

IMPROVING PRODUCTIVITY OF THE SMALLHOLDER OIL PALM SECTOR IN PAPUA NEW GUINEA: A SOCIO-ECONOMIC STUDY OF THE HOSKINS AND POPONDETTA SCHEMES

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ABBREVIATIONS

ACIAR	Australian Centre for International Agricultural Research
CLUA	Clan Land Usage Agreement
FFB	Fresh Fruit Bunch
HOP	Higaturu Oil Palms
HOPL	Hargy Oil Palms Ltd
ILG	Incorporated Landowner Group
OPIC	Oil Palm Industry Corporation
LSS	Land Settlement Scheme
MLFS	Mama Lus Frut Scheme
NBPOL	New Britain Palm Oil Limited
PNGDB	Papua New Guinea Development Bank
PNGOPRA	Papua New Guinea Oil Palm Research Association.
VOP	Village Oil Palm
WNB	West New Britain

EXECUTIVE SUMMARY

The oil palm industry is one of the more successful rural developments in Papua New Guinea. Oil Palm is grown in five areas: Hoskins and Biella in West New Britain, Popondetta, Milne Bay and New Ireland, with over 14,500 smallholder oil palm blocks. In 2000, smallholders produced approximately 531,264 tonnes of FFB (worth K36.5 million) which accounted for 33% of total production, the company estates producing the balance. In 2000 oil palm exports accounted for 32% of the total value of Papua New Guinea's agricultural exports, and 5% of total Papua New Guinea exports. In the same year the value of oil palm exports exceeded coffee, traditionally the most important commodity crop in terms of foreign exchange earnings.

Whilst there has been a large increase in the total area under smallholder cultivation, improving smallholder productivity remains one of the industry's major challenges. Smallholder productivity per hectare is much lower than that of the estate plantations, and village oil palm (VOP) productivity is below that of the land settlement schemes (LSS) (except for Popondetta).

In 1999 project funding was approved by ACIAR to research the biophysical and socio-economic interactions of factors affecting productivity among oil palm smallholders in Hoskins and Popondetta. The primary aim of the research was to help improve smallholder oil palm productivity. The main objectives of the project were to:

- gain an understanding of the socio-economic constraints on smallholder production;
- evaluate the Mama Lus Frut Scheme;
- develop strategies for more effective extension interventions;
- make recommendations for change that might result in further increases in smallholder productivity, and
- produce a work manual for extension officers.

With the assistance of OPRA staff, research was undertaken at the Hoskins and Popondetta schemes with smallholders the focus of data collection. Other key stakeholders that participated in the research included OPIC, NBPOL, HOPL, customary landowners and industry associations, such as the oil palm growers associations. The research employed semi-structured interviews, case-studies, questionnaire surveys, workshops, focus groups, analysis of industry smallholder data bases and the review of relevant reports and published literature.

At the beginning of the data collection phase, workshops with extension officers at Hoskins and Popondetta identified the key variables explaining variation in smallholder productivity (particularly harvesting practices, rates of fertiliser use and levels of commitment to oil palm) as: physical factors; agronomic and farm management practices; intra-household relations and decision-making; income distribution; time and cash management skills; tenure security; economic necessity to harvest; level of interest in oil palm harvesting; and the personal characteristics of growers. Building on this knowledge and working closely with smallholders, the study identified the following factors affecting smallholder productivity:

1. Oil Palm is one of many economic activities smallholders pursue

- In addition to oil palm, smallholders are involved in a range of economic activities which we define as livelihood strategies. Smallholder livelihood strategies promote household economic and social security by increasing income and diversifying income sources, strengthening people's capacity to meet their needs, increasing the range of options and choices available to households, enhancing food security and reducing household risks.
- The main smallholder livelihood strategies include managing a range of cash crops, wage employment, operating small business enterprises, garden production for home consumption and local markets, and indigenous exchange. These non-oil palm activities sometimes compete for labour and time with oil palm production; at other times they have a positive influence where they

contribute to income and food security thereby adding to household well-being and broader social stability on the schemes.

- For many smallholders, access to alternative income sources is necessary to meet household needs, especially on highly populated LSS blocks and/or during times of depressed oil palm prices. An important reason why smallholders pursue income diversification is to even income variations due to the fluctuating price of oil palm.

- For many VOP smallholders in Hoskins and Popondetta, entry into oil palm production is relatively recent and many retain holdings of other export cash crops, especially cocoa and copra. In a survey of 100 VOP and LSS smallholder blocks at Hoskins, 72% and 26% respectively had access to other export cash crops. Of the Hoskins VOP blocks with cash crops, 83.5% had two or more types of cash crops in addition to oil palm.

- The oil palm plantation estates provide opportunities for short-term casual employment and long-term employment of smallholders. The former often provides temporary financial relief for block residents at periods of peak cash demand such as when school fees are due, or payments must be made for customary obligations.

- Access to off-block wage employment can add significantly to material standards of living on smallholder blocks. Whether off-block employment or self-employment adversely affects oil palm productivity requires further research, though the evidence suggests that off-block employment is only a problem when it limits labour availability at harvest times. On the more heavily populated blocks at Hoskins, off-block employment provides very important supplementary income, and relieves some of the economic and population pressures on the blocks.

- Food garden production is extremely important for LSS and VOP smallholders in terms of labour demands and meeting household consumption requirements. At Hoskins labour allocated to gardening exceeds that allocated to oil palm and is the dominant activity carried out by smallholders. This is most notable among women who allocate almost 2.5 times as much labour to food gardening as to oil palm; for Hoskins men, gardening and oil palm are of about equal importance in terms of the amounts of time allocated to each

activity. At Popondetta, men spend more time in oil palm related work than gardening, and women spend considerably more time in garden production than in oil palm.

- Approximately 80% of categories of meal ingredients at Kavui LSS and Popondetta were from gardens compared with about 50% of meal ingredients from food gardens at Gaungo VOP. The balance at Gaungo is made up of store foods, (mostly tinned fish and rice) and fresh fish and meat. The higher protein diets of VOP smallholders at Hoskins are partly a reflection of the wider range of income choices available to VOP smallholders and the greater population pressure on LSS blocks, where falling per capita incomes from oil palm are increasing settlers' dependence on subsistence food production.

- The marketing of food crops, coconuts, betel nut, tobacco, processed foods and manufactured items at local markets provides a regular additional income for women at both Hoskins and Popondetta. At Hoskins, market income is especially important for women from the LSS schemes. A survey of women selling at several markets around Kimbe and Hoskins, revealed that 54% of sellers were from LSS schemes and 8% were settlers residing on village land, and LSS women were disproportionately over-represented in local markets in terms of the values of items for sale, especially garden produce. At Hoskins, VOP women are not as heavily involved in marketing garden produce. Average earnings per market visit were K10.91 at Hoskins and K4.64 at Popondetta.

- Most smallholders are involved in various forms of customary production and exchange, especially VOP producers. For many VOP smallholders, the motivation to harvest is not so much concerned with accumulating savings for capital investments or consumption in the market economy, but with redistributing wealth through kin exchange. Some smallholders with intermittent involvement in oil palm production may not harvest for several months but will do so to contribute to a communal feast or exchange. For more regular VOP producers, oil palm production may increase significantly when customary demands are unusually high. Thus, the requirements of customary exchange can drive people's involvement in oil palm production.

2. Population growth is creating economic and social pressures on the LSSs

- Population pressure is beginning to emerge on the older LSS schemes such as Hoskins (and possibly Bialla) as the second generation marry and establish their own households on the block. Many blocks are now supporting several families.
- Population density per LSS block at Hoskins has increased from 8.6 persons per block in 1990 to 13.3 in 2000 with an average of 2.9 families per block. The current high numbers of households per LSS block at Hoskins partly reflect the difficulties settlers now face in returning to their “home” villages or acquiring land or off-block employment in WNB or elsewhere in Papua New Guinea.
- The more populated blocks are complex economic and social units and very different to the single families that first settled on the LSSs in the late 1960s and early 1970s.
- Social instability and conflict is associated with heavily populated blocks. Many multiple household blocks experience economic and population pressure, and disputes and violence often occur on payday over the distribution of oil palm income. Inter- and intra-household disputes reduce social harmony and can sometimes lead to significant disruption of oil palm production. In the longer term they are a disincentive for smallholder investment.
- Economic pressure on populated blocks is leading to the development of supplementary income sources to maintain household livelihoods. The trend to increased reliance on non-oil palm income sources is likely to continue as population grows and as it becomes more difficult through time for second generation settlers to return “home”.
- Acquiring additional land is the primary desire of most smallholders experiencing population pressure on their blocks. However, opportunities for second generation smallholders to purchase LSS blocks are becoming constrained by limited savings potential and the inflation of LSS block prices. In response, some LSS settlers are “purchasing” land from customary landowners, squatting illegally on government or private land, seeking land in other provinces or moving into informal (squatter) settlements in urban centres.

- The growing numbers of smallholders illegally residing on government or company land, or “purchasing” insecure VOP land have the potential to seriously undermine social stability in the future.
- There are increasing numbers of under-employed people on blocks, especially youth, who are unable to participate fully in oil palm production. They are an under-utilised resource for the industry, and in the longer term may pose a threat to the social sustainability of the schemes as they become more disaffected and alienated.
- With population increase it appears LSS smallholders are becoming more reliant on garden production, although the Mama Lus Frut Scheme may have offset this reliance to some extent in Hoskins. Those blocks with high populations, which do not have alternative sources of income, are reverting to more subsistence-like lifestyles in which garden production is assuming much more importance.

3. Smallholder household types and patterns of labour organisation are diverse

- As the smallholder sector develops over time, diverse household types are emerging. A major finding of the study is the transition occurring on LSSs where the single nuclear family managing a block is being displaced by other household configurations. Single, caretaker and multiple household types are all now present on the schemes. The multiple household block is steadily replacing the single household block.
- Single household blocks are largely found on VOPs and on the LSS at Popondetta where population pressures are less. Thus, on the older LSS schemes like Hoskins, single households are being replaced by multiple families co-resident on a block.
- Alongside the diversification of household types new ways of organising and remunerating labour are emerging. The shared *wok bung* production system where all or most family members or co-resident households participate in harvesting and block maintenance is no longer the only form of labour organisation on the blocks.

- At Hoskins, some blocks with multiple households have moved away from a shared *wok bung* style of work organisation (where most adults from all co-resident households contribute to harvesting), to more individualised units of production where harvesting is rotated between co-resident households with less shared inter-household labour harvesting and block maintenance. This style of production organisation is referred to as '*markim mun*' by smallholders. Rotation (*markim mun*) production usually emerges in response to the increasing number of co-resident households on blocks.
- In the shared *wok bung* production system, labour remuneration is not necessarily commensurate with labour input, but rather payment is governed more by gender, age or kinship status. Labour remuneration on a rotation (*markim mun*) system is usually expected to be commensurate with labour input and there is less in-kind payment. Income distribution is often a source of disputes on blocks and can result in the withdrawal of labour, disruptions to harvesting or a shift in the production strategy from a shared *wok bung* system to a rotation (*markim mun*) system.
- The rotation (*markim mun*) production system, which appears to be increasing, may be less efficient than shared family labour harvests. There is some evidence to suggest that oil palm productivity is lower per hectare on highly populated blocks that employ a rotation (*markim mun*) system than on highly populated blocks that continue to practice shared family labour harvesting where more adults tend to participate in harvesting. Also, under a rotation (*markim mun*) system there is a higher probability that block maintenance will be neglected or disputed, replanting delayed and greater avoidance of loan repayments.
- The shift to a rotation (*markim mun*) system on highly populated blocks where households are operating more like independent nuclear family units is a major socio-agronomic transformation occurring on the LSS at Hoskins (and probably at Bialla). At Popondetta this study did not record the rotation (*markim mun*) system among smallholders, and OPIC staff recalled only a small number of blocks that had this style of production organisation.
- The study of household types and labour organisation reveals that the deployment of household labour in oil palm production is an outcome of

interactions between household decision-making, income distribution, family/gender relations, the range of livelihood strategies pursued and production motivation. All these factors affect oil palm productivity.

4. Land disputes and tenure insecurity undermining smallholder commitment to oil palm and the long-term viability of the industry

- Land conflicts take many forms in the oil palm smallholder sector, from the large compensation claims demanded by customary landowners for land alienated for estate plantations and land settlement schemes to inter- and intra-household disputes over block ownership.
- Land conflicts are critical production issues. Land disputes reduce smallholder productivity by removing disputed stands of oil palm from production and lowering smallholder incentives to invest in their long-term futures (e.g., replanting or fertiliser uptake). Also, insecure tenure undermines smallholder confidence in and commitment to oil palm, and deters economic development.
- Land conflicts on both VOP and LSS blocks are particularly serious in Popondetta and are a major constraint on and challenge to improving smallholder production.
- The “sale” of customary land in some VOPs at Hoskins is leading to land disputes between settlers and some landowning clan members, especially younger clan members who perceive future land shortages for themselves. These disputes are undermining the future tenure security of settlers “owning” VOP blocks.
- At Hoskins and Popondetta there is growing intolerance and resentment of settlers (“outsiders”) who landowners believe are reaping most of the rewards of economic development and are the cause of growing land shortages in the region.

Industry and OPIC Interventions

- To increase smallholder production and productivity, the industry has introduced several smallholder initiatives. They include new payment systems,

credit schemes, fertiliser incentive schemes, infill plantings of oil palm on LSS blocks, replanting programmes and developing new areas of smallholder oil palm. The latter is restricted to VOP expansion and the development of mini-estates on customary land.

- Replanting programmes at Hoskins and Popondetta are being hindered by a reluctance amongst smallholders to replant. At Popondetta, smallholders are reluctant to replant for several reasons including high debt levels, potential loss of income, low oil palm prices, tenure insecurity, rental arrears, poor road conditions and a view by some smallholders that replanting is unnecessary.
- Despite problems of debt avoidance, interest-free, in-kind credit to smallholders at Hoskins and Popondetta remains very important for maintaining and enhancing smallholder productivity, social harmony, and for ensuring the future growth of the smallholder sector.
- In all project areas VOP plantings are increasing. Popondetta's VOP expansion programme under the Oro Expansion Project funded by the World Bank has increased by over 7,840 hectares since the project commenced in 1993, far exceeding the initial project target of 3,500 hectares.
- Oil palm mini-estates (oil palm estates managed by private companies on land leased from customary landowners) are a recent phenomenon and are undergoing rapid expansion, yet the long-term socio-economic impacts are little understood and difficult to predict. A particular concern is how to ensure that the benefits from mini-estate development flow to women and groups holding secondary rights in the resource.
- The most successful smallholder intervention has been a new payment system for women known as the Mama Lus Frut Scheme. It has provided substantial financial benefits for the company and women. In 2000, participating women earned K1,443 on average. Women spend a high proportion of their oil palm income on food and family needs and this partly explains why smallholders view the scheme as significantly improving the social environment and general quality of life on the blocks.
- The Mama Lus Frut Scheme has helped households to better meet their needs by strengthening livelihoods through improving income distribution and labour arrangements within households, reducing reliance on garden/market income,

enabling households to meet short-term cash demands and social obligations, and opening up new avenues for men to contribute to the household economy.

- The success of the scheme can be explained partly by the scheme's guaranteed payment for women's labour, the way it was introduced, the employment of female extension officers in OPIC, and the high level of support for the scheme by OPIC and NBPOL. Also, there were few structural/cost barriers to participation in the scheme, and loose fruit collection was easily incorporated into existing gendered work roles and patterns. Most importantly, it strengthened household livelihood security through increased financial and social benefits for women.
- In the process of weighing up an industry or OPIC intervention, smallholders often focus on how a proposed intervention fits into, strengthens or adds to their existing livelihood strategies. OPIC or company initiatives for smallholders are more likely to be successful if they are compatible with household livelihood strategies which smallholders see as important in maintaining economic and social well-being.

Recommendations

- Smallholder initiatives by the companies or OPIC to increase smallholder production or productivity should aim to promote sustainable livelihoods through increasing household choices, incomes, land security and social harmony.
- Develop more flexible payment systems to encourage greater labour mobility between blocks and more equitable distribution of income between co-resident households.
- Encourage the development of supplementary income sources that do not draw labour away from oil palm production. This will help relieve some of the economic pressures on smallholder LSS blocks at Hoskins.
- Maintain and enhance food security by encouraging strategies of sustainable food garden production, like improving garden soil fertility through the composting of empty fruit bunches and the application of inorganic fertilisers. OPIC's policy of encouraging infill planting of oil palm on LSS blocks should be reassessed.

- Address land disputes to ensure future land security and social stability, and conduct further research into the long-term socio-economic impacts of mini-estate development.
- Provide incentives for replanting by smallholders. Replanting “packages” could include interest free credit and flexible loan repayment rates that take account of prevailing oil palm prices. Promote high value market crops to compensate for short-term losses in oil palm income during replanting.
- Continue the interest free credit schemes currently available to smallholders from the oil palm companies. The value of these schemes to smallholders could be enhanced significantly by making repayment rates more flexible to take account of fluctuations in oil palm prices.
- Promote family planning and budgeting among smallholders. This should be supported by all stakeholders in the industry and the Department of Health. As all smallholders will soon be required to have bank accounts for the direct payment of oil palm income, bank staff should regularly participate in industry field days to provide advice on banking and budgeting. Finally, as the long-term social and economic sustainability of the schemes is being eroded by population growth, it is imperative that family planning advice be made available to smallholders. As a matter of course, Department of Health staff should participate in field days to provide advice on family planning matters.

CHAPTER ONE

BACKGROUND TO OIL PALM IN PAPUA NEW GUINEA

1.0 Introduction

Oil Palm is grown in five project areas in Papua New Guinea: Hoskins and Bialla in West New Britain (WNB), Popondetta, Milne Bay and New Ireland (Figure 1.1). All project areas operate on a nucleus estate-smallholder model whereby smallholders supply oil palm fruit to mills operated by the nucleus estate company. In WNB and Popondetta smallholder production is located on Land Settlement Schemes (LSS) (State leased land) and on Village Oil Palm schemes (VOPs), (village-based production on customary land). VOPs were introduced after the LSS schemes and were established to encourage more involvement in the industry by local villagers. Milne Bay and New Ireland do not have LSSs, only VOPs. Presently, there are over 100,000 hectares of oil palm, of which 43,000 ha are smallholder plantings (ADS (PNG) 2001).

