx.doi.org/dbgw.lis.curtin.edu.au/10.1016/j.foodpol.2011.11.004>.
- Wollni, M., & Fischer, E. (2015). Member deliveries in collective marketing relationships: Evidence from coffee cooperatives in Costa Rica. *European Review of Agricultural Economics*, 42(2), 287. <http://dx.doi.org/10.1093/erae/jbu023>
- World Bank. (1992). Papua New Guinea: Revitalizing agriculture - issues and options, final report for the Coffee Industry Corporation.

Wrigley, G. (1988). *Coffee*. Essex: Longman Scientific & Technical.

Zimmer-Tamakoshi, L. (1997). The last big man: Development and men's discontents in the Papua New Guinea Highlands. *Oceania*, 68, 107-122. <http://dx.doi.org/10.1002/j.1834-4461.1997.tb02653.x>.

Zullo, J., Pinto, H., Assad, E., & Ávila, A. (2011). Potential for growing Arabica coffee in the extreme south of Brazil in a warmer world. *Climatic Change*, 109(3), 535-548. <http://dx.doi.org/10.1007/s10584-011-0058-0>.

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Appendix 1

PNGS1626:201X

Second edition

201Y-mm-dd

PAPUA NEW GUINEA STANDARD

Green Coffee

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FOREWORD

This Standard was proposed by the Coffee Industry Corporation and prepared by the Biological Standards Committee of the National Institute of Standards and Industrial Technology (NISIT). The Standard was prepared in response to a need to standardize and upgrade the quality of coffee exported.

This Standard takes into account the use of water-resistant and hermetically-sealable liners for jute bags; the removal of trade grades “AA”, “AB”, “C”, “X”, “E”, “PSC”, and “T”; as well as the inclusion of new grades Arabica “B” and, for Robusta, “R1”, “R2” and “RT”. It also allows for the separate size differentiation of a number of trade grades and the inclusion of a more descriptive definition of liquor quality. In addition, the numbering and sequencing of some clauses has been changed as a result of the revision of trade grades. Furthermore, a few words or terms deemed inappropriate were replaced with ones deemed appropriate to the Trade Grade Specifications in Tables 1 and 2 to reflect the true characters and descriptions. ISO referenced documents have been updated to current Standards.

This Standard deals with parameters and criteria for liquor and physical quality for conformity.

The term “normative” has been used in this Standard to define the application of the table to which it applies. A “normative” table is an integral part of a Standard.

The second edition cancels and replaces the first edition (PNGS 1626:1993) which has been technically revised. The following key stakeholders were involved in the Green Coffee Working Group:

- Coffee Industry Corporation
- Papua New Guinea Coffee Export
- Nowek Limited
- Kosem Ltd
- WR Carpenters
- Public Private Partnership Projects
- Niugini Highlands Coffee Exports
- Michael Wheeler (International Consultant for PNG)
- National Institute of Standards and Industrial Technology

1. SCOPE

This Standard specifies requirements for Green Coffee in Papua New Guinea (PNG), including:

- a) standard parameters and criteria for liquor and physical quality;
- b) criteria for sampling, analysis and determination of grades; and
- c) specifications for marking and packaging.

2. NORMATIVE REFERENCES

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

All documents are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent edition of the Standards list below.

ISO 668:2013

Series 1 freight containers - Classification, dimensions and ratings

ISO 3509

Coffee and coffee products – Vocabulary.

ISO 4072

Green coffee in bags – Sampling.

ISO 4149

Green coffee – Olfactory and visual examination and determination of foreign matter and defects.

ISO 4150

Green coffee or raw coffee – Size Analysis – Manual and machine sieving

ISO 6668

Green coffee – Preparation of samples for use in sensory analysis.

ISO 6673

Green coffee – Determination of loss in mass at 105°C.

3. TERMS AND DEFINITIONS

For the purpose of this Standard the “CIC” denotes the PNG Coffee Industry Corporation; and “ISO” denotes the International Organization for Standardization. For the purpose of this Standard, the definitions in ISO 3509, ISO 4072, ISO 4149, ISO 4150, ISO 6668, and ISO 6673 and the following apply.

3.1 Consignment

The quantity of green coffee in bags, dispatched a received at one time and covered by a particular contract or shipping document. It may be composed of one or more lots.

3.2 Lot

A part of a consignment or a consignment presumed to be of uniform characteristics, consisting of not more than 1,000 bags of the same type, with the same marks and mass, containing green coffee assumed to have common properties of reasonably uniform character and to which a given scheme of examination can be applied.