1.1 Brief History Of Oil Palm Development In Papua New Guinea

Germans were the first to plant oil palm in 1894-95 on the Rai Coast of Papua New Guinea (Sack and Clark 1979, quoted in Grieve 1986). The Germans also established additional experimental plantings in the early 1920s near Popondetta in Northern (Oro) Province (Landell Mills 1991). Commercial plantings were established in 1967 following a World Bank recommendation that oil palm on a nucleus estate-smallholder system be introduced to New Britain or Bougainville to diversify the agricultural economy and increase the export income of Papua New Guinea (IBRD 1965; Grieve 1986).

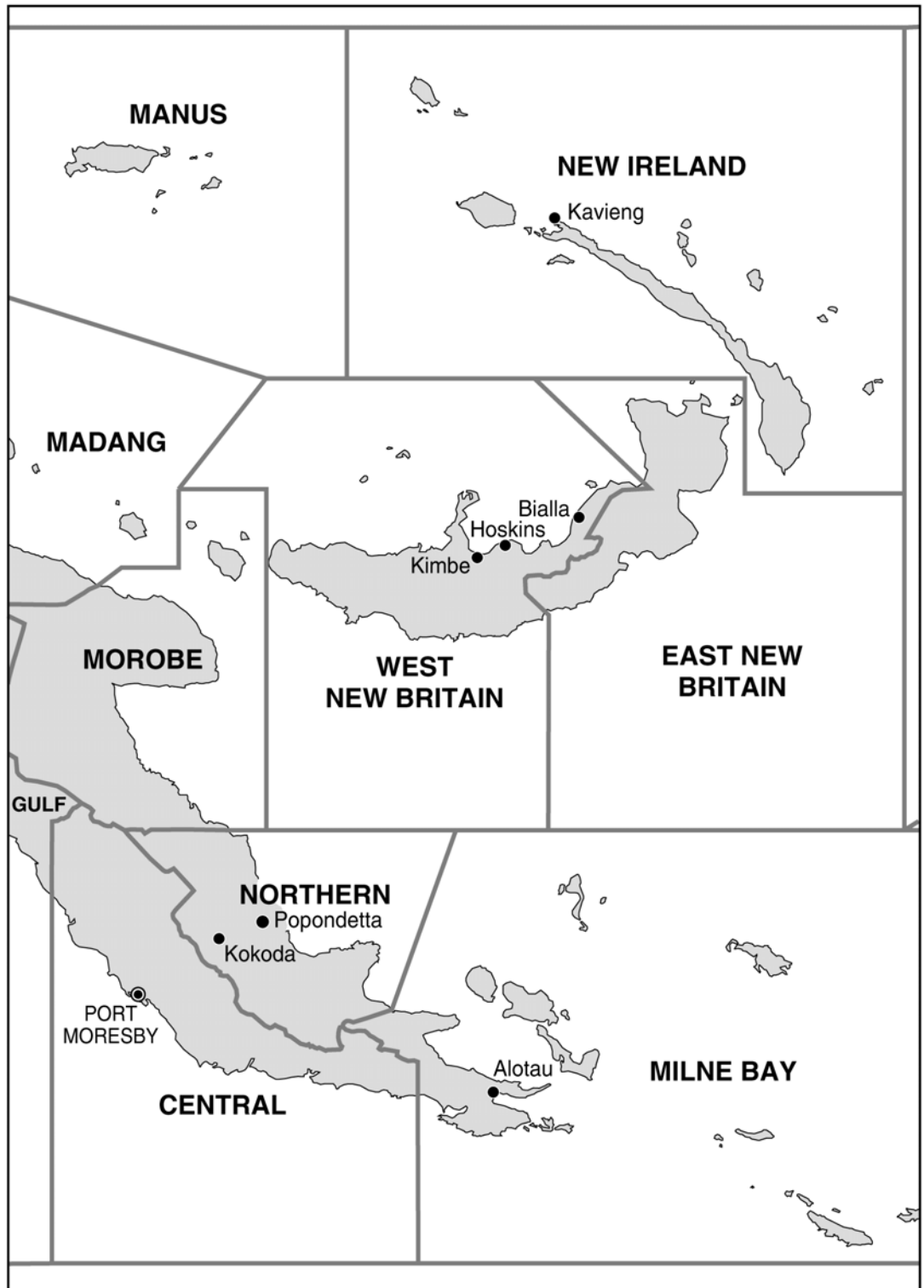


FIGURE 1.1. Oil palm areas in Papua New Guinea

The World Bank recommendation accorded at the time with the colonial administration's land settlement programme to open up alienated land for the voluntary resettlement of rural people from over-populated areas to "under-populated" regions of Papua New Guinea. Alienated land was subdivided into smallholdings for the primary purpose of cash crop production. The settlement schemes were viewed as a major vehicle to increase agricultural export production, improve rural incomes, integrate Papua New Guineans into cash crop production, relieve population pressure in some rural areas and to bring into production "unused" or under-exploited land (Hulme 1984, 81). The Australian colonial administration also considered that by establishing individualised holdings on land settlement schemes, Papua New Guineans would experience the benefits of an individualised land tenure system which, it hoped, would eventually replace customary land tenure (Hulme 1984, 86). Customary land tenure was considered inimical to the development of large-scale cash crop production.

The colonially administered land settlement schemes in the late 1950s and mid 1960s (based on crops other than oil palm) were small schemes and suffered from ad hoc planning, few services and minimal government supervision and guidance. Hence, the World Bank recommendation that oil palm be developed using a nucleus estate-smallholder model was enthusiastically accepted because it had the advantage of the smallholder settlement located around and supported by a central nucleus estate jointly owned by the government and a private company. The company would be responsible for managing the estate, establishing its own processing mill, marketing, and providing smallholders with planting material, technical advice and processing facilities (Christensen 1986).

As part of the settlement scheme policies of the 1950s and 1960s the Australian administration had obtained large tracts of land along the north coast of New Britain, and later viewed these as suitable for the development of an oil palm nucleus estate-smallholder scheme (Hulme 1984, 237). In 1966 the British plantation company, Harrisons and Crosfield applied to the administration to

develop an oil palm nucleus estate-smallholder project and the following year the first nucleus estate-smallholder scheme based on oil palm was established at Hoskins, a joint venture between the government and Harrisons and Crosfield (Longayroux 1972). The two parties registered New Britain Palm Oil Development Pty Ltd (NBPOD) as a joint venture company and in 1967 work began at Nahavio to develop oil palm production in the province.

Under the agreement NBPOD developed an oil palm estate and a processing mill and the Administration opened government land adjacent to the estate for 500 smallholders to settle and plant oil palm for processing by the company. Oil palm planting on customary land by the local indigenous population was also encouraged. The Hoskins scheme was considered by both parties as a pilot project (Longayroux 1972, 5), and it later became a model for other oil palm nucleus estate-smallholder schemes in Papua New Guinea (Hulme 1984).

1.2 Smallholder Schemes

1.2.1 Hoskins, LSS

The smallholder land settlement scheme developed by the administration at Hoskins was based on land holdings of approximately 6-6.5 hectares. It was expected that 4 hectares would be planted to oil palm, and the remaining area reserved for food gardens. Groupings of approximately 130-320 blocks became subdivisions, each with a central community centre containing a primary school, health centre, agricultural extension office, designated market area, stores and recreational facilities. Blockholders acquired 99 year agricultural leases over their blocks and were provided with loans from the Papua New Guinea Development Bank (PNGDB) for house building, oil palm seedlings, tools, land rent and to cover living expenses while waiting for the first harvest (Jonas 1972; Hulme 1984).

People from other provinces of Papua New Guinea acquired smallholder leases and the first settlers moved onto their blocks in July 1968. Whilst the agricultural leases were publicly advertised and open to all Papua New Guinea residents, preference was given to applicants from land-short areas, such as the

Chimbu, Maprik and Wabag areas, and the Gazelle peninsula of East New Britain. Hulme reports (1984, 242) that special government publicity committees were set up in these land-short areas to encourage people to resettle on the oil palm blocks. Many labourers involved with pre-settlement development were also allocated blocks and later Morobe Province was targeted as a recruitment area for settlers (Ploeg 1972; Hulme 1984). By independence in 1975, 1,536 LSS blocks had been planted to oil palm and the project's target of 1,560 blocks was achieved in 1975/76 (Hulme 1984, 241). The majority of settlers at that time were from East and West Sepik (42%), followed by Chimbu (22%), East New Britain (15%), Morobe (11%) and West New Britain (4%) (Hulme 1984, 242 – based on 1976 figures). Additional leasehold blocks were released in the 1970s and currently the Hoskins scheme has 1,634 LSS blocks (Table 1.1).

1.2.2 Hoskins, VOP

Following the initial development and establishment of the LSS scheme, attention was turned to indigenous landowners in the Hoskins area. The VOP project initially encouraged local villagers to plant 2 or 4 hectare blocks of oil palm on customary land, but most have planted only 2 hectares. Villagers were provided with PNGDB loans to develop their blocks and between 1970 and 1975, 182 VOP blocks were established (Leach and Benjamin 1984, 17). By the end of 1980 there were 418 blocks. VOP blocks were slow to develop at Hoskins, although further expansion was stimulated in 1986 following assistance from the Asian Development Bank (Christensen 1986). Presently, there are 3,021 VOP blocks in the Hoskins Scheme (Table 1.1). A feature of the VOP blocks is their lower productivity compared with LSS blocks.

1.2.3 Bialla

The government and company viewed the Hoskins scheme as a success because it surpassed many of its early production and earning goals (Hulme 1984, 253) and provided an impetus to regional growth and development in the province. Its perceived success led the government to set up similar oil palm nucleus estate-smallholder schemes at Bialla and Popondetta.

The Bialla scheme was established in 1972 following a joint agreement between the government and a Japanese company. However, a dispute between the government and the company delayed the commencement of the project and in 1977 a new agreement was signed with SIPEF (Belgium) and Warrens (United Kingdom) (Christensen 1986). A joint government and SIPEF-Warrens venture company, Hargy Oil Palms was formed. The basic operation and structure of

Table 1.1. Estate and smallholder production details for each oil palm scheme in Papua New Guinea.

	HOSKINS	BIALLA	POPONDETTA	MILNE BAY (Alotau)	NEW IRELAND (Lakuramau)
Company	New Britain Palm Oil Limited	Hargy Oil Palms Ltd	Higaturu Oil Palms Ptd Ltd	Milne Bay Estates Ltd	Poliamba Ltd
Ownership foreign/national	80% Kulim, Malaysia/15% WNBPA Gov, 5% other	50% SIPEF, Belgium/50% PNG Gov.	54% PACRIM, British/46% PNG Gov.	60% PACRIM, British/40% PNG Gov.	79% PACRIM, British/19% NIDC/2% other.
Total estate area (ha)	23,927	5,600	7,785	6,990	6,000
2000 estate production (tonnes FFB)*	555,680.97	82,374.58	147,141.52	197,885.0	103,739.1
Estate yields (t/ha)**	23.2	14.7	18.9	28.3	17.3
LSS blocks	3,021	2,161	1,045	nil	nil
VOP blocks	1,634	1,067	4,448	536	648
Total smallholder area (ha)	16,148	11,250	13,000	1,338	1,285
2000 smallholder production (tonnes FFB)*	277,642.7	119,730.01***	113,665.12	9,609.0	10,616.8
Smallholder yields (t/ha)**	17.2	10.6	8.7	7.2	8.3
% smallholder production to total production (2000)	33.3%	59.2%	43.5%	4.6%	9.3%
Total mini-estate area (ha)	7,128	nil	2,051	1,975	309
2000 production* (tonnes FFB)	833,323.6	202,104.59	260,806.64	207,494	114,355.9

Source: PNGOPRA data, ADS (PNG) 2001

* 2000 production figures derived from PNGOPRA data.

** yields calculated on 2000 production figures and total area (hectares).

*** production total also includes some smallholder crop in the Hoskins scheme.

the Bialla scheme mirrored that of the Hoskins scheme whereby the company partners agreed to develop a nucleus estate of oil palm and a processing mill and the government opened alienated land adjacent to the estate for smallholder leasehold settlement.

Settler selection for the Bialla land settlement scheme followed that of the Hoskins scheme with blocks publicly advertised and priority given to applicants from land-short areas of Papua New Guinea. A VOP programme was also established. By the mid 1980s, 900 LSS blocks and 110 VOP blocks had been established at Bialla (Christensen 1986, 139). The number of smallholder blocks has increased substantially over the last two decades and there are now 1,067 VOP and 2,161 LSS blocks (Table 1.1).

1.2.4 Popondetta

The Popondetta Oil Palm scheme was initiated in 1976 following a recommendation that the failed Popondetta cocoa scheme¹ be redeveloped as a nucleus estate-smallholder oil palm project (Harrison Fleming Advisory Services 1973 quoted in Hulme 1984, 216).

In 1976 the government entered into a joint venture agreement with the British Commonwealth Development Corporation (CDC) to redevelop the 16,000 hectare cocoa scheme into an oil palm nucleus estate-smallholder project (Grieve 1986). The two parties formed Higaturu Oil Palm Plantation Ltd (HOPPL²). In 1976 work began on developing a 4,500 hectare estate and processing facilities. The government, with World Bank funding, agreed to establish smallholder oil palm plantings which included a land settlement scheme for leasehold blocks similar to that operating in Hoskins and Bialla.

The resulting LSS scheme was a mix of the existing cocoa settlers (251 blocks), who were assisted to replant oil palm, and new settlers (544 blocks) from other provinces in Papua New Guinea (Hulme 1986, 298). By 2000, 1,045 LSS blocks had been established (Table 1.1).

VOP development at Popondetta was on customary land and on Land Tenure Conversion (LTC) blocks. Most of the latter were previously planted with cocoa and were incorporated into the oil palm project with the help of a ‘comprehensive package of resources’ for the planting and maintenance of oil palm (Fingleton 1972, 166). Like the growers at Hoskins and Bialla, VOP/LTC growers and LSS settlers were provided with Rural Development Bank credit to cover living costs, planting materials and housing loans.

Although the initial smallholder planting targets were not achieved in the early stages of the Popondetta project (Hulme 1984, 297), smallholder oil palm development grew steadily throughout the 1980s from 3,395 hectares in 1980 to 6,285 hectares by the close of the decade (OPIC file, n.d.). VOP smallholder holdings then expanded significantly from 1993 under the present World Bank funded “Oro Smallholder Oil Palm Expansion Project”. The project’s original objective was to plant an additional 6,000 hectares of smallholder oil palm by 1999. The enthusiastic planting of oil palm on VOPs has seen this target exceeded. By 2000 an additional 7,840 hectares had been planted, bringing the total area of smallholder plantings to approximately 13,000 hectares (ADS (PNG) 2001, 17).

1.2.5 Milne Bay

Milne Bay started in 1985 following government approval for the development of a K60 million oil palm and cocoa scheme (Grieve 1986). The government in a joint venture with Commonwealth Development Corporation planned to establish 4,000 hectares of oil palm and 750 hectares of cocoa (Christensen 1986, 139), and Milne Bay Estates Ltd was formed (now a subsidiary of Pacific Rim Plantations Ltd). The project, with World Bank funding, was seen as a major vehicle for bringing sustainable economic development to the province. One thousand hectares of smallholder village oil palm on customary land was also planned, but unlike previous oil palm nucleus estate-smallholder projects, no State land settlement scheme with leasehold blocks was established. By the mid 1980s, policies of land settlement had fallen out of favour with government

and were no longer viewed as a major strategy in rural development (see Jones & McGavin 2001).

Milne Bay Estates began planting in 1986, and over the next five years 4,661 hectares of estate plantations and 383 hectares of VOP blocks were under cultivation (Konimor 1991). World Bank funds provided credit to growers to establish oil palm blocks. Although cocoa was planted on one of the company estates (Sagarai) in 1993 it was converted to oil palm due to disease problems. Now, estate planting has increased to 6,990 hectares with plans for further expansion (ADS (PNG) 2001, 20). The development of estate plantations is being hampered by land disputes with customary landowners (OPIC 1998, 23).

Village oil palm has been established on customary land under Clan Land Usage Agreements (CLUA) to facilitate loan requirements (OPIC 1998, 20). Presently, 1,338 hectares of village oil palm are planted, numbering 356 smallholder farmers (ADS (PNG), 2001), with expectations that numbers will continue to grow over the short term. Unlike other oil palm schemes in Papua New Guinea, smallholders' contribution to total production is only around 5%, considerably lower than that of other schemes (Table 1.1).

1.2.6 New Ireland

New Ireland is the most recent and smallest oil palm scheme in Papua New Guinea. The company, Poliamba Pty Limited (subsidiary of Pacific Rim Plantations Ltd), operates the estate and mill process and was formed in 1998 following the restructuring of a group of cocoa and copra plantations in that province (Papua New Guinea Oil Palm Association 1998). The company completed most of its planting in 1992 and plantings total around 5,200 hectares (ADS (PNG) 2001).

Village oil palm plantings were established in 1991 with financial support from the Rural Development Bank of Papua New Guinea. The area planted to oil palm remains limited with less than 1,300 hectares planted on customary land (Table 1.1).

Details of company ownership, estate and smallholder hectareage and production for each oil palm scheme is provided in Table 1.1. The Oil Palm Industry Corporation's (OPIC) strategic priorities (1999-2003) for each scheme are listed in Appendix 1.1.

1.3 Government and Private Support in the Establishment of the Oil Palm Industry in Papua New Guinea

The establishment of the industry based on the nucleus estate-smallholder model facilitated private investment in Papua New Guinea. Substantial private investment was required to establish the estates and associated processing and marketing facilities. Large-scale private investment continues as the industry expands in the five project areas. For example, New Britain Palm Oil Limited had estimated capital expenditure of K47.4 million for 1999 and K59.2 million for 2000. Much of this is for developing estate lands and processing facilities at Numondo and Kulu-Dagi and Inland Kove (NBPOL 1999). Hargy Oil Palm Ltd is also investing over K20 million in the construction of a new mill at Navo. Presently, private investors are examining the feasibility of expanding oil palm to other provinces, namely Gulf, East New Britain, Madang and East Sepik.

The establishment of the oil palm industry in Papua New Guinea also received considerable financial support from government and international donors, though this varied between the different schemes. The government was joint owner in the early nucleus estate schemes in West New Britain and Popondetta, and remains a major shareholder in Bialla, Popondetta and Milne Bay. Also, the World Bank and the Asian Development Bank have played a substantial funding role in establishing the industry in Papua New Guinea. The World Bank provided funding support for much of the development of the smallholder sector at Hoskins, Popondetta and Milne Bay.

The government and overseas donors continue to provide substantial support to the industry, although government support is in decline. The government provides smallholder extension services (though increasingly funded by a levy

on growers), industry subsidies, credit for smallholders and is responsible for the provision of services and infrastructure. Currently, the largest overseas funded project, the World Bank Oro Expansion Project which began in 1993 has received in excess of US\$27 million in funds.

1.4 Structure of the Oil Palm Industry in Papua New Guinea

The estate companies own and operate the processing mills and their own plantation estates. Some also take responsibility for transporting smallholder fruit to their processing mills and providing seedlings, technical services and advice to smallholders.

In most of the project areas, smallholder oil palm fruit is harvested fortnightly and stacked at the roadside edge of the block for collection by the company for processing. A harvest can take up to 3-4 days work depending on the area planted to oil palm, age of palms and the number of people assisting with harvesting. The fruit is cut, transported to the road in wheelbarrows and stacked for weighing and collection. When fruit is harvested, or over-ripe, oil palm fruitlets become dislodged from the main bunch. This loose fruit is separately collected by women and weighed, and can account for up to 14% of the harvest. A long-term concern for the oil palm industry has been the high rate of loose fruit wastage. The recent introduction in several schemes – Hoskins, Popondetta and Biella - of a separate payment card for women to collect loose fruit has led to large increases in loose fruit collection (Chapter 8).

Smallholders sell their fruit to the company, and depending on the project area, are paid either fortnightly or monthly. The price paid for the fruit is determined by the world price of palm oil and is based on an agreed formula developed by the Papua New Guinea Government, the companies and the growers' associations. There is some variation in the price paid to smallholders by the different companies, largely as a result of varying transport costs between project areas.

Despite the rise in land disputes (Chapter 6), the nucleus estate-smallholder model has worked well. Not only do smallholders generally have good access to transport and processing facilities, technical support and a regular income, but the presence of a large plantation estate also provides additional employment opportunities for smallholders. This is especially beneficial for the growing population on the LSS. Also, for the milling company the nucleus estate-smallholder model provides the company with access to a larger area of land planted to oil palm.

With the restrictions and difficulties of alienating land for project developments, the industry, since the late 1990s, has been developing mini-estate schemes. Presently, approximately 11,500 hectares are under mini-estate production, with planned expansion of over 30,000 hectares in the near future. Bialla is the only scheme that has not established mini-estates. Mini-estates allow companies access to customary land for oil palm through a lease, lease-back arrangement with an Incorporated Landowning Group (ILG) – a legally-constituted landowning corporate body. The customary land is leased to the National government which then sub-leases it back to the ILG. The ILG in turn leases the land to the company for development. Leases are usually for a 20 or 40 year period during which time the company takes responsibility for the management of the mini-estate, and the landowning group receives an annual rental fee as well as annual royalty payments on the production. In the case of NBPOL, landowners are also issued company shares – the number depending on the hectares leased and the lease period. The lease, lease-back system is not new to Papua New Guinea and is operating in several resource development projects.

1.5 Structure of Governance in the Oil Palm Industry

The industry consists of several institutions namely, the Oil Palm Industry Corporation, Papua New Guinea Oil Palm Research Association, Oil Palm Growers Associations, and the Papua New Guinea Palm Oil Producers Association. Each is discussed below.

1.5.1 Oil Palm Industry Corporation (OPIC)

Agricultural extension services to smallholders were initially under the management of the Department of Agriculture and Livestock (DAL). In 1992, as part of the government's corporatisation and agricultural reform policies, the Oil Palm Industry Corporation (OPIC) was established as a quasi government agency. OPIC is financed by a smallholder crop levy of K3.50/tonne which is matched by the oil palm companies. International aid funding also provides significant financial support for the organisation.

The central role of OPIC is to provide extension services to smallholders and to:

- increase smallholder productivity;
- promote improved farm management techniques;
- provide advice and education regarding oil palm production methods;
- enhance the well-being of smallholders.

OPIC is also responsible for liaising with the government, oil palm companies and other organisations involved in the industry. To facilitate OPIC's role, Local Planning Committees have been established in each of the five project areas. These committees consist of the OPIC project manager and a representative from the local growers association, provincial government, plantation company and the Oil Palm Research Association. The Committee meets regularly to discuss, plan and monitor the work of OPIC and to act as a forum for various stakeholders to raise various issues of interest or concern. OPIC's mission statement and five year strategic plan for 1999-2003 are presented in Appendix 1.2.

1.5.2 Papua New Guinea Oil Palm Research Association

Oil palm research began in 1967 when the Dami Oil Palm Research Station in WNB was established by Harrisons and Crosfields. As the industry expanded, a single research organisation that serviced all project areas was considered necessary for the industry. In 1980 the Papua New Guinea Oil Palm Research Association (OPRA) was formed between the government, the plantation companies and the smallholder sector. OPRA is financed by a smallholder and

plantation crop levy, some government funding and many of its research projects are funded by external (largely overseas) research grants.

OPRA's main areas of research include agronomy (in particular soil chemistry and plant nutrition), entomology, smallholder studies, and plant pathology. The research underpins OPRA's major role in developing new technologies and farm management techniques to improve oil palm production. The association also provides technical support and training to smallholders, extension officers and plantation company officers. OPRA's research output is in the form of academic and conference papers, technical reports and information bulletins for disseminating information throughout the industry.

1.5.3 Papua New Guinea Palm Oil Producers Association (POPA)

The Palm Oil Producers Association represents the interests of the milling companies. It liaises and negotiates with governments for positive support for the oil palm companies and the industry as a whole.

1.5.4 Oil Palm Growers Associations

Each project area has a smallholder Oil Palm Growers Association which represents the interests of smallholders to the industry bodies such as the companies, OPIC and OPRA and to National/provincial governments. The Chair of each growers' association sits on the board of OPIC and represents smallholders at Local Planning Committee meetings. Smallholder membership is voluntary and an annual subscription fee helps fund the associations.

The extent of smallholder involvement in the associations varies between project areas and over time. At various times the associations have experienced problems with financial mismanagement resulting in members losing confidence in their organisations. For example, in 2000 the membership of the Hoskins growers association numbered 89 growers, representing a substantial fall in membership from 500-600 members in the mid 1990s. The massive loss of members resulted from misappropriation of the growers' association funds. In Popondetta the Growers Association membership has been limited due in part

to the perception amongst settlers that the organisation is dominated by local landowner interests.

1.6 Current State of Oil Palm Industry in Papua New Guinea

Most of the development of the oil palm industry occurred in the decade 1975-1985. Since the first commercial plantings in 1968 at Nahavio, West New Britain over 50,000 hectares are now under estate cultivation and over 43,000 hectares have been planted by smallholders. Since 1997 approximately, 11,463 hectares have been planted to mini-estates. Growth of the industry has benefited enormously by the introduction in the early eighties of a pollinating weevil³ (*Elaeidobius kamerunicus*) and more recently by higher yielding and disease resistant strains of oil palm.

In terms of total exports the oil palm industry is emerging as the most important agricultural export industry in Papua New Guinea. Over the last few years oil palm has been one of the fastest growing agricultural exports in the country and has performed remarkably well, especially compared to other tree crop exports (Tables 1.2 and 1.3). Last year the value of oil palm exports exceeded coffee for the first time (DAL data, 2001). In 2000 oil palm exports accounted for 32% of the total value of Papua New Guinea's agricultural exports, and 5% of total Papua New Guinea exports (data held by DAL, 2001). The total value of palm oil exports for 2000 was K302.5 million, a substantial increase from K142.2 million in 1995. In the same period the volume of palm oil exports increased by 77.5% (Table 1.3).

Table 1.2. Values and quantities of Papua New Guinea agricultural exports 1990-2000.

	1990 Value (Kmillions) Amount (‘000 tonnes)	1991 Value (Kmillions) Amount (‘000 tonnes)	1992 Value (Kmillions) Amount (‘000 tonnes)	1993 Value (Kmillions) Amount (‘000 tonnes)	1994 Value (Kmillions) Amount (‘000 tonnes)	1995 Value (Kmillions) Amount (‘000 tonnes)	1996 Value (Kmillions) Amount (‘000 tonnes)	1997 Value (Kmillions) Amount (‘000 tonnes)	1998 Value (Kmillions) Amount (‘000 tonnes)	1999 Value (Kmillions) Amount (‘000 tonnes)	2000 Value (Kmillions) Amount (‘000 tonnes)
Palm Oil	33	53	64	79	78	142	182	207	272	338	303
	143	200	206	246	231	187	267	275	213	254	331
Coffee	103	80	68	101	205	215	190	326	476	417	291
	63	47	53	63	65	55	62	59	84	79	65
Cocoa	30	34	34	33	29	48	66	73	82	85	83
	34	36	39	38	26	31	41	39	26	29	37
Copra	9	5	12	14	15	27	49	47	39	66	60
	55	44	48	59	50	64	99	90	58	63	66
Copra Oil	12	13	24	20	20	30	51	51	70	96	66
	35	33	35	46	35	33	50	49	53	50	48
Rubber	2	2	2	3	3	4	4	7	7	5	6
	2	3	3	4	3	3	3	4	5	4	4
Tea	7	5	7	7	4	5	13	10	19	19	20
	5	5	6	6	3	4	9	7	7	8	8

Source: Bank of Papua New Guinea and DAL statistics

Table 1.3. Percentage changes in the quantities of Papua New Guinea agricultural exports.

AGRICULTURAL EXPORT CROP	PERCENTAGE CHANGE IN QUANTITY 1991-1995	PERCENTAGE CHANGE IN QUANTITY 1995-2000	PERCENTAGE CHANGE IN QUANTITY 1991-2000
Palm Oil	-6.5	77.5	65.9
Coffee	18.2	18.8	40.5
Cocoa	-14.5	22.5	4.7
Copra	45.9	3.6	51.1
Copra Oil	-0.30	45.0	44.5
Rubber	94.6	-17.8	59.8
Tea	-10.6	102.3	80.8

Source: Bank of Papua New Guinea and DAL statistics

Currently, there are over 14,500 smallholder oil palm blocks. In 2000, smallholders produced 531,264 tonnes of FFB and earned approximately K36.5 million from oil palm (ADS (PNG) 2001, 1). At Hoskins alone, approximately, K1-1.5 million enters the economy every month (ADS (PNG) 2001, ii). In 2000, smallholders accounted for 43% of the area under oil palm and 33% of total production.

Whilst there have been large increases in production and the area planted by smallholders (Table 1.4), improving smallholder productivity (production per unit area) remains the industry's major challenge. Smallholder productivity continues to be much lower than the estate plantations (Table 1.1), and VOP productivity is consistently lower than the LSS (except for Popondetta). A priority of the industry is to increase smallholder production as a proportion of total production to at least 50% by 2003 (OPIC 1998, ii). This is to be achieved through expanding the area under cultivation and by increasing the productivity of existing blocks.

Table 1.4. Smallholdings of oil palm in 1998 and 2000.

PROJECT	1998	2000
	SMALLHOLDER OIL PALM (HECTARES)	SMALLHOLDER OIL PALM (HECTARES)
HOSKINS	11,180	16,148
BIALLA	9,279	11,250
POPONDETTA	9,931	13,000
MILNE BAY	1,060	1,338
NEW IRELAND	975	1,285
TOTAL	32,425	43,021

Source: OPRA data and ADS (PNG), 2001

Oil palm appears to have several attributes that make it suitable for smallholder production:

- It has few pest and disease problems.
- It grows on a wide range of soils and requires little maintenance.
- Oil palms can tolerate a lot of neglect and can be quickly brought back into production. If oil palm prices collapse, harvesting can be abandoned until prices rise again.
- Although yields vary seasonally, palms produce all year, providing smallholders with a regular income (unlike coffee which has a very short harvest season).
- Because of the nucleus estate model smallholders generally have good access to processing and marketing facilities.
- Better world prices.

Endnotes

1. The Popondetta cocoa scheme established in the 1950s allocated leasehold blocks to Australian ex-servicemen. A smaller area of leasehold blocks was opened up for Papua New Guineans: most being from Popondetta and a small minority from other provinces in Papua New Guinea. The average block size was approximately 10 hectares (Hulme 1984, 216).
2. In 1995 HOPPL was renamed Higaturu Oil Palms – a member of the Pacific Rim Plantation Pty Ltd Group. In 1995 Pacific Rim Plantations Ltd was formed following a restructuring of CDC. It was a joint venture between the PNG government and CDC.
3. The pollinating weevil eliminated the need for hand pollination of the palms every few days, and this vastly improved pollination rates and lowered labour costs on the plantations and reduced the demands on labour in the smallholder sector.

CHAPTER TWO

FORMULATION OF PROBLEM AND RESEARCH DESIGN

2.0 Research Problem

During 1999 funding was approved by ACIAR for a joint ANU/Curtin/PNGOPRA project to research the socio-economic constraints that affect productivity among smallholders. The primary aim of the research was to help improve smallholder oil palm productivity.

Smallholder production in Papua New Guinea has been increasing steadily over the last decade (Table 2.1). In 2000 total smallholder output was 531,264 tonnes, a doubling of production since 1994. However, a characteristic of smallholder production is that yields for both LSS and VOP growers are much lower than those for the plantation sector (Table 2.2), and average yields per hectare for the VOPs are consistently lower than that of the LSS (except for Popondetta). There is also considerable variation in productivity among individual smallholders. Some LSS and VOP smallholders consistently maintain productivity levels at or near estate productivity levels, while other smallholders have consistently low productivity levels.

Table 2.1. Smallholder production by project 1994-2000 (FFB tonnes)

YEAR	Hoskins	Bialla	Popondetta	Milne Bay	New Ireland	Totals
1994	120,733	79,425	59,374	4,101	67	263,633
1996	146,140	93,627	75,177	8,537	1,357	324,838
1998	210,918	83,708	94,280	7,793	2,505	399,204
2000	277,643	119,730	113,665	9,609	10,617	531,264

Source: POPA 1998 and data held by OPRA

Table 2.2. Comparison of smallholder and estate productivity by project for 2000 (tonnes/hectare)

	Hoskins	Bialla	Popondetta	New Ireland	Milne Bay
Smallholder	17.2	10.6	8.7	8.3	7.2
Estate	23.2	14.7	18.9	17.3	28.3

Source: OPRA data

A primary goal of the industry is to increase smallholder production and productivity through a range of interventions such as increased fertiliser use, access to credit for tools and seedlings, harvesting cards for women and promoting better farm management techniques amongst smallholders (Chapter 7). These interventions have mostly been geared to increasing yields through intensification of inputs by improving block maintenance, switching to higher yielding palms and encouraging the participation of women in oil palm production.

Although it is widely acknowledged by the industry that diverse socio-economic factors interact with agronomic practices to explain variations in productivity between growers, few studies have examined the socio-economic constraints among smallholders. One key work is the Landell Mills (1991) study at Hoskins. That study identified the socio-economic factors associated with four smallholder production categories (0-25, 25-50, 50-75 and 75-100 percentiles of mean block productivity), and concluded that variations in productivity were attributable to incomplete harvesting, post-harvest loss and poor agronomic practices. It was suggested that labour shortages, conflicts over land, disputed inheritance, off-block residence and employment, time management between customary obligations, community commitments and oil palm production, together with illness and aging among the original owners were explanatory factors. By using high, medium and low production categories the study identified the main constraints operating in each category (Table 2.3).

Table 2.3. Factors affecting production on low, medium and high producing blocks

PRACTICE	LOW PRODUCERS	MEDIUM PRODUCERS	HIGH PRODUCERS
Harvesting	Abandoned block Incomplete harvesting Irregular harvesting Less than 12 pick ups p.a.	Incomplete harvesting Irregular harvesting 12-20 pick ups p.a.	Complete harvest Regular harvest every 14 days 20 + pick ups p.a.
Lus Frut collection	None	Sometimes	Always
Fertiliser	None	Unevenly administered Not enough	Correct amounts Correctly administered
Weeding	None	Inappropriate weeding Not enough Irregular weeding	Good technique Regular weeding
Herbicide	None	Inappropriate use	Adequate use
Replanting	None	Not at right time Not enough	Well planned
Poisoning	None	Not at right time Poisoned trees burnt or left to stand	Well planned Poisoned trees knocked over

Source: adapted from Landell Mills 1991

2.1 Formulation of Research Questions

Workshops with OPIC extension officers were conducted at the beginning of fieldwork at Hoskins and Popondetta to draw on their knowledge and experience to refine the research questions and to ascertain their understanding of the primary factors explaining variations in productivity. A similar framework of smallholder production categories to that used in the Landell Mills study was adopted in the workshops. At the workshops a comprehensive list was made of what extension officers identified as the primary factors influencing smallholder production. The results from each workshop are presented in Tables 2.4 and 2.5.