3.3 Full container load (FCL)

One fully loaded container - of nominal length either 20 feet or 40 feet in accordance with ISO 668:2013 containing cargo for one consignee (importer).

4. GRADES AND TRADE TYPES

4.1 Species grown

Two species of coffee are grown and processed in Papua New Guinea: Arabica (*Coffea Arabica*) is generally grown at altitudes of 1000 m asl and more while Robusta (*Coffea canephora*) is grown in the lowlands.

4.2 Trade grade designation

4.2.1 Trade grade designations comprise “A”, “B”, “Y”, “Y2”, and “Y3” in the case of Arabica coffee, and “R1”, “R2” and “RT” in the case of Robusta coffee.

4.2.2 All certified and specialty branded coffee shall be exported in accordance with the grades specified in Tables 1 and 2.

4.3 Parchment coffee – Arabica

4.3.1 General

Dry Arabica coffee beans wrapped in the endocarp.

Classes for Arabica parchment are defined in Clauses 4.3.2 to 4.3.5.

4.3.2 Class 1 Arabica parchment

Clean, sound, pale, even coloured Arabica parchment, which is substantially free of visible defects, has no off odours and is capable of yielding either “A” or “B” grade green bean.

4.3.3 Class 2 Arabica parchment

Clean, sound, pale coloured Arabica parchment, which has some visible defects and is capable of yielding “Y” grade green bean.

4.3.4 Class 3 Arabica parchment

Arabica parchment which does not have an excessive amount of visible defects and is capable of yielding “Y2” grade green bean.

4.4 Parchment coffee – Robusta

4.4.1 General

Dry Robusta coffee beans shall be wrapped in the endocarp.

Classes for Robusta parchment are defined in Clauses 4.4.2 to 4.4.3.

4.4.2 Class 1 Robusta parchment

Clean, sound, pale, even coloured Robusta parchment which is substantially free of visible defects and is capable of yielding “R1” grade green bean.

4.4.3 Class 2 Robusta parchment

Robusta parchment, which does not have an excessive amount of visible defects and is capable of yielding “R2” grade green bean.

5. PACKING FOR EXPORT

5.1 Packing in bags

5.1.1 Green coffee for export shall be packed in clean, sound, new, non-mineral oil jute bags free from tears, any sign of leakage or any objectionable odour. Bags for export coffee shall be between 1,020 and 1,070 mm long and between 535 and 610 mm wide.

5.1.2 Where coffee is packed in jute bags with water-resistant and hermetically sealable liners, random sampling shall be undertaken by authorized CIC Provincial Inspectors prior to packing and sealing the liner within clean, sound, new, non-mineral oil jute bags free from tears, any sign of leakage or any objectionable odour. Quality assurance and certification shall be undertaken and cleared in designated ports prior to export.

5.1.3 The net weight of a bag of green coffee for export shall be 60 kg at time of shipment, except for “Y3” grade, which may weigh less.

5.2 Export bag labelling

5.2.1 Bags of green coffee for export shall bear the following markings in black indelible food-grade ink, in letters not less than 50 mm high and 6 mm thick. The marks shall be placed in separate lines, centrally placed below the mouth or closure in the following order:

- a) The words “Papua New Guinea” or the abbreviation “PNG”.
- b) “Washed Raw Arabica/Robusta Coffee” according to contents.
- c) The words “Clean, sound and new” denoting the condition of the bag.

- d) On the reverse side of the bag, the following marks shall be displayed in separate lines centrally placed in the following order:
- i) A rectangle placed breadth-wise below the mouth or closure of the bag and printed in black indelible food-grade ink so as to obscure any other markings required by this Clause. The rectangle shall be divided into three compartments.
 - ii) Indelibly marked in black food-grade ink in figures not less than 50 mm high, the following shall appear within the three compartments:
 - 1) In the left-hand compartment the number 166 being the International Coffee Organization (ICO) identification mark for PNG.
 - 2) In the central compartment a number up to four digits long allocated by the CIC to identify the exporter of the coffee.
 - 3) In the right-hand compartment a number up to five digits long being the exporter's serial number for the particular lot of coffee. The serial number shall be one of a series commencing with the number "1" for the first consignment destined for export by the exporter in the year commencing on the first of October and will be preceded by either the letter "M" to represent that the shipment will be shipped to an International Coffee Organization (ICO) member country; or the letters "NM" to represent that the shipment will be shipped to an ICO non-member country. The series shall be renewed annually on the first of October.
 - iii) Below the marked rectangle the following is to be displayed in separate lines and marked indelibly in food-grade ink in black characters not less than 50 mm high.
 - 1) A mark sufficient to identify the consignee of the coffee.
 - 2) A mark sufficient to identify the port of destination of the coffee.
 - 3) Such distinguishing marks as may be necessary to identify the grower or the exporter of the coffee.
 - 4) The prescribed mark for the grade of the coffee beans and, if appropriate, any third-party certification mark.
 - 5) At the discretion of the exporter, some writing to carry any special description that he wishes to apply to his beans.