Several important findings and research questions emerged from the OPIC workshops. First, extension officers at both project schemes stressed how individual smallholders frequently shift between the “high” and “low” producer categories through time. Several of the factors identified to explain low production, such as illness, death, or disputes over tenure and/or conflicts between family members on a block were raised in relation to how the occurrence of these types of events can suddenly shift a smallholder from high

Table 2.4. Factors identified by OPIC officers to explain high and low production among Hoskins smallholders

	HIGH PRODUCTION	LOW PRODUCTION
PHYSICAL FEATURES	Good soils. Good terrain conditions and drainage.	Poor soils. Poor terrain conditions and poor drainage.
AGRONOMIC AND FARM MANAGEMENT PRACTICES	Regular harvesting More likely to harvest rear section of block. Regular and correct use of fertiliser. Well maintained tools regularly available for harvesting. Well maintained block. Introduction of the Badang to overcome labour shortages, irregular harvesting and terrain problems.	Irregular harvesting. Low harvesting rate at rear of block. Harvesting rate decreases away from the road (i.e., strong edge-effect). Fertiliser use poor or irregular. Harvesting tools often unavailable for harvesting or broken and not repaired promptly. Poorly managed block.
LABOUR CHARACTERISTICS	Co-operation of all family members (<i>wok bung</i>) in production. Organised, hard-working family unit. Limited labour availability overcome by use of contract work (e.g., contract workers used to apply fertiliser and for block maintenance). Visitors provide additional labour for harvesting and block maintenance work.	Elderly blockowner with limited labour supply. Limited labour availability unable to be overcome. Usually the result of family conflict. Labour disorganised. Illness and poor health, but no support with block maintenance or harvesting.
INTRA-HOUSEHOLD RELATIONS AND DECISION MAKING INCOME DISTRIBUTION	Family unity and cohesiveness. All the family benefits from income earned on block. All co-operate to harvest and maintain block.	Family conflict. Reluctance to share income. One person controls the money and thus little incentive for other family members to harvest. Too many visitors on the block wanting to share in the income. Can act as a disincentive to harvest regularly.
TIME AND CASH MANAGEMENT SKILLS	Good cash management. Community type distractions limited. Good time management. Limited demands on their time from customary obligations.	Community distractions which remove labour from oil palm production (e.g., funerals, local and community politics and customary obligations). Poor cash management. Spending money on beer often results in low block maintenance and less commitment to production
TENURE SECURITY		Inheritance problems on the LSS acts as a disincentive as ownership uncertain. Land disputes, either with customary owners or within the family.
ECONOMIC MOTIVATION	Economic pressure to earn a high income (e.g., some households motivated by school fees, debt repayments, etc. Once economic pressure is removed (e.g., payment of school fees) then the household can shift to lower production levels.	Limited or no economic pressure to earn a high income (e.g., VOPs blocks). Less economic pressure to harvest as they have greater access to subsistence and alternative sources of income (e.g., cocoa).
LEVEL OF INTEREST		Young people lack commitment to the industry, or pride in the block. They are interested in money, but not interested in maintaining the block. Multiple block owners. Several low producers are multiple block owners, especially on VOP. Lazy grower.

Source: data collected from workshop with OPIC officers at Hoskins, Nahavio, 22nd August, 2000

Table 2.5. Factors identified by OPIC officers to explain high and low production among Popondetta smallholders

	HIGH PRODUCTION	LOW PRODUCTION
PHYSICAL FEATURES	Favourable topography	Poor topography.
AGRONOMIC AND FARM MANAGEMENT PRACTICES	Regular harvesting. Owner harvests and maintains all the block. Adequate supply of tools.	Irregular and partial harvesting. Only harvests and maintains front section of the block. Lack of tools. Old palms on block. Grower tends to harvest only the younger and shorter palms.
LABOUR CHARACTERISTICS	Most family members involved with harvesting.	Family members unwilling to provide labour due to family conflicts. Off-block employment – less labour for oil palm.
INTRA-HOUSEHOLD RELATIONS AND DECISION MAKING	Co-operation between family members. Disputes rare.	Disputes within family. Mainly between brothers, between fathers and sons and sometimes between sons and step-fathers.
INCOME DISTRIBUTION	Fair distribution of income within family.	Unequal distribution of income acts as disincentive to family members to harvest.
TIME AND CASH MANAGEMENT SKILLS	Good cash management. Balanced social and community obligations.	Poor cash management. Customary obligations takes time away from oil palm production.
TENURE SECURITY		Land ownership disputes on VOP blocks. Some blocks being reclaimed or compensation demands made. Insecurity of tenure of LSS blockowners acts as disincentive to production and improving living standards.
ECONOMIC MOTIVATION	Rely heavily on oil palm income and block to provide family sustenance. No alternatives. Fall in oil palm prices has only limited impact on production.	VOP smallholders have good access to garden land and other subsistence resources. Do not need to rely heavily on oil palm. Fall in oil palm prices acts as disincentive. Some stop harvesting and maintaining the block.
LEVEL OF INTEREST	Personal character. Competitive and plans ahead. Readily listens to extension advice.	Personal character. Grower ‘lacks vision and initiative’. Some growers resist change. Unwilling to listen to extension advice.

Source: data collected from workshop with OPIC officers at Popondetta, 26th September, 2000

to low production. Conversely, a low producer can over time move from low production to high production when problems are resolved on a block. Hence, at both Hoskins and Popondetta, extension officers maintained that individual smallholder productivity is highly variable and often fluctuates in response to social factors affecting the well-being of smallholders and the level of social harmony on the block. The discussion raised several research questions:

What explains the high variability in production among smallholders?

Why is there so much movement between production categories?

What influences the level of social harmony on a block?

How useful is the high-low production dichotomy in capturing the complexity of inter- and intra-household processes operating on a block?

Second, extension officers stressed poor cash and time management as an ongoing constraint on smallholder production. The discussion revealed how men and women are involved in a diverse range of activities that draw on their labour and time (e.g., customary obligations, off-block employment, visitors and gardening), and oil palm is only one of these activities. However, extension officers emphasised that some of the negative factors identified as affecting production, such as customary obligations and hosting visitors from home (Hoskins only) are also important dimensions of life quality. Fulfilling customary obligations and hosting visitors from home strengthens social bonds and is a valued part of social life. Also, it must be kept in mind that high producers continue to participate in customary exchange and host visitors. In the Landell Mills study (1991, 42), for example, a quarter of the top producer households had family members who had visited their home villages during the five month survey period. The discussion drew attention to the following research questions:

How are non-oil palm activities and responsibilities (e.g., customary exchange, off-block employment, gardening) managed or integrated into household economies and production practices?

What is the relationship between non-oil palm activities and oil palm production? Do non-oil palm labour and time demands compete with oil palm production or do they have a positive influence whereby they contribute to household livelihood security?

What is the relationship between non-oil palm activities and social stability on blocks?

Following the workshops at Hoskins and Popondetta we compiled the factors extension officers identified as affecting smallholder oil palm production (Table 2.6).

Table 2.6. Compilation of factors affecting oil palm production at Hoskins and Popondetta

HIGH PRODUCTION	LOW PRODUCTION
Favourable topography	Poor topography
Regular and complete harvesting	Irregular and partial harvesting
Well maintained block	Poorly maintained block
Family cohesion	Family disputes common
Co-operation of most family members in harvesting	Few family members participate in harvesting
Secure land tenure	Land tenure is insecure or under dispute
Fair/undisputed distribution of oil palm income	Income distribution unfair/contested
Economic pressure to harvest	Less economic pressure to harvest (mostly on VOP blocks)
Good time management of customary and community obligations	Customary and community obligations take time away from oil palm production
Good cash management	Poor cash management
High commitment/interest in oil palm industry	Low commitment/interest in oil palm industry
Well maintained and adequate supply of tools	Lack of available tools for harvesting

Table 2.6 highlights the key variables that required further investigation of their influence on smallholder production. These were:

- Physical factors.
- Agronomic and farm management practices.
- Intra-household relations and decision-making.
- Income distribution.

- Time and cash management skills.
- Tenure security.
- Economic necessity to harvest.
- Level of interest in oil palm harvesting.
- Personal characteristics of growers.

These variables were incorporated into the research design of the project. The study aimed to investigate the links and interactions between these variables to reach a fuller understanding of the constraints on and variations in smallholder productivity.

Most of the factors identified in Tables 2.4, 2.5 and 2.6 are largely internal to a block. Extension officers also identified a range of external factors affecting smallholder production and commitment to the industry. The study therefore also explored, where relevant, the impact of the following on smallholder production:

- Company transport systems (for the collection of smallholder fruit).
- Road conditions.
- Extension and company-smallholder services and initiatives.
- Effectiveness of the Lands Department to resolve land disputes.
- Law and order problems.

2.2 Objectives of the Study

After consultation with the main stakeholders in the project area (smallholders, OPIC, oil palm companies), several modifications were made to the initial aims and objectives outlined in the original project document. The final objectives of the project were to:

- gain an understanding of the socio-economic constraints on smallholder production, especially the socio-economic factors operating within households that help explain household productivity and the range of agronomic practices.

- Evaluate the Mama Lus Fruit Scheme. The aims were to learn how the scheme has changed production practices within the household and to assess its impact on women, household income and labour flows.
- Develop strategies for more effective extension interventions through working with smallholders, OPIC staff and the companies.
- Make recommendations for change that might result in further increases in smallholder productivity.
- Produce a “toolkit” for extension officers. The toolkit is designed to be a learning manual to improve extension skills and strategies for increasing smallholder productivity.

In summary, the expected benefits of the project were:

- improved understanding of the circumstances and decision-making of smallholders;
- interventions to raise productivity better tailored to the needs and circumstances of smallholders;
- the enhanced economic viability and social stability of the smallholder sector in the longer term.

2.3 Description of Research Design

2.3.1 Research sites

Fieldwork was limited to the Hoskins and Popondetta oil palm projects because of logistical constraints and the requirements of the study to have LSS smallholders included in the study. New Ireland and Milne Bay do not have oil palm LSSs and were therefore unsuitable for investigation in this study. The Bialla project was omitted because at the commencement of the project, Hargy Oil Palm had withdrawn financial support for key industry organisations such as OPIC and OPRA, so their support of the project was not guaranteed.

The Hoskins and Popondetta sites provided an interesting contrast as smallholder and plantation development at each site occurred under different historical, economic, social, and political contexts. Also, both companies and OPIC offices have recently introduced several smallholder programmes and are actively promoting expansion of the smallholder sector.

2.3.2 Research Design

The research design was based on a combination of methodologies involving semi-structured interviews, case-studies, questionnaire surveys, workshops, focus groups, analysis of industry smallholder data bases and review of relevant reports and published literature. The research relied on in-depth qualitative interviews with smallholder families. The multi-method approach enabled a comprehensive understanding of the factors influencing smallholder production, especially from the perspective of smallholders. This approach also provided a means of cross-checking and validating information across smallholder families as well as providing leads into important areas of inquiry.

Key stakeholder groups that participated in the research included:

1. Smallholders (men and women).
2. Oil palm companies.
3. OPIC.
4. Industry associations, such as the Oil Palm Growers Associations, and
5. Customary landowners.

Most data were collected from August 2000 to the end of January 2001 (four months at Hoskins and two months at Popondetta) by two research scientists (funded by the project) and an OPRA-employed research assistant at each project site. Additional data were collected by OPRA's agronomist, GIS researcher and research assistants during February to April 2001.

Initially at each site, OPIC and company smallholder production data bases were analysed, discussions were held with OPIC field and project managers,

and field visits undertaken with OPIC extension officers to all LSS and some VOP subdivisions.

2.4 Data Collection

Data collection in Hoskins and Popondetta was divided into four parts:

1. Weekly interviews and surveys with selected smallholder households (six weeks at Hoskins and four weeks at Popondetta).
2. Interviews with key industry personnel, workshops with OPIC extension officers and focus groups with smallholders.
3. Bio-physical and socio-economic smallholder survey.
4. Review of company and OPIC data bases, reports and other published material.

2.4.1 Weekly interviews and surveys with smallholder households

The main purpose of the weekly surveys/interviews was to develop household case studies to reveal the socio-economic dynamics within and between households resident on a block. This was to contribute to an understanding of the range of agronomic practices within the smallholder sector, including how households respond to and accommodate new industry initiatives to increase smallholder productivity.

At Hoskins and Popondetta a total of 12 households at each site were initially selected from one LSS and one VOP for the weekly survey/interviews. The sample was restricted in size and confined to one LSS and one VOP for several reasons:

- Small sample size is more suitable for household case study analysis using repeat interviews based largely on qualitative research methods. Using qualitative interview techniques, each interview generally takes between one and two hours. This allows for three smallholder interviews per day.
- Logistically, it was more appropriate to confine the study to a small geographical area as distances between blocks and subdivisions are too great to allow more than two sites of data collection in each project

area. Also, if the family is absent it is easier to return later in the day after completing an interview with another family in the same subdivision. This would not be possible if the interviews were spread across several subdivisions.

- Time constraints.

Smallholder households were selected on a range of characteristics, including demographic profile of block, access to labour and production performance (high, medium and low producers). The study also included a mix of ethnic groups on the LSS schemes. Smallholder production data from company and OPIC data bases for the previous 18 months, and information gained from OPIC officers were used in the final selection of households.

At Hoskins, the LSS and VOP subdivisions chosen for weekly surveys were Kavui LSS subdivision and Gaungo VOP. Kavui was established in 1972 and currently has 319 registered blocks. It is typical of most LSS subdivisions and was chosen after several subdivisions were deemed unsuitable for data collection (e.g., security risks, recent inter-ethnic conflicts, or only recently established, such as Siki). Also, according to OPIC, Kavui was fairly “stable” socially and in terms to production.

The first oil palm plantings at Gaungo were in 1974/75 when 12 blocks were planted. Initially the establishment of oil palm blocks at Gaungo was slow, but in the last fifteen years oil palm has expanded considerably, partly because of better road infrastructure and land being “sold” to “outsiders”. Gaungo currently has 320 registered oil palm blocks, and a further large area is presently being subdivided into blocks for planting oil palm.

Gaungo was selected for several reasons: recent and rapid expansion of oil palm; the movement of villagers to reside on their blocks rather than in the village; the trend to “sell” village land to “outsiders” (migrants); and access to alternative sources of income such as fishing and other cash crops. The latter is a feature of many coastal VOPs, and the “sale” of customary land is also occurring at several other VOPs in the Hoskins scheme.

At Popondetta, Sorovi LSS and Igora VOP were selected for the study. Sorovi LSS was chosen largely because the Mama Lus Frut Scheme had been introduced earlier that year and the research team were interested to learn of any changes to production since its introduction. Igora VOP was chosen because it had a mix of producers with recent and lengthy engagement with the oil palm industry. However, due to access problems (e.g., Plate 2.1), Igora VOP was dropped from the study after two weeks and Igora LSS was chosen for its easier access. Much of the data collection at Popondetta took place in the wet season. The very poor road conditions restricted site selection and hence, accessibility and road conditions heavily influenced the final selection of survey sites.



Plate 2.1. Collapsed culvert at Igora VOP, Popondetta

After completing the sample selection and gaining the acceptance and approval of the twelve families to be included in the study, families were visited weekly over a six-week period. In Popondetta, due to heavy rains, flooding and impassable roads, the number of visits was reduced to four and in some cases, three visits for some households. Regular visits were considered the most appropriate means to develop family case studies that explored household dynamics, labour strategies and income distribution. Gaining an understanding of the situations of particular households requires a level of trust and rapport to develop between interviewees and interviewers and this takes time and commitment. Once familiarity and trust are established people are more open in discussing their situations and concerns, and are generally very co-operative. For the interviewer, it is also a gradual process of getting to know the individuals in each family and learning what characterises and shapes their everyday life.

The weekly visits to smallholder blocks combined semi-structured interviews with a short standardised quantitative survey (Appendix 2.1). The weekly survey recorded: household and inter-block labour activity and allocation (oil palm, gardening and other economic and social/leisure activities); household income (e.g., from oil palm, marketing, customary exchange) and expenditure and food consumption (the latter to assess the relative importance of garden and store-bought foods). An additional survey was conducted following a harvest pick up (Appendix 2.2) which recorded household and non-household labour contributions to the oil palm harvest. Survey questions usually were interspersed in general conversation. In responding to questions, informants were not discouraged from digressing to related issues or other important matters that had arisen in the week since the previous interview. This often uncovered new information that would not be revealed through the standardised survey and provided insights into what people themselves felt were important issues.

These conversations led into more semi-structured interviews. The main emphasis of the interviews was to gain an understanding of everyday life issues

through people's own stories and from the perspective of smallholders themselves. This helped build a picture of what influences people's decision-making processes and behaviours. Also, as the visits progressed, people came to view our visits as an opportunity to express their concerns and ideas. Although relatively free-flowing, the interviews explored the following topics:

- household labour and income decision-making;
- factors influencing household and family members', participation in oil palm production;
- additional and/or competing labour and income demands;
- levels of household cohesion and cooperation;
- constraints on oil palm production;
- impacts and perceptions of agricultural extension initiatives, especially the Mama Lus Fruit Scheme.

On a typical fieldwork day we would visit three smallholder blocks together (four days each week for 12 households). Often smallholders who were not part of our sample would turn up at an informant's block or stop us on the road and request to be interviewed at a later date as they too wished their views be included in the study. In these additional interviews, themes identified amongst the sample group were often elaborated in more detail. Because these people were "self-selecting" it is probable that the issues they wished to discuss were of more concern to them than for the general population – issues such as population pressure and lack of access to gardening land. In this way, interview numbers snowballed to include many smallholders that were not part of the formal sample¹. In total, 172 separate interviews with smallholders were undertaken.

Towards the end of the fieldwork at each site we discussed the general findings and recommendations with the families in our weekly surveys and sought their feedback on our recommendations. This process helped ensure the data collected were an accurate reflection of the situations and concerns of smallholders, and that the recommendations were more likely to be valued and

supported by smallholders. At Hoskins, the preliminary findings and recommendations were then presented in a seminar to the Scientific Advisory Committee of the Oil Palm Research Association (Koczberski and Curry 2000).

Data collection methods in the weekly surveys and one-off interviews could be described as participatory action research in that the emphasis was on close collaboration and discussion with smallholders to identify constraints on production, and develop workable solutions to overcome these constraints. The approach also sought to gain an understanding of the lived experiences of smallholders from the perspective of husbands, wives, sons, daughters and other relatives residing on the blocks (Reason 1998, 269). These discussions inform the main findings and recommendations of this report. As researchers our primary aim was to produce research results and outcomes that would enhance the well-being of smallholders, which at the same time would gain the support of industry.

2.4.2 Industry interviews, OPIC workshops and smallholder focus groups

Interviews were conducted with key stakeholders in the industry such as the oil palm companies, OPIC, growers associations, and customary landowning groups. Semi-structured and structured interviews were conducted with key personnel in the oil palm companies at both Popondetta and Hoskins. Interviews with the General Managers, smallholder officers and mini-estate officers were conducted to:

- learn about corporate strategies and new or planned smallholder initiatives;
- gauge what the company, especially smallholder staff, identified as the major smallholder production issues; and
- gain a more rounded understanding of the oil palm industry in Papua New Guinea.

Group interviews with several members of the growers' association in Hoskins and representatives from the landowning company in Popondetta provided further information on the smallholder sector and the main socio-economic and political factors affecting smallholder production at both sites.

A close working relationship with OPIC allowed for numerous interviews and discussions with OPIC staff throughout the fieldwork period. On several occasions, particularly in the early stages of the project, we accompanied extension officers to the field to gain a better understanding of the various subdivisions, the nature of extension work and to draw on extension officers' knowledge of the subdivisions and the smallholder sector. These fieldtrips also provided an opportunity to observe the interactions between smallholders and extension officers. Interviews and discussions with extension officers also explored their ideas on effective extension strategies, possible ways to increase productivity among smallholders, problems in the smallholder sector and difficulties in their work as extension officers. The support, knowledge and experience of OPIC staff were extremely helpful in validating information gathered from smallholders and in developing a sense of the main issues affecting smallholder-extension officer relationships.

As mentioned in Section 2.1 a workshop with OPIC staff in each project site was conducted at the beginning of the project. The workshops were well attended with 25 and 19 officers participating at Hoskins and Popondetta respectively. At the conclusion of fieldwork at each site a further workshop was held with extension officers to present the preliminary research findings and recommendations, and to seek their input and feedback for the final report².

Smallholder group interviews (focus groups), usually made up of four to eight people, were conducted occasionally to explore specific topics. Two focus group meetings with women were held in Hoskins (Kavui and Gaungo) to discuss issues pertaining to the Mama Lus Fruit Scheme (MLFS). The purpose of the interviews was to gauge women's views on the attractiveness/unattractiveness of the MLFS and to obtain a more detailed

understanding of how the scheme had been incorporated into household labour and income strategies.

Two other focus group meetings were held at Hoskins: one with Kavui smallholders to discuss some of the preliminary findings and recommendations of the research and another at Gaungo with “outsiders” “buying” land in the VOP to gather information on land disputes at Gaungo (both focus groups were held at blocks participating in the weekly survey to which other people were invited to participate). Although these formal group interviews generated valuable data, they tended to lack the more free-flowing discussion of many of the opportunistic group discussions which sometimes occurred when we visited smallholder blocks. In these latter instances the smallholders had taken it upon themselves to invite other people (mainly extended kin or shared ethnicity) to their blocks to talk to us, or we just happened to arrive on a block when a group of people were visiting for some other purpose. In these discussions most people appeared to express their views easily, and their familiarity with each other meant that the conversation was more open as well as humorous.

2.4.3 Bio-physical and socio-economic smallholder survey

A quantitative bio-physical and socio-economic survey of 100 smallholders was undertaken by OPRA staff across several LSS and VOP subdivisions at Hoskins and Popondetta. At Hoskins 50 blocks were surveyed in February-March 2001 across five LSS and 50 blocks across 16 VOP subdivisions. At the time of writing, the growers survey of 100 blocks at Popondetta was under way. The purpose of these surveys was to examine the bio-physical and socio-economic interactions within the smallholder sector. The survey was conducted following completion of the main data collection phase described above, and the content of the survey was informed by data collected in the first phase of the study. In the socio-economic part of the survey, data were collected on:

- Planting details (area and year planted).
- Ownership status (original leaseholder, deceased estate, caretaker).
- Population (number of individuals and families living on block).

- Food Gardens (location and type).
- Additional income sources.
- Labour supply and agronomic practices.

The bio-physical data collection is currently underway by OPRA agronomists and will be completed in late 2001. The bio-physical data incorporates soil chemical and plant tissue analyses and terrain classification of each block visited. The 100 blocks at each study site were selected across the main soil types, and a cross-section of high, medium and low producers in the sample was attempted.

Data entry and analysis of the socio-economic information is not complete: some of the Hoskins data are discussed in this report, but the Popondetta data, due to poor road conditions delaying data collection, are as yet unavailable. Thus while the report is presently unable to address bio-physical and socio-economic interactions within the smallholder sector, some of the socio-economic data have been used to inform the broader smallholder issues discussed in this report.

2.4.4 Review of company and OPIC data bases, reports and other published material

Smallholder data bases held by OPIC and the oil palm companies in Hoskins and Popondetta were used for sample selection based on smallholder oil palm income, production and planting history; loose fruit production; production trends; variations in productivity between smallholders within and between subdivisions; and levels of and patterns of debt repayment. While production data were considered to be reasonably accurate at Hoskins, data on areas planted and years of planting were less so at Hoskins, because the relevant data bases were not always updated. Block production data at Popondetta were problematic because of the large numbers of growers avoiding loan deductions by using contractors to cart their fruit to the mill (production was not being recorded against their blocks). However, Popondetta OPIC's data base on smallholdings of oil palm and replanting data appeared reasonably accurate.

Company and OPIC reports and other published material provided additional information on the oil palm industry and smallholder sector. This additional material was especially useful for detailing the background of the industry and understanding the current state and future development of the industry and the smallholder sector.

2.5 Conclusion

In summary, the research relied on a multi-method approach that entailed spending a considerable amount of time with individual smallholders and their families to gain a better understanding of the socio-economic factors affecting household productivity. The mix of qualitative and quantitative techniques provided detailed data which, in certain circumstances, is preferable to approaches relying solely on formal survey methods where larger numbers of people are interviewed using a standardised questionnaire. The latter technique assumes that the researchers already have a detailed understanding of the economic and social situations in the sample population. However, where little is known about the everyday situations of a population, more qualitative assessments are preferable as a prelude to a formal survey as they allow the researchers to develop a more accurate picture of the situation of the study population.

Endnotes

1. The following example gives some idea of this process of “snowballing”. During a regular interview at Kavui a neighbouring smallholder requested we visit his block. When we arrived at his block we found four other smallholders waiting to talk to us. After a lengthy discussion one smallholder asked if we would visit his brother who also wanted us to collect his ‘*stori*’. A week later we arrived at his brother’s block where three other growers were waiting for us.
2. The workshops also provided data for the contents of the extension work manual.

CHAPTER 3

LIVELIHOOD STRATEGIES

3.0 Introduction

The chapter examines the diverse range of livelihood strategies pursued by smallholders and how they influence oil palm production. A key finding of this study is that smallholders pursue a diverse range of livelihood strategies in addition to oil palm production. Livelihood strategies are defined as those activities undertaken by smallholder households to provide a means of living. A key goal of livelihood strategies is to ensure household economic and social security. In our analysis of smallholder livelihood strategies emphasis is given to the range of income sources pursued by smallholders, and the important role subsistence agriculture and kin networks continue to play in maintaining household livelihood security¹.

The chapter draws attention to the range of economic activities in which smallholders are engaged, of which oil palm is but one. This has implications for extension services and smallholder interventions. Importantly, the chapter shows that studies of smallholder production could benefit from focusing more on livelihood strategies as these strategies indirectly influence oil palm production through their impact on economic and social well-being. Acknowledging smallholders' participation in a range of livelihood strategies would assist in developing a more complete picture of oil palm smallholders and their social and economic circumstances.

3.1 Smallholder Livelihood Strategies

Men and women are involved in a diverse range of activities that draw on their labour and time (Figure 3.1). Activities like food gardening, maintaining social

and kin networks and seeking medical care draw on people's time; for women, food preparation, childcare and church activities take a considerable proportion of their time. Socialising, especially for men, is an important activity in that much of this time is invested in maintaining social relationships with relatives and friends, thus strengthening social networks and maintaining social harmony through the ongoing day-to-day resolution of social conflicts².

As mentioned in the introduction to this chapter, a principal goal of livelihood strategies is to ensure household economic and social security. This section outlines the range of livelihood strategies pursued by smallholders. To think of oil palm production as being the only and/or dominant economic activity of smallholders is misleading because other important household strategies are obscured. Indeed, in some instances, oil palm production is not the primary activity or income source at all.

This section discusses how these various livelihood strategies interact with oil palm production and how they contribute to household well-being. This is important information for understanding what is occurring at the block level, and for developing appropriate interventions aimed at increasing smallholder production and productivity. The main livelihood strategies outlined below include cash crop production, wage employment, small business enterprises, garden production for home consumption and local markets, and customary exchange. Each is discussed below.

3.1.1 Cash crop production

Oil palm is generally the only export cash crop planted on smallholder oil palm blocks. Some LSS smallholders have holdings of other export cash crops in their home villages cared for by village kin, and at Hoskins some LSS

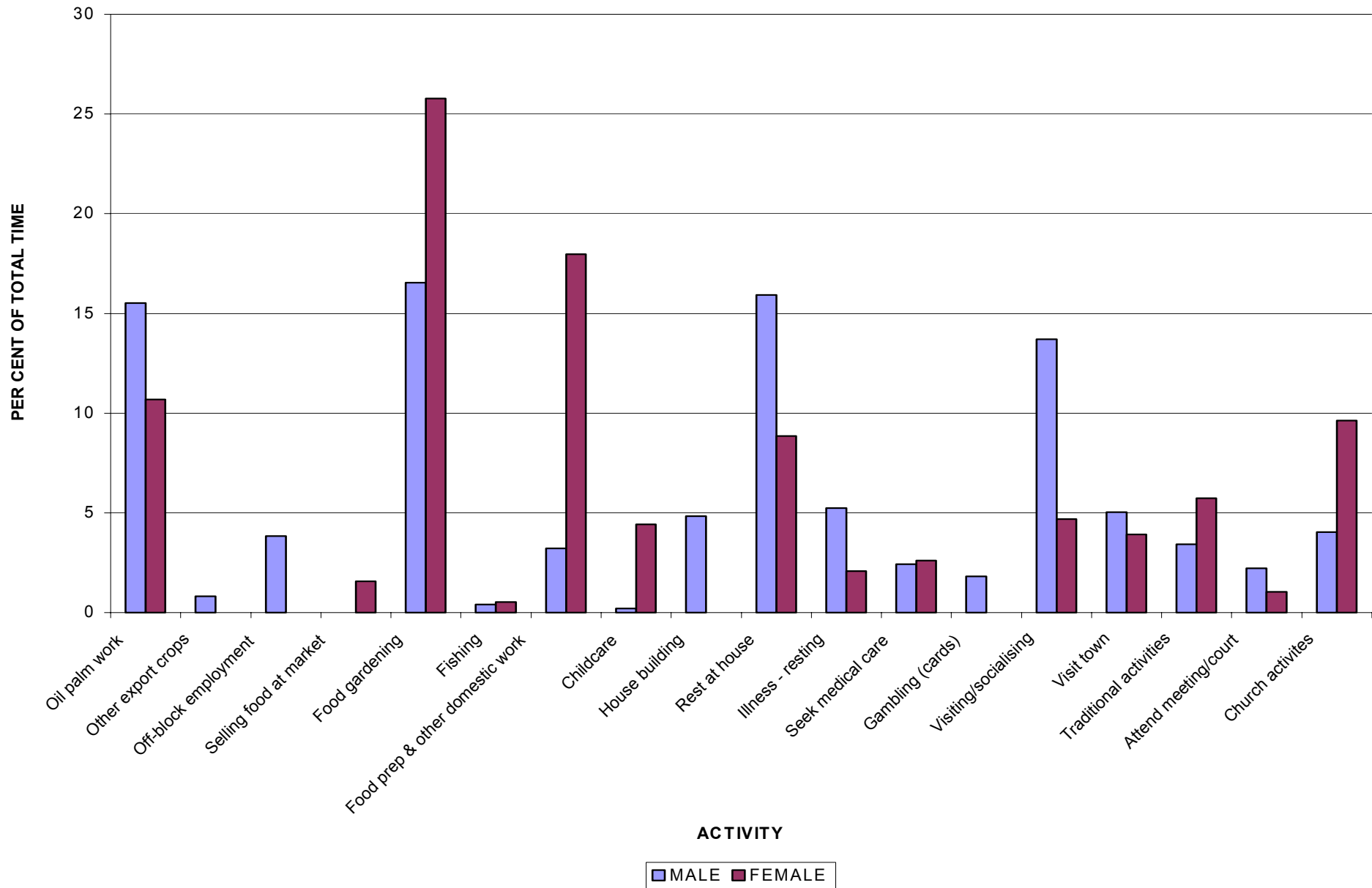


Figure 3.1. Activity by gender for Kavui and Gaungo (Source: Weekly Surveys, Hoskins).

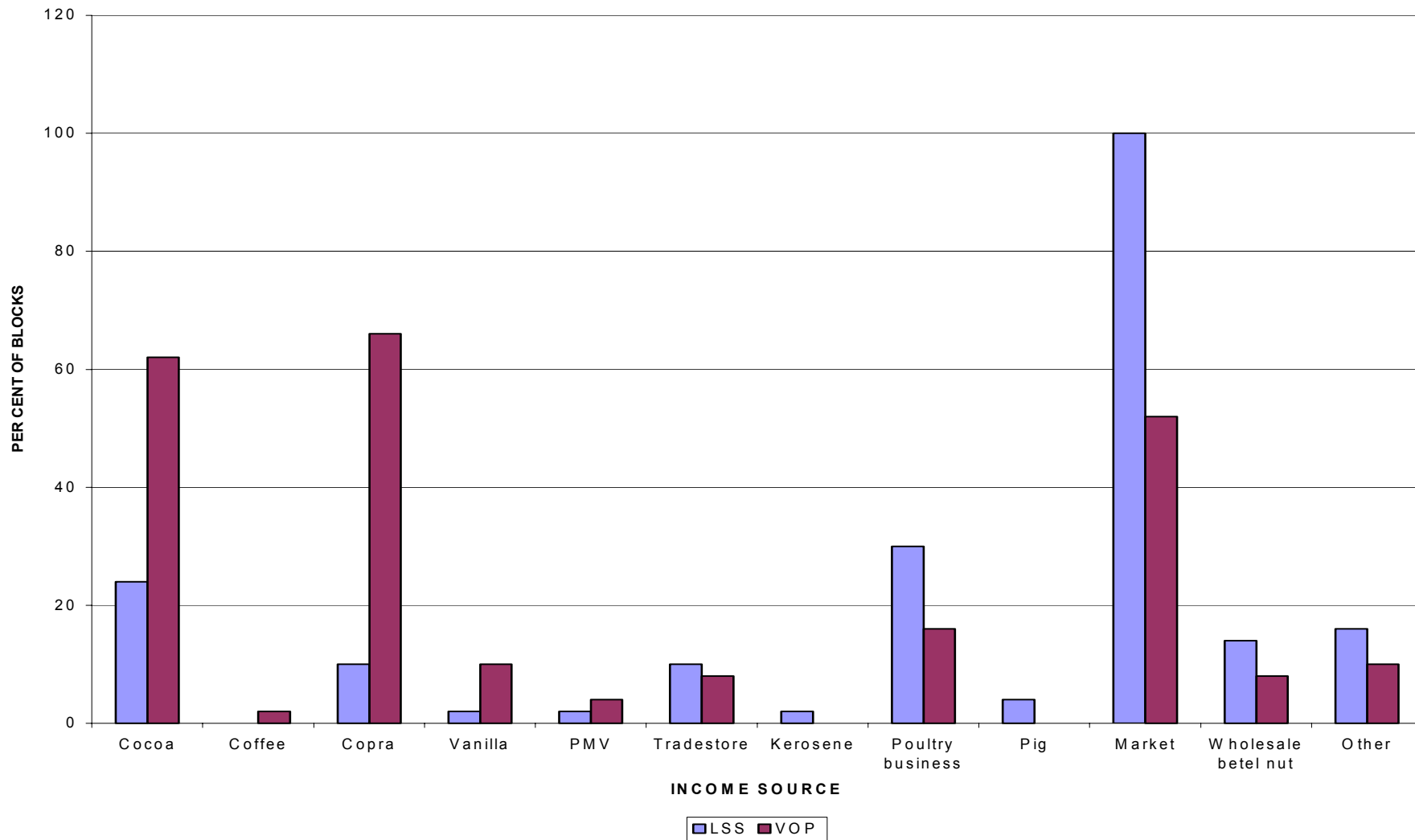


Figure 3.2. Non-oil palm income sources for Hoskins smallholders (Source: Growers Survey, Hoskins)

subdivisions such as Siki, Sarakalok, Kapore and Dagi still have remnant plantings of copra and some cocoa (Figure 3.2). At Siki, for example, in 1995, 16 smallholders owned copra dryers and eight owned fermentaries (Kean 2000, 165). More recently at Hoskins, planting of vanilla bean has been increasing and is now providing a supplementary income for some smallholders.

For most VOP smallholders in both Hoskins and Popondetta, entry into oil palm production is relatively recent and many retain holdings of other export cash crops, notably cocoa, copra, and coffee. These older export cash crops are increasingly being replaced by oil palm. In a survey of 50 VOP and 50 LSS leaseholders at Hoskins, 72% and 26% respectively had access to other export cash crops (Table 3.1). Of the Hoskins VOP blocks with cash crops, 83.5% had two or more types of cash crops in addition to oil palm.

Table 3.1. Percentage of Hoskins LSS and VOP leaseholders with export cash crops other than oil palm.

	Coffee	Cocoa	Copra	Vanilla
LSS	nil	24%*	10%	2%
VOP	2%	62%	66%	10%

*The majority of these blocks are in Kapore LSS

Export cash crops provide an alternative income source when oil palm prices are low. Many smallholders view cash crop diversification as a form of income security to hedge against falling cash crop prices. As one Galilo VOP grower stated:

*taim prais bilong wel palm igo daun, mipela no wori – moni
ikam long kopra na koko*
when the price of oil palm falls, we do not worry – copra and
cocoa provide us with money.

As the relative prices of cash crops change, many VOP smallholders adjust their production strategies accordingly. For example, the renewed interest in oil palm production on the Hoskins VOP subdivisions may have much to do with the

current depressed price of copra. Interest in oil palm may wane if copra prices were to rise. In New Ireland, a near doubling of oil palm production in 2000 among VOP smallholders has been attributed in part to the collapse of copra prices³ (ADS (PNG) 2001, 23). The stability in VOP oil palm production at Hoskins, despite the fall in oil palm prices, may be partly attributable to the very low price of copra over the past few years. Thus, for smallholders, especially VOP smallholders, a range of cash crop alternatives allows them some flexibility and greater income security in the face of fluctuating commodity prices⁴.

3.1.2 Wage employment

Access to off-block wage employment often adds significantly to material standards of living on the blocks. Permanent houses, water tanks and other substantial assets erected on the blocks in the last decade or so have mostly been financed by savings from off-block employment. Also off-block employment of a household member can provide an ongoing income subsidy to block residents which is especially useful on highly populated blocks (Chapter 4.2.1). The oil palm plantation estates provide opportunities for short-term casual employment and long-term employment of smallholders. The former often provides temporary financial relief for block residents during peak cash demands such as payment of school fees, brideprices or other customary obligations.

Non-agricultural wage labour is more limited and provides employment to a minority of smallholders that hold specific trade or professional skills or have obtained upper secondary or tertiary education. Some are employed in workshop, clerical or management positions in NBPOL and others work in government or the private sector. For families with a wage earner, material standards of living are usually significantly higher than blocks without a wage earner.