- 6) Where coffee is packed in jute bags with water-resistant and hermetically sealable liners, the bag shall be clearly marked and differentiated by a green vertical stripe in food-grade ink measuring at least 40 mm wide on the right hand side of both sides of the bag, from the top to the bottom in order to identify and prevent accidentally compromising the integrity of the bag.

5.3 Packing in bulk containers

- 5.3.1** The green coffee shall be packed in a 20 foot Standard Ocean-Going Container (see ISO 668). The bulk containers shall be clean, sound, dry, water and air tight, and shall be free of any objectionable odour.
- 5.3.2** The containers shall be lined with clean and dry polythene or polypropylene liners that are free from tears, any signs of leakage and any objectionable odour.
- 5.3.3** The maximum net weight of green coffee in bulk containers shall not exceed 21,600 kg or 360 x 60 kg green coffee bags equivalent. All bulk weights shall be indicated clearly on every export document.
- 5.3.4** When bulking is completed, authorized CIC Inspectors shall issue an Inspection Certificate and may put its seal on the bulked container. The sealing is final and shall not be tampered with until it reaches the port of destination.
- 5.3.5** Unless otherwise stated, all bulk coffees should be shipped on FCL/FCL basis.

6. DRAWING OF SAMPLES FOR ANALYSIS

- 6.1** Sampling for any purpose shall be carried out according to the provisions of ISO 4072.
- 6.2** Where samples are to be drawn from coffee stored for bulk shipments, such samples shall be drawn by one of the following two methods:
 - a) Samples shall be drawn randomly at three to four intervals as the beans enter a bulk container; or
 - b) Samples shall be drawn randomly from bags neatly stacked and clearly marked in container lots prior to the actual bulking.

Such lot samples shall be blended to obtain a fully representative bulk sample of not more than 2 kg by weight per container.

- 6.3** Where coffee is to be shipped in jute bags with water-resistant and hermetically sealable liners, random sampling should be done in accordance with the procedures outlined in ISO 4072. Sampling shall be undertaken by authorized CIC Provincial Inspectors prior to packing.

7. MOISTURE CONTENT

Green Coffee for export shall contain water at not less than 8% nor more than 12.5% of total mass. Determination may be made according to ISO 6673 or by another method agreed upon by the parties concerned.

8. OLFACTORY AND VISUAL EXAMINATION AND DETERMINATION OF FOREIGN MATTER AND DEFECTS

- 8.1** Examination and determination shall be made according to the provisions of ISO 4149.
- 8.2** Allocation of grade to samples being examined shall be made according to the specifications set out in Tables 1, 2 and 3.

9. SENSORY ANALYSIS

- 9.1** Samples for sensory analysis shall be prepared according to the provisions of ISO 6668.
- 9.2** Judgments be recorded in terms agreed by the parties concerned.
- 9.3** Allocation of grade to sample being analyzed shall be made according to the specifications set out in Tables 1 and 2.

10. SIZE ANALYSIS

Size analysis shall be carried out according to the provisions of ISO 4150 and made according to the specifications set out in Tables 1 and 2.

Table 1: Papua New Guinea Green Coffee Specifications - Arabica (Normative)