In the Landell Mills (1991, 32) study there was a higher level of self-employment amongst high producers on LSS blocks by the sons or relatives of

household heads. The same study also presented evidence to suggest that off-block employment was associated with lower oil palm productivity on VOP blocks. The study reported for Hoskins VOPs that there was a high level of off-block employment in the low production category and those seeking off-block employment were young household heads. Further, of the low producers, 31.6% had off-block employment incomes higher than their income from oil palm. This would suggest that on blocks where there are a small number of dependants on the wage earner, off-block employment can become a substitute for oil palm income. That is, it more than compensates for foregone income from oil palm. Also, as indicated by the OPIC extension officers at Popondetta, off-block employment is only a problem when it limits the labour availability at harvest times.

The situation on heavily populated blocks is likely to be different, especially on LSS blocks where alternative incomes are more constrained. Here, off-block employment provides important supplementary income, and because of higher population numbers is unlikely to lead to other block residents withdrawing their labour from oil palm production (Box 4.1). In summary, we found no evidence to suggest that off-block employment adversely affects oil palm productivity, but it certainly added to the material standards of living of other block residents and widened the choices open to smallholder households.

3.1.3 Small businesses

Small commercial enterprises provide many smallholders with another source of income, but for the majority of small business proprietors, it remains a minor activity that supplements oil palm income. Business enterprises vary in size and turn-over, and include public motor vehicles (PMVs), tradestores, kerosene sales and the raising and marketing of poultry and pigs. Tradestores are typically small and sell a limited range of stock such as tinned fish and meat, rice, vegetable oil, tea, coffee, sugar, biscuits, cigarettes, matches, drinks and snacks. Profit margins are narrow and many stores can become insolvent, particularly if customers are slow to repay credit. Approximately 10% of LSS blocks and 8% VOP blocks have tradestores (Figure 3.2).

The most common small business activity at Hoskins is live poultry sales. Survey results indicate that 30% of LSS and 16% of VOP smallholder blocks had poultry businesses. These enterprises are popular due to the relative ease of entry into the business, good consumer market and the profitable returns they generate (Box 3.1). However, recent increases in the price of chicks and feed have created new entry barriers to this business.

At Hoskins, most small business enterprises are operated by LSS smallholders (Figure 3.2). This is to be expected where limited access to land for other cash crops restricts LSS smallholders to small commercial business ventures on their blocks. Also, as LSS smallholders point out, access to alternative income sources is often necessary to meet household needs, particularly during times of depressed oil palm prices. On the Popondetta LSS schemes, small commercial enterprises are largely absent due to the conflicts between landowners and settlers (Chapter 6.1.2).

A burgeoning and profitable business in the VOP areas in Popondetta, and to a lesser extent in Hoskins, is the wholesaling of betel nut (*Areca catechu*). This may be sold locally or exported to other provinces where returns are higher. In Popondetta a substantial trade has developed between Popondetta and the Highland provinces and Port Moresby. Buyers from these regions frequently visit Popondetta to purchase large quantities of betel nut and their presence in town is heralded by the large numbers of betel nut sellers congregating outside the town market waiting for the buyers to arrive.

3.1.4 Subsistence production

Food garden production remains extremely important for LSS and VOP smallholders in terms of labour demands and household consumption. Households grow sufficient food to meet most of their requirements, and women often sell surplus garden produce at local markets. The range of foods cultivated is broad, but is dominated by roots crops, notably sweet potato (*Ipomoea batatas*), Chinese taro (*Xanthosoma sagittifolium*), taro (*Colocasia esculenta*), cassava (*Manihot esculenta*), and yams (*Dioscorea* spp). These are

often interplanted with bananas (*Musa* spp). Gardens may be planted to one or more of these root crops, and often contain tobacco and a range of other vegetables such as maize, tomatoes (*Lycopersicum* spp), sugar cane, pitpit (*Saccharum edule*), a variety of green vegetables including aibica (*Hibiscus manihot*), aupa (*Amaranthus tricolor*), pumpkin (*Curcubita maxima*), and spring onions.

Gardens cultivated primarily as cash crops for local markets are often planted as monocultures of peanuts or sweet potato. Fruits such as pineapples, pawpaw, watermelon and sweet banana are also planted for sale at local markets. Because of their relatively better access to land than LSS settlers, VOP smallholders are likely to have more extensive gardens and more access to secondary forest for foraging, hunting and the collection of house building materials.

The above general description of garden food crops does not take into account variations in food crop types by ethnicity (see Benjamin 1977 for a detailed discussion). From our own observations, Sepik households tend to plant cassava as a substitute for sago, a major component of “traditional” Sepik diets, while Tolai settlers favour larger plantings of bananas. Also, among the Orokaivan VOP smallholders in Popondetta, taro (*Colocasia esculenta*) is the dominant crop. However, ethnic differences in garden food preferences appear less marked than described by Benjamin (1997), and observations suggest that sweet potato and cassava are becoming more acceptable across all cultural groups. Whether this is a reflection of changing tastes or declining soil fertility on the blocks cannot be resolved at present (both sweet potato and cassava are more tolerant of poorer soils than other root crops).

The weekly surveys reveal that garden production is very important in terms of labour allocations and is a central part of everyday life for Hoskins and Popondetta smallholders (Figures 3.1 and 3.3). Gardening labour surpasses oil palm labour as the dominant activity carried out by Hoskins smallholders. Overall, smallholders spend considerably more time in gardening than they do in oil palm related work. This is most notable among women who allocate

almost 2.5 times as much of their labour to gardening than to oil palm; for Hoskins men, gardening and oil palm are of about equal importance in terms of amounts of time allocated to each activity (Figure 3.1). There is also an indication that both oil palm work and gardening are more important for LSS settlers than VOP producers (Figure 3.3). This may partly reflect population pressure/land constraints on the Hoskins LSS scheme where economic necessity is driving oil palm production, and where, as a corollary, gardening systems are becoming more labour intensive.

Further evidence of the importance of gardens for household food security is provided by data from dietary surveys undertaken at Hoskins and Popondetta (Figures 3.4, 3.5 and 3.6). Again, these results indicate that LSS settlers are much more dependent on gardens than VOP producers. Root crops, green vegetables and bananas dominate meal ingredients for LSS settlers, whereas Gaungo VOP smallholders have much more variety in their diets as well as better quality diets characterised by higher protein intakes (Figure 3.4). Nineteen per cent of all meals at Gaungo VOP contained either fresh meat/fish or tinned fish; whereas only 6% of meals at Kavui and 5% at Popondetta did so.

If sources of meal ingredients are categorised by “garden” and “non-garden”, the reliance of LSS settlers on subsistence garden production becomes more apparent (Figure 3.5). Approximately 80% of meal ingredients at Kavui LSS and Popondetta (mostly LSS settlers in the sample) were from gardens compared with about 50% of meal ingredients from food gardens at Gaungo VOP. Further, if the source of ingredients of each meal is considered, it is clear that Gaungo VOP producers have more nutritious diets as two-thirds of all the meals they consume contain at least one non-garden ingredient compared with 23% and 32% for Kavui and Popondetta respectively (Figure 3.6). Further, store food consumption among Kavui smallholders tends to be concentrated within the first few days to a week of receiving the monthly oil palm cheque. For the following three weeks, Kavui smallholders rely mostly on garden foods.

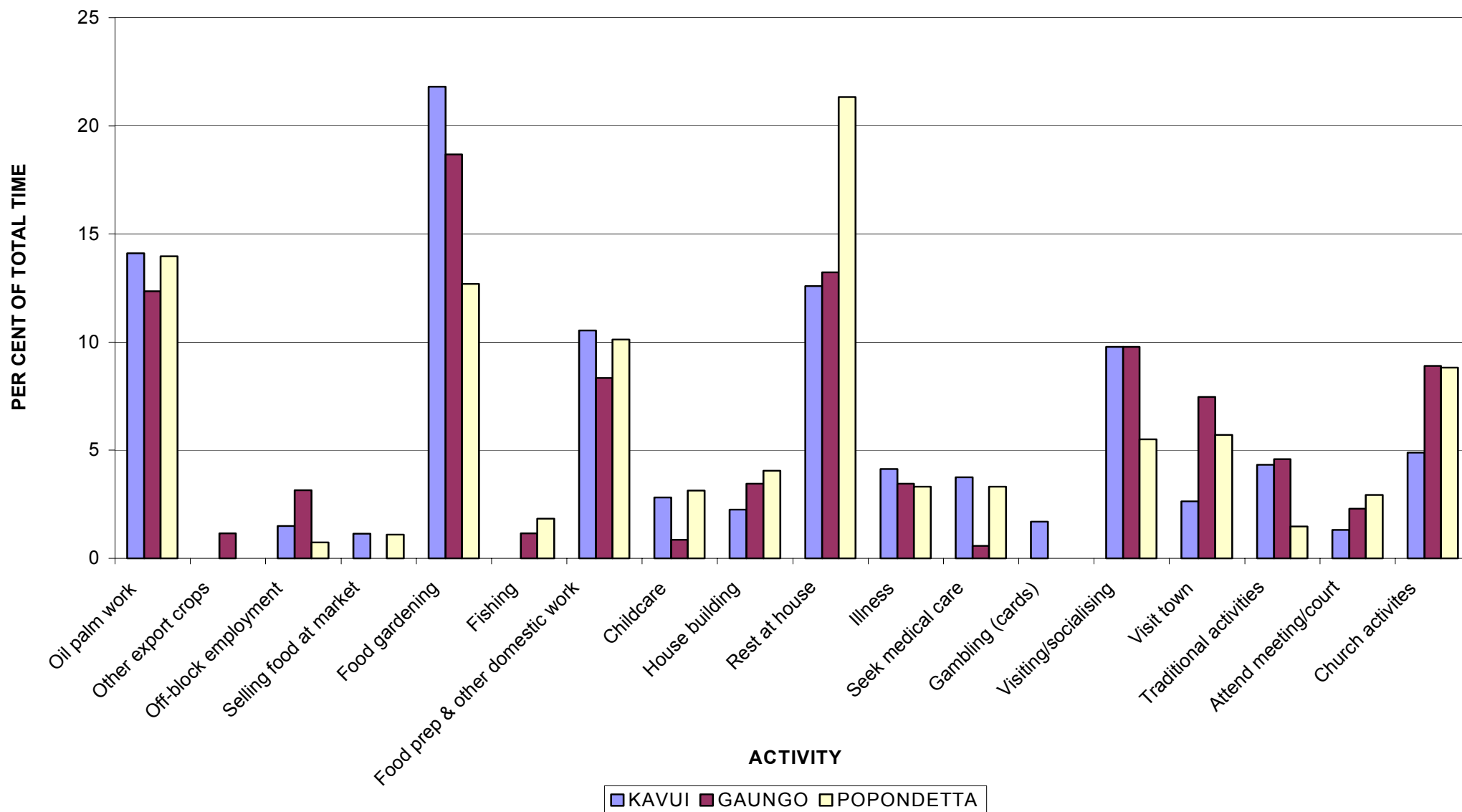


Figure 3.3. Proportions of time spent on different activities at Kavui, Gaungo & Popondetta (Source: Weekly Surveys).

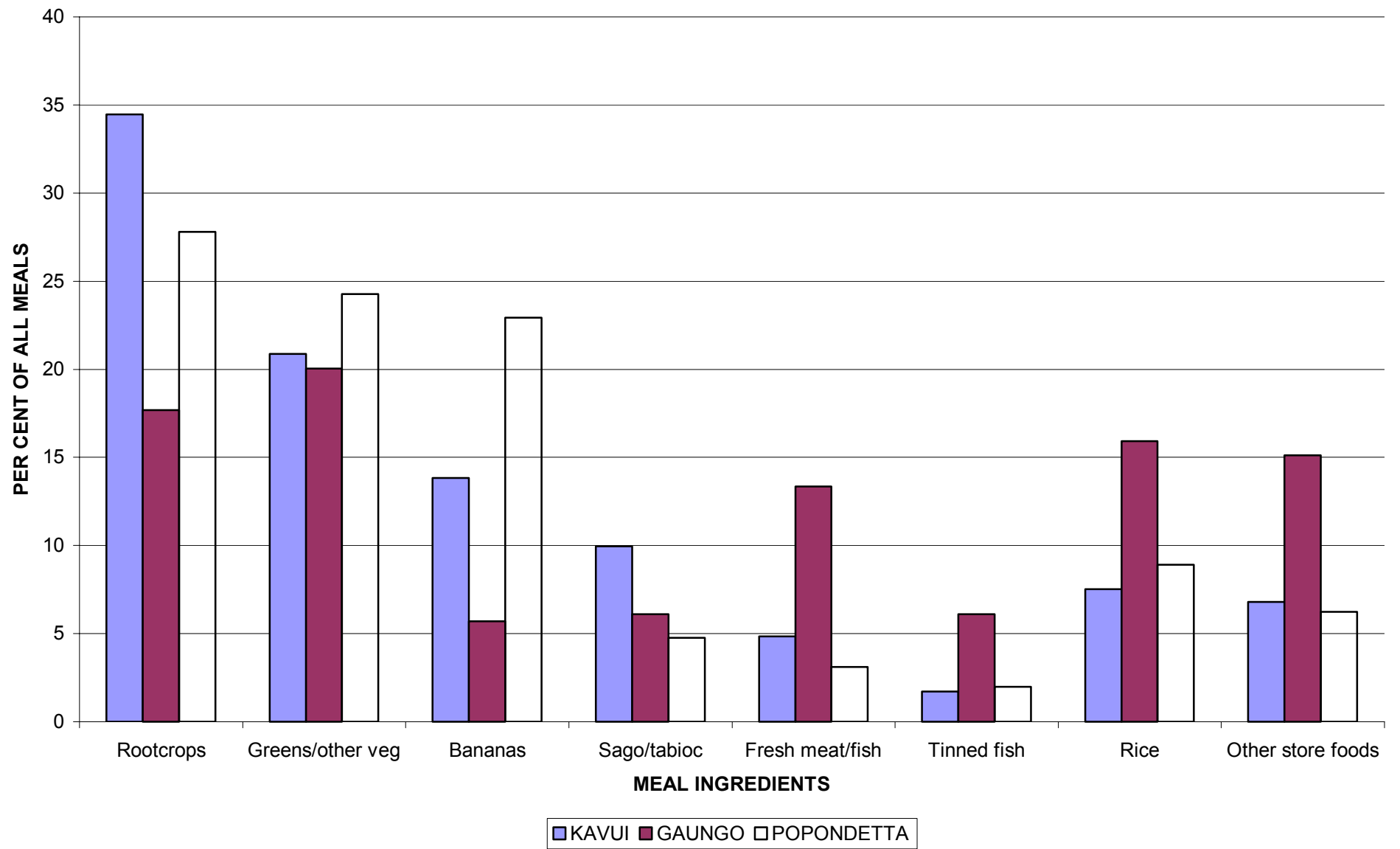


Figure 3.4. Meal ingredients at Kavui, Gaungo & Popondetta as percentage of all meals (Source: Weekly Surveys).

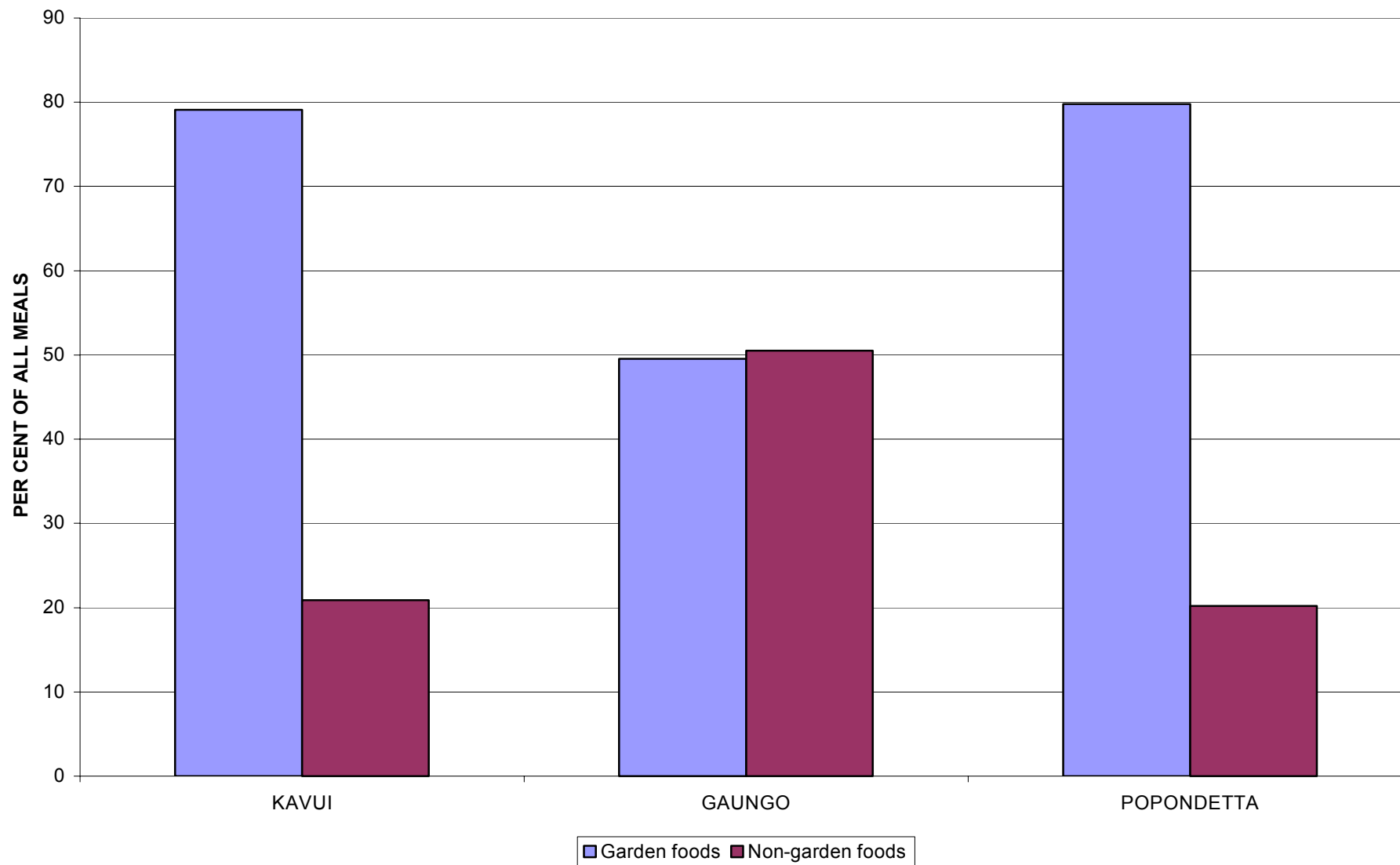


Figure 3.5. Sources of all meal ingredients categorised by garden and non-garden (Source: Weekly Surveys).