Grade	Cup quality	Maximum defects allowed (Equivalent per kg)	Raw bean colour	Odour	Bean size																											
A	Full, reasonably balanced, uniform, clean, cup; well-pronounced body and acidity; rich and distinct fragrance and aroma.	10	Bluish green	Fresh and clean, no off odours allowed.	Displayed as a Suffix to the designated grade, e.g. A20. If a specific screen size is designated the coffee shall be uniform in size above designated screen size. No suffix means the coffee is mixed size. <table border="1"> <thead> <tr> <th>Screen No.</th> <th>Screen Diameter (mm)</th> <th>ISO norm</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>7.94</td> <td>8.00</td> </tr> <tr> <td>19</td> <td>7.54</td> <td>7.50</td> </tr> <tr> <td>18</td> <td>7.14</td> <td>7.10</td> </tr> <tr> <td>17</td> <td>6.75</td> <td>6.70</td> </tr> <tr> <td>16</td> <td>6.35</td> <td>6.30</td> </tr> <tr> <td>15</td> <td>5.95</td> <td>6.00</td> </tr> <tr> <td>14</td> <td>5.55</td> <td>5.60</td> </tr> <tr> <td>PB (11-14)</td> <td>4.37 to 5.55 (single bean/round shape)</td> <td>4.40 to 5.60</td> </tr> </tbody> </table>	Screen No.	Screen Diameter (mm)	ISO norm	20	7.94	8.00	19	7.54	7.50	18	7.14	7.10	17	6.75	6.70	16	6.35	6.30	15	5.95	6.00	14	5.55	5.60	PB (11-14)	4.37 to 5.55 (single bean/round shape)	4.40 to 5.60
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B	Regular, uniform clean cup; medium to high acidity and pronounced body; rich fragrance and aroma.	30	Even, green to bluish green																													
Y	May lack some uniformity in the cup; good acidity and body; Some fruitiness/wineyness; good fragrance and aroma.	70	Pale green to green	Clean/fresh, some fruitiness.																												
Y2	Irregular cup profile; fair acidity and body; no foul or foreign flavour.	150	Mixed light green to green	No foul or foreign odours.	Mixed																											
Y3	No foul or foreign flavour.	30% defects by weight, excluding good nipped beans. No foreign matter. Shall be fit for human consumption	Mixed	No foul or foreign odours.	Mixed																											
NOTE: No foul or foreign flavour and odours relates to phenolic, engine oil, excessive mould and other similar chemical off flavours/odours.																																

Table 2: Papua New Guinea Green Coffee Specifications - Robusta (Normative)

Grade	Cup quality	Maximum defect allowed (Equivalent per kg)	Raw bean colour	Odour	Bean size															
R1	Reasonably balanced, uniform, clean cup; low bitterness and smoother body. Rich and distinct fragrance and aroma.	30	Green	Fresh and clean, no foul or foreign odours allowed.	<p>Displayed as a Suffix. Where a specific screen size is designated the coffee shall be uniform in size above designated screen size. No suffix means the coffee is mixed size.</p> <table border="1"> <thead> <tr> <th>Screen No.</th> <th>Screen Diameter (mm)</th> <th>ISO norm</th> </tr> </thead> <tbody> <tr> <td>18</td> <td>7.14</td> <td>7.10</td> </tr> <tr> <td>17</td> <td>6.75</td> <td>6.70</td> </tr> <tr> <td>16</td> <td>6.35</td> <td>6.30</td> </tr> <tr> <td>15</td> <td>5.95</td> <td>6.00</td> </tr> </tbody> </table>	Screen No.	Screen Diameter (mm)	ISO norm	18	7.14	7.10	17	6.75	6.70	16	6.35	6.30	15	5.95	6.00
Screen No.	Screen Diameter (mm)	ISO norm																		
18	7.14	7.10																		
17	6.75	6.70																		
16	6.35	6.30																		
15	5.95	6.00																		
R2	Neutral robusta cup; Medium to Fair average quality.	150	Green	No four or foreign odours.	Mixed															
RT	No foul or foreign flavour.	30% defects by weight, excluding good nipped beans. No foreign matter. Shall be fit for human consumption.	Mixed	No foul or foreign odours.	Mixed															
<p>NOTE: No foul or foreign flavour and odours relates to phenolic, engine oil, excessive mould and other similar chemical off flavours/odours.</p>																				

Table 3: Defective Schedule (Normative).

Description of defect	Number of defects/ Foreign matter	Defect equivalent
Large stone (1 cm diameter)	1	2
Medium stone (about 5 mm diameter)	1	1
Small stone (less than 5 mm diameter)	3	1
Large stick (3 cm length)	1	2
Medium stick (2 cm length)	1	1
Small stick (1 cm length)	3	1
Pod	1	1
Full black	1	1
Partly black	5	1
Full sour	1	1
Partly sour	5	1
Shells	5	1
Pulper-cut/Brokens	5	1
Floaters	5	1
White/Old	5	1
Parchment	2	1
Husk/Hull	2	1
Immature	5	1
Water damage	5	1
NOTE: Any other foreign matter and defect not included in this schedule may be assessed by the authority using this Standard or by an arbitration panel.		