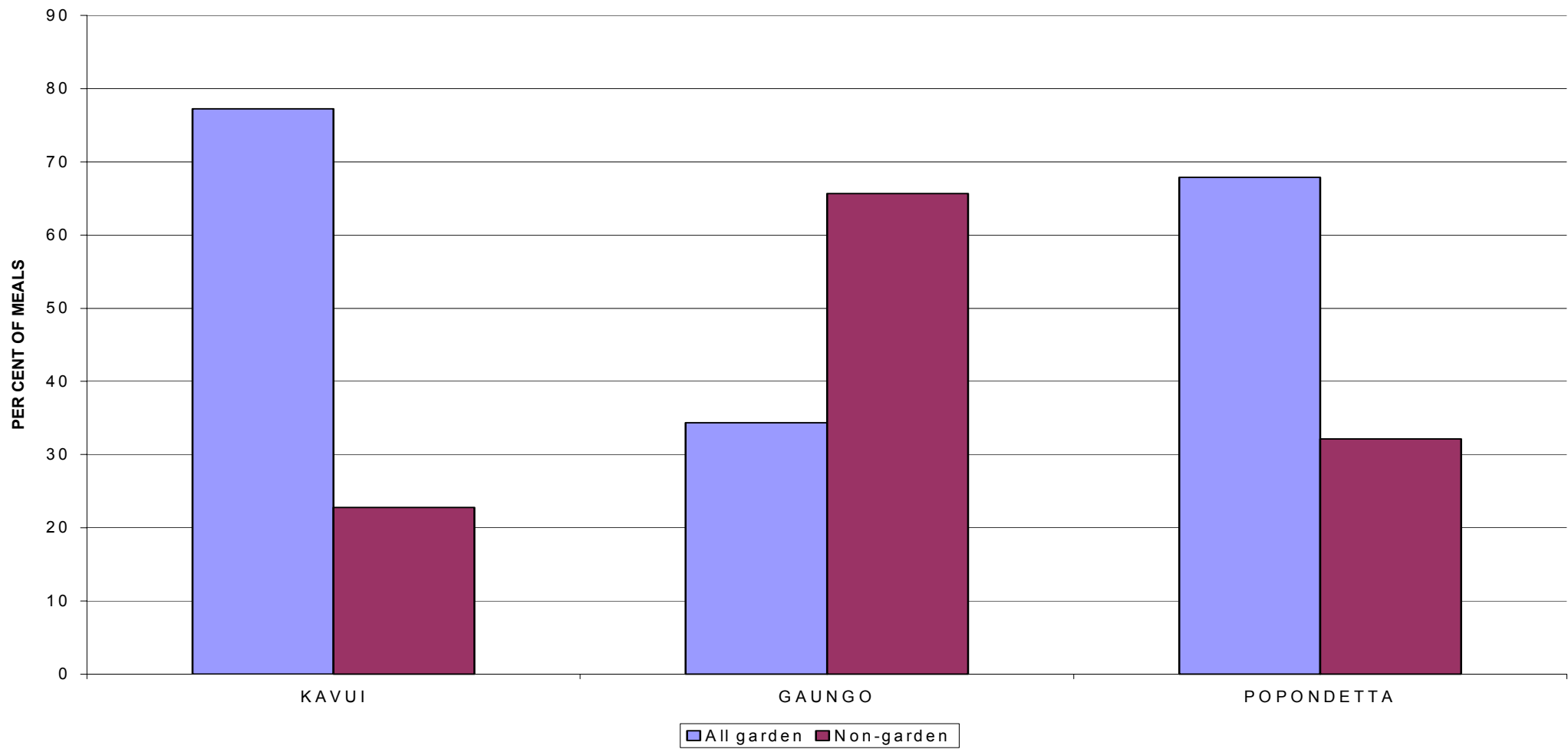


Figure 3.6. Proportions of meals consisting entirely of garden foods and meals containing at least one non-garden ingredient (Source: Weekly Surveys).

These data on garden production and meal consumption are perhaps surprising to some in the industry given the common perception that relative to LSS settlers, VOP smallholders are positioned more peripherally in economic development and generally less committed to and involved in oil palm production. The differences in diet quality between LSS and VOP smallholders are partly a reflection of the wider range of income choices available to VOP smallholders. They are also partly attributable to the population pressure on Hoskins LSS blocks, where declining per capita incomes from oil palm are increasing settlers' dependence on subsistence food production.

Exchanges of garden labour and food occur regularly between households co-resident on a block or between friends and relatives residing on nearby blocks. Daily exchanges of food between households are common and reflect the importance of food sharing in Papua New Guinean societies; and garden produce, especially on the VOPs, continues to play a central role in customary exchange (see below). In the Hoskins LSS subdivisions, some older Sepik settlers from the Maprik district, East Sepik Province, continue to cultivate ceremonial long yams (*Dioscorea alata*) which are sometimes exchanged between males from this area.

Most gardens are located on the block, although some smallholders have gardens on other blocks belonging to relatives or friends, or on village land in the case of VOP smallholders. At Hoskins, many growers near the boundaries of LSS subdivisions have also established gardens on adjoining private and government land. On the LSS schemes the rear two hectares are usually reserved for gardening land, though in recent years OPIC has been encouraging growers to plant these to oil palm (Chapter 7.4). Where old oil palms have been poisoned for replanting, the area is generally planted to food crops and remains in production until the new oil palm canopy closes. In these areas food gardens appear to be very productive, probably as a result of the application of fertiliser for juvenile oil palms and the richness of organic matter from the decaying poisoned palms⁵.

In-shore fishing is also an important part of the subsistence and cash economy for many coastal VOPs in West New Britain and can provide a significant income source during the fishing season. Fish is sold at local markets (fresh or smoked), to town supermarkets in Kimbe and, increasingly, to commercial fish buying operations. At Gaungo VOP, for example, fishing provides a good and regular income. People often move between oil palm and fishing depending on fish catches and the price of oil palm. During the survey period at Gaungo when oil palm prices were relatively low (K56/tonne), some households temporarily abandoned oil palm production to concentrate on fishing⁶.

3.1.5 Informal markets

The marketing of food crops, coconuts, betel nut, tobacco, processed foods and manufactured items at local markets provides a regular additional income, especially for women from the LSS schemes. Each LSS subdivision has its own community market, as well as several other smaller informal markets. In addition, the town markets of Kimbe, Bialla and Popondetta are also important for LSS women. Many oil palm company compounds have market places too, and LSS women frequent these markets to sell garden produce to plantation workers on company pay days.

Marketing is a popular activity among women as it provides a source of cash income between the fortnightly (Popondetta) or monthly (Hoskins) oil palm payments. Average earnings per person, per market visit were K10.91 at Hoskins and K4.64 at Popondetta. Although the amount of money earned is not substantial, the additional cash plays an important role in family welfare as the cash is used to purchase small everyday household items such as soap, kerosene and store and market foods. For some households on heavily populated LSS blocks at Kavui, local markets can be the primary source of income.

Before women were issued an oil palm harvesting card (“mama card” – Chapter 8), market income was, for many LSS women, their primary source of cash income. In a survey of 100 blocks at Hoskins in February-March 2001, 100% of LSS blocks and 52% of VOP blocks reported female residents regularly

selling food at local markets (Figure 3.2). Further, 88% of LSS blocks and 42% of VOP blocks reported at least one female resident marketing produce within the preceding seven days of the survey. This not only reflects the importance of markets (and gardening) for smallholders, especially for LSS women, but it also points to the fact that the rapid uptake and entrenchment of the Mama Lus Frut scheme at Hoskins appears not to have impacted significantly on marketing. In terms of total time allocated to marketing, it is a minor activity overall and considerably less than other tasks such as food gardening and oil palm work (Figure 3.1). Also, on blocks with multiple households, sometimes one woman may market produce on behalf of co-resident women. Therefore, in terms of the demands on total labour availability marketing is small.

A survey undertaken with OPIC of women selling at several markets around Kimbe and Hoskins in October 2000, revealed that 54% of sellers were from LSS schemes and 8% were settlers residing on village land (Table 3.2). Given that many of the other sellers at the markets were from urban centres or company or government compounds, then women from local landowner groups have very limited involvement in marketing. These figures again reflect the importance of local markets for women from the LSS subdivisions.

The same survey revealed that LSS women are disproportionately over-represented in local markets in terms of the values of items for sale (Figure 3.7). While “manufactured goods” and “secondhand clothes” dominate markets in terms of total value and tend to be marketed by non-LSS women, these figures are a little misleading. The survey recorded the value of goods on display, and because only a small proportion of these items are sold per market visit, their inclusion in Figure 3.7, tends to devalue the contribution of food items where a much higher proportion of the items on display are sold on each market visit.

Table 3.2. Numbers and percentages of settler women marketing in October 2000 from LSS subdivisions or residing on village land (percentages in brackets)

	MARKET						TOTAL
	BULUMA	HOSKINS	KAPORE	KIMBE	MOSA	NAHAVIO	
LSS	16 (50)	7 (54)	21 (95)	49 (45)	29 (67)	14 (41)	136 (54)
VOP SETTLER			1 (5)	6 (5)		13 (38)	20 (8)
OTHER*	16 (50)	6 (46)		54 (50)	14 (33)	7 (21)	97 (38)
TOTALS	32 (100)	13 (100)	22 (100)	109 (100)	43 (100)	34 (100)	253 (100)

*“Other” is made up of women residing in town, company or government compounds, and women from traditional landowning groups

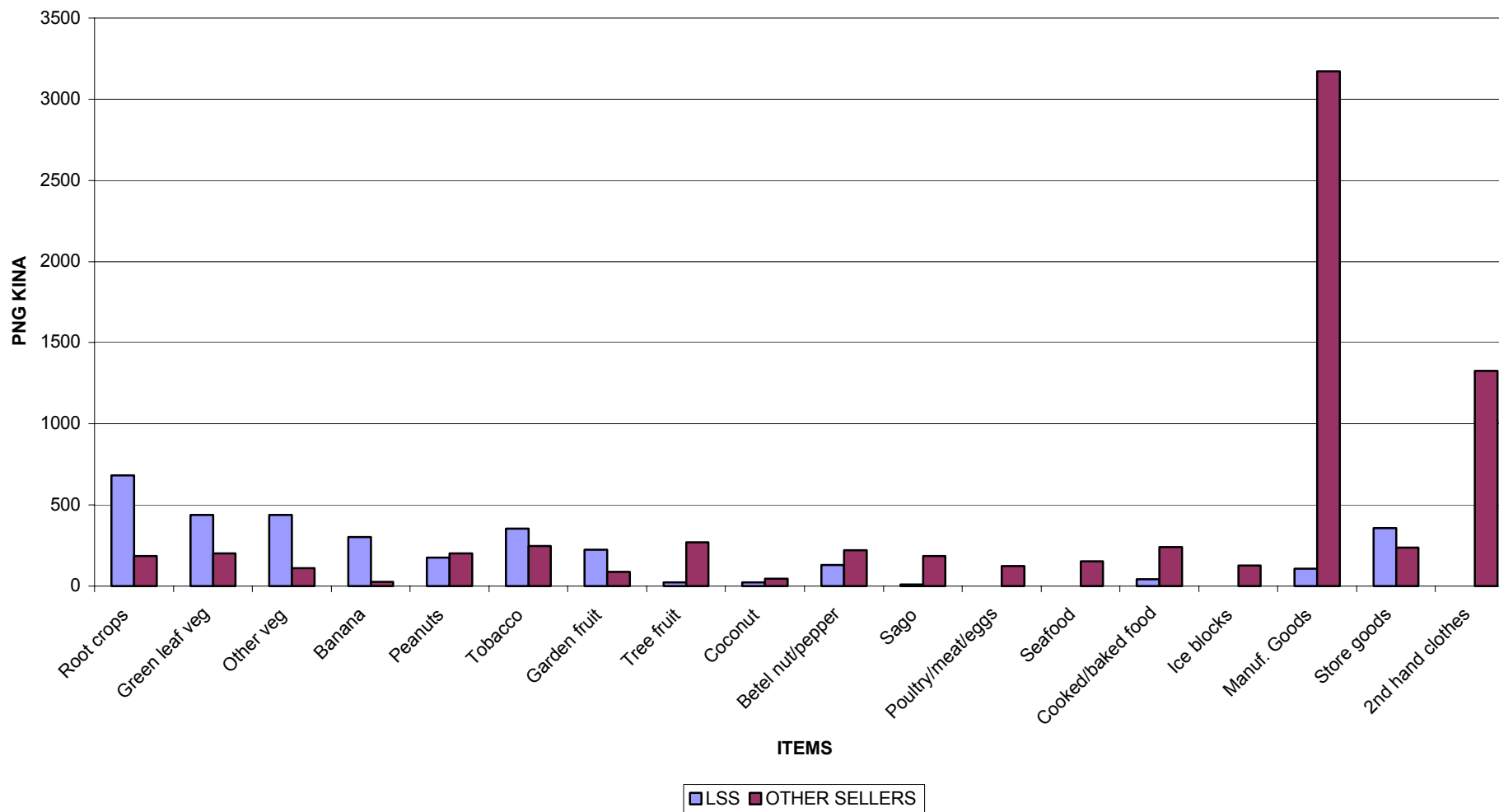


Figure 3.7. Values of categories of items on sale at markets (Source: OPIC & OPRA survey of markets in Hoskins and Kimbe in October 2000).

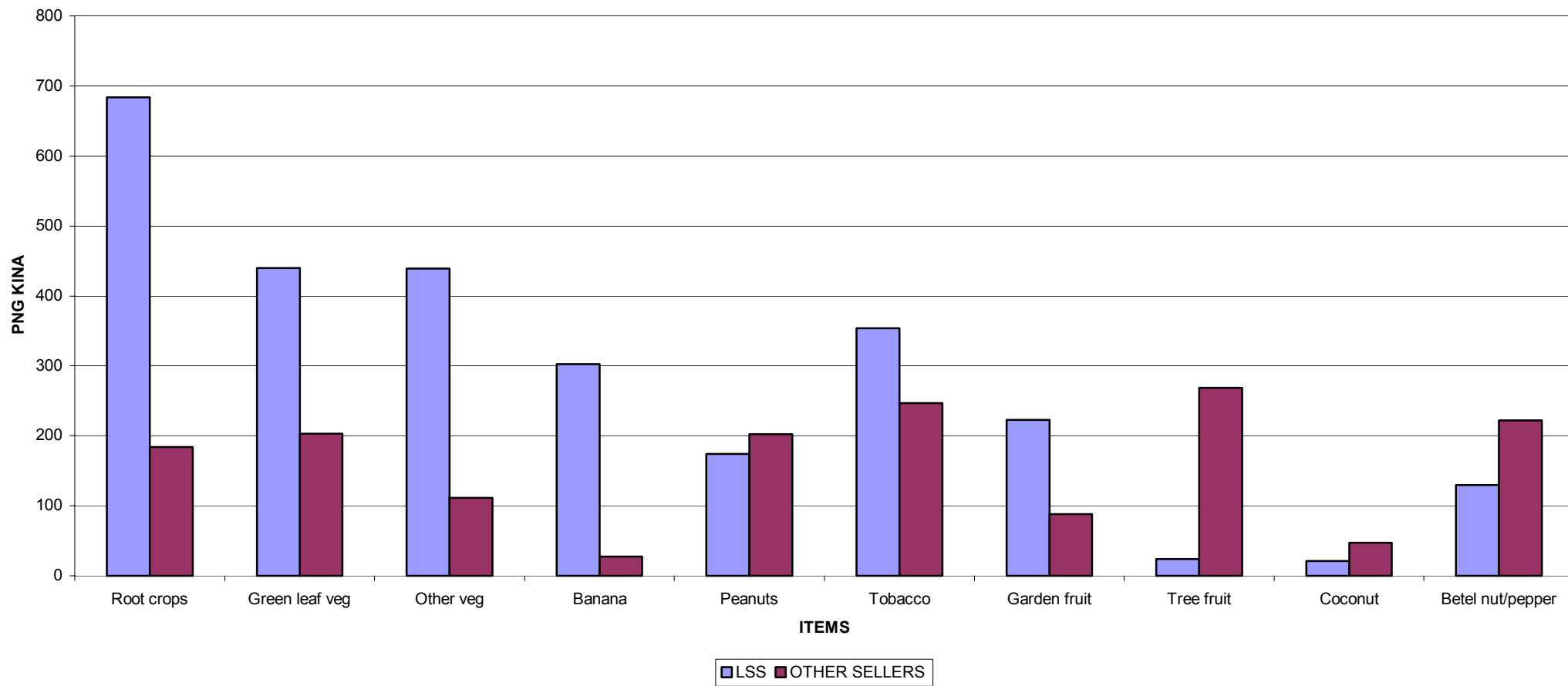


Figure 3.8. Values of categories of “garden” items on sale at markets (Source: OPIC & OPRA survey of markets in Hoskins & Kimbe in October 2000).

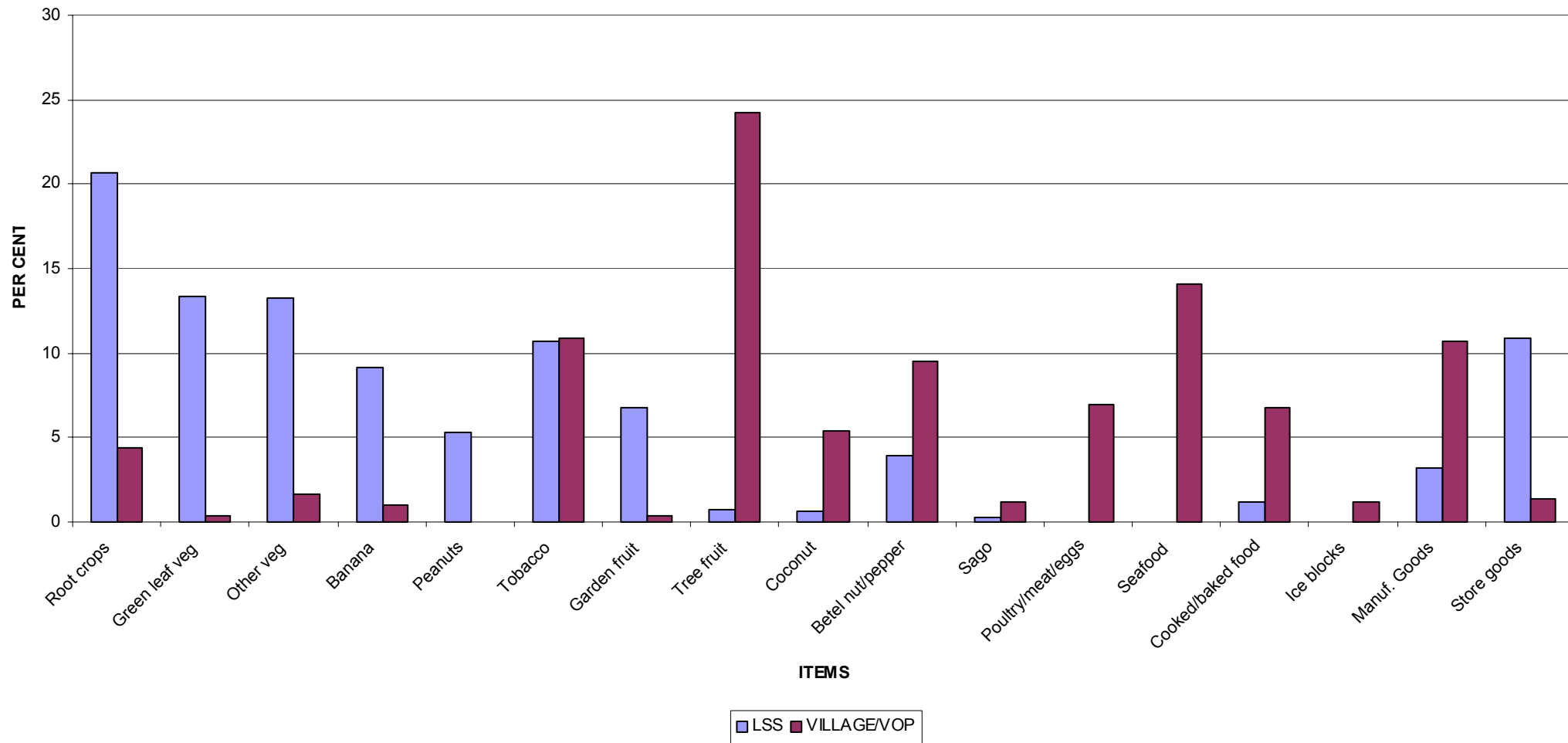


Figure 3.9. Breakdown of categories of items on sale at markets by women from LSS (total = 100%) & Village/VOP (total = 100%) (Source: OPIC & OPRA survey of markets in Hoskins & Kimbe in October 2000).

Women from the LSS subdivisions tend to dominate sales of “garden” foods, both in terms of the kina value of foods on display (Figure 3.8) and in their proportional share of the quantities of these items on sale (Figure 3.9). In terms of kina value, the most important items on sale by LSS women in descending order of importance are “root crops”, “green leaf vegetables”, “other vegetables”, “tobacco” and “bananas” (Figure 3.8). Perhaps surprisingly, given that the villages have more access to garden land, village and VOP women are not as heavily involved in marketing garden produce at local markets (Figure 3.9). They tend to sell more “tree fruit”, “poultry/meat/eggs” and “seafood”, which may reflect their better access to these resources. Also, given that they are living in the village context it is possible that a higher proportion of their surplus garden produce is channelled into customary exchange rather than markets. Overall, village/VOP women have very limited involvement in marketing relative to LSS women and other women (from urban settlements and company compounds) selling at local markets.

Apart from the economic benefits a market income provides, it is also a highly valued social environment for women to catch up on gossip, meet friends, relatives and recently arrived visitors from their home provinces, and to exchange stories and news. At the town market especially, women gather from all over the region and the market is a centre for the dissemination of news and information. We met many women who identified more closely with marketing than with oil palm production, and whilst this is partly a historical legacy of women’s marginal status in the oil palm industry, it also reflects the immense social significance women attach to marketing and the marketplace.

3.1.6 Customary economy

The indigenous economy consists of the exchange of goods, services, labour, traditional wealth items and cash between kin. The effect of exchange is to bind individuals and groups into networks of social relationships and obligations. Customary exchange can be in the form of daily gifts of cooked and uncooked food, garden and oil palm labour, various services and cash contributions to major events to mark initiations, marriage, birth, death, adoptions, dispute

settlements, or land transfers. Exchange is also increasingly being used to raise capital for business ventures and land purchases and to help with the education costs of children.

Customary exchange remains very important on both the LSS and VOP subdivisions. On the LSS subdivisions, exchange occurs between kin living nearby and many continue to participate in exchange with relatives in their home villages through either hosting short-term visitors or by making cash contributions to village exchange transactions or other requests. For LSS smallholders, it is in their interest to maintain customary exchange relationships with home so that their claim to village resources remains intact (Chapter 4.2.2). Some LSS smallholders have formed exchange relationships with unrelated settlers and contribute wealth and food to large ceremonies such as those surrounding marriage and death. These non-kin exchanges are a very important aspect of creating and strengthening a sense of community on the LSS schemes.

While customary obligations remain important on the LSS, it is more so on the VOPs. This is hardly surprising given that most VOP smallholders are still operating in the village context with all its networks of obligations and cultural practices still extant, whereas for settlers these networks have been altered, and partly eroded by their absence from their home villages. In Popondetta, for example, *pondo*, the Orokaivan term for customary exchange or feast, is central to social life and *pondo* events remain common where large quantities of food, pigs, cash and other items are exchanged. Such *pondo* exchange now extends to events such as Easter, Christmas, the opening of a new church, school or other community facility and to mark special days such as the anniversary of the Mt. Lamington eruption. A large *pondo* draws on extensive networks of kin who contribute pigs, garden food, cash and/or store bought foods. In this way, customary exchange is continually occurring between and within lineages which locks people into webs of social and material obligations. The intermittence of oil palm production on VOPs is sometimes attributable to the variable demands of customary obligations for labour, cash and time.

It is often assumed that cultural practices and customary obligations are an impediment to cash crop production (said to draw people away from production). However, the reverse can be true. Cash and store bought items are now important exchange items and one reason people engage in the market economy is to earn cash to fulfil customary obligations. In essence, the requirements of customary exchange can drive people's involvement in the market economy/oil palm production. For example, in Popondetta and at Gaungo, fluctuations in individual oil palm production among village smallholders can be explained partly by their activities in customary exchange. Some smallholders with intermittent involvement in oil palm production may not harvest for several months but will do so to contribute to a feast or exchange. For more regular producers, oil palm production may increase significantly when customary obligations are unusually high, such as when brideprices or death compensation must be paid. At other times, the harvest may be weighed on another card belonging to a relative, for example, to support a brideprice payment. It seems for village smallholders that cultural practices, obligations and rituals are timed to the oil palm cycle of payment, rather than with the garden cycle as practised in earlier times. The motivation to harvest is not so much concerned with accumulating savings for capital investments or consumption in the market economy, but with building and maintaining social relationships by redistributing wealth through exchange. Thus, for many VOP smallholders, oil palm production is very much embedded in kinship relations and customary obligations and does not conform to the model of the rational economic producer.

3.1.7 Other sources of income

VOP smallholders may also receive additional income as royalties from mini-estates or timber leases. Also, some VOPs at Hoskins such as Gaungo, Moroakea and Mosa "sell" land to non-clan members. Money earned from land sales can be substantial. During the survey period at Gaungo, one household received K3,000 and another K1,000 as part payment for sale of clan land. Whilst much of this income is distributed to other clan members, it remains an important income source for some households and allows them to make

significant capital investments in such businesses as tradestores, PMVs and fishing equipment.

Another source of income available to some smallholders at Hoskins are share dividends received biannually from NBPOL. In 1999 shares in NBPOL were offered at a discount to smallholders and approximately 2,300 growers took up the offer of shares in the company. The smallholder section at NBPOL estimates that between K300,000 and K400,000 was paid to growers as dividends in 2000. If we take K350,000 as an estimate for dividends paid to growers in 2000, smallholder shareholders earned an average dividend of K152.

3.2 Conclusion

Smallholders draw income and sustenance from a diverse range of sources, and oil palm is not always the principal activity or focus of people's lives. Indeed, where block populations are high and contain several household units, the block is often dependent upon several income sources for its livelihood and relies heavily on gardens for household consumption (see Chapter 4).

The diverse strategies pursued by smallholders are undertaken for several reasons. An important reason for income diversification widely raised by smallholders was that it lowered income risks by reducing their vulnerability to the fluctuating price of oil palm. During the latter stages of data collection when the price of oil palm dropped to K52/tonne, smallholders often referred to their dependence on other income sources to meet family needs. In one discussion with a grower at Kapore LSS on the range of income sources on his block, he remarked:

... banis kakaruk, em olsem liklik bisnis bilong mipela. Nau prais bilong wel pam igo daun, mipela lukluk long kakaruk na moni bilong maket.

... the chicken project is like our small business. Now the price of oil palm has dropped, we rely on the chicken business and local markets.

Similar sentiments were expressed on the VOP blocks. Such comments when combined with the data presented above illustrate that smallholder livelihood strategies promote household economic and social security by:

- increasing income and diversifying income sources;
- strengthening people's capacity to meet their needs;
- expanding the options and choices available to households;
- increasing food security;
- lowering risks; and,
- maintaining a sense of community.

Acknowledging the range of livelihood strategies operating on smallholder blocks and understanding why smallholder households undertake diverse economic and social activities may assist the industry in formulating appropriate smallholder interventions. For example, industry initiatives are probably more likely to succeed if they are compatible with (or do not undermine) household livelihood strategies. As outlined above, it may be that economic necessity (especially on the heavily populated blocks) leads a smallholder block to embrace a range of livelihood strategies to supplement oil palm income. Moreover, additional sources of income are even more critical to the household economy during periods of depressed oil palm prices. A fuller picture of smallholders that recognises their diverse situations and livelihood strategies and how these relate to variations in smallholder productivity would better inform smallholder interventions.

The range of livelihood opportunities also partly explains why some growers are more committed to oil palm production than others. It is probably correct to say that many VOP growers are part-time/intermittent producers who view oil palm as just one of several activities and choices open to them. On the VOP smallholder blocks managed by local landowners, harvesting is much more irregular than on the LSS schemes. VOP oil palm producers not only have an adequate subsistence base to provide for most of the daily food needs, but as in the case of Gaungo VOP, they often have a broader range of income sources than LSS smallholders. Thus, the economic pressure to harvest oil palm is not as great on the VOPs. They can, and do, shift in and out of production depending on the relative returns to labour of oil palm, other cash crops, fishing,

and garden production. Although such producers are a constant source of frustration to the industry, it may be better to accept this situation and look at ways of encouraging more flexible labour practices through the use of hired labour for harvesting and identify the ways in which the social and economic priorities of smallholders can be accommodated to increase oil palm productivity.

In brief, the ability of smallholders to pursue livelihood opportunities is important for the overall social and economic sustainability of the smallholder sector. The policy importance of such findings include:

1. Smallholders pursue diverse livelihood strategies as a way of reducing risk.
2. Non-oil palm incomes are important for maintaining the social and economic viability of smallholder blocks.
3. As population and land pressures continue to grow there will be increasing numbers of block residents engaged in non-oil palm activities.
4. Promotion of non-oil palm income earning opportunities is important for the long-term economic and social viability and development of the oil palm schemes.
5. Subsistence gardening is of critical importance to smallholders and ways of supporting the sustainability of food production, especially on the LSS schemes should be explored by the industry (e.g., composting trials, kitchen gardens, improving access to garden land, etc.).
6. While smallholders are competent in actively finding solutions to meet their needs, long-term planning is sometimes subverted to short-term needs when perceived levels of economic and social security are low.

Box 3.1: Chicken business, Gaungo VOP, Hoskins

William has two hectares of oil palm. We arrived at his block to complete the weekly survey and found him and his brother building a poultry coop. They were finishing the roofing when we arrived. Part of the roof was sago thatch and the rest covered with plastic, which William had bought for K68. William wanted to start his own poultry business after observing several successful poultry businesses in his village. Also, as he explained, poultry sales would provide him with supplementary income between the monthly oil palm cheques.

The estimated costs to establish the business are as follows:

Items	Cost (Kina)
1 box 52 chicks	130.00
1 bag starter	43.00
3 bags grower K43 X 3	129.00
1 bag finisher	43.00
TOTAL COST	K345.00

Estimated total sales

50 chickens at K20 each	K1,000.00
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Net profit	K655.00
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If the business succeeds, William plans to buy a further 3 or 4 boxes of chicks next time. A major factor determining the success of poultry businesses is credit repayments and saving the profits for reinvestment into the business. Many poultry sales are on credit and if the repayment of credit is delayed then the business can collapse.

Endnotes

1. The study of livelihoods and rural diversification is appearing as a new approach in rural development among international development organisations and practitioners. Our discussion of livelihood strategies is restricted to focusing on the economic and social activities households perform to secure livelihoods. Some studies use broader definitions and have included such components as household assets, educational levels, access to services or financial capital (e.g, Chambers and Conway 1992; Carswell 1997; Ellis 2000).
2. In Figure 3.1 the category “Rest at House” does not suggest that men spend a significant proportion of their time idle. In wet weather there is a tendency for men to stay around the house whereas women still need to visit their gardens to harvest food for meals. Also, on dry days when men said they were resting at the house, often a visitor was present, though this was under-reported. They were more likely to report “Visiting/ Socialising” when this involved a visit to another block.
3. Copra is the main alternative cash crop in New Ireland.
4. The behaviour of VOP oil palm smallholders is similar to other commodity crop smallholders in PNG where commitment to production depends on prices. In the Wosera subdistrict, East Sepik Province, for example, many smallholder coffee producers abandon their coffee blocks during depressed prices and concentrate their efforts on producing foods for sale at local markets.
5. In Popondetta growers planted aibika around the base of standing poisoned palms. Aibika flourished in these conditions which growers attributed to the abundance of organic material.
6. A study in two villages in New Ireland which owned copra plantations showed that fish landings were negatively correlated with the mean annual copra price (Dalzell and Wright 1990).

CHAPTER FOUR

MAINTAINING LIVELIHOODS IN THE CONTEXT OF RISING POPULATION PRESSURE

4.0 Introduction

Population growth on the LSS schemes is becoming a critical production issue. This chapter examines population growth on the Hoskins scheme and the economic and population pressures that are emerging on the Land Settlement Schemes. Hoskins LSS was established in 1968 and average number of persons per block has more than doubled over this time as second generation settlers marry, have children and remain living on the block as opportunities to return “home” diminish. As we argue, the recent increase in mean numbers of persons per block and the presently high numbers of households per block indicates in part how returning “home” is increasingly constrained for settlers as their village ties weaken through time. On the Hoskins LSS blocks (and possibly Bialla) it is now common for several family units to be residing on and sharing the resources of a block. Usually, these multiple household blocks consist of the elderly original owner, his married sons (and sometimes married daughters) and their families all residing on the block.

These multiple household blocks are often under a great deal of economic pressure as oil palm income is divided among several households. Further, because each family sharing a block has financial demands to pay for health, schooling, food and other basic household necessities, the conditions are present for social instability and conflict. In response, smallholders are pursuing a range of livelihood strategies not only for economic security, but also to promote social stability.

Chapter 3 described the range of livelihood strategies in which smallholders are engaged. In this chapter, we continue the analysis at the household level and

explore in more detail the situation of multiple household blocks which are now experiencing population pressure and where oil palm income alone is insufficient to meet family needs. The discussion draws attention to the ways households are dealing with falling per capita oil palm income as the number and size of households increase on the block. To capture this complexity we discuss the range of livelihood strategies households are adopting to maintain income levels and social and economic security.

The growing population on LSSs presents new challenges to the industry as the schemes become increasingly complex and internally diverse. The growing number and complex nature of multiple household blocks warrants further investigation to better understand the social and economic context as well as the agronomic circumstances of these blocks. Such information can assist future industry interventions and extension services.

Before we describe the strategies of multiple household blocks, a brief overview of population growth is provided.

4.1 Population and Demographic Issues: The Growth Of The Multiple Household Block

Between 1980 and 2000, WNB's annual population growth rate averaged 3.7%, making it one of the fastest growing provinces in the country (National Census of Population and Housing 2001). The increase is due to both in-migration and a high rate of natural increase. At the 1990 census, 29% of the WNB population were immigrants and the province's Total Fertility Rate was over 6, amongst the highest in the country. At 3.7% annual growth rate the population is doubling every 21 years. Kimbe's population has been growing rapidly (Keig 2001, 265), and it is likely that Biella too has been experiencing relatively rapid population growth.

Table 4.1 shows various estimates of average numbers per LSS and VOP block for the Hoskins scheme. They show an increase in population density from the early 1970s through to 2000. The small increase in density from 7.2 persons per block in 1975 to 8.6 in 1990, suggests that out-migration may have been a factor

over this period. It is probable that out-migration may have been more important in the earlier periods when ties with home were still strong and people were able to reintegrate successfully into their home villages.

Table 4.1. Mean numbers of persons per LSS and VOP block, Hoskins, 1972-2000

		YEAR			
	LSS/VOP	1972	1975	1990	2000
Mean number of persons per block	LSS	5.9	7.2	8.6	13.3
Mean number of persons per block	VOP	NA	NA	7.0	11.1

Source: Landell Mills 1991 and field survey data

A period of substantial population growth from 1990 to 2000 and the currently high numbers of households per LSS block (Table 4.2) may reflect the difficulty settlers would now face if they attempted to return “home”. Their long absences together with the fact that many of their children were raised in WNB and learned Melanesian pidgin rather than their home languages, would mean that their chances of returning home and re-establishing themselves are slim. Further, their home areas are likely to be also experiencing population pressure, especially because in the establishment of these schemes, settlers from land-short areas were given priority. So the recent growth represents a new situation in which settlers’ residence options are more constrained.

Unable to move “home”, the alternatives include off-block, long-term employment or a precarious urban existence in the rapidly developing informal settlements associated with most Papua New Guinean urban centres. Given that opportunities for formal sector employment are extremely limited (Levantis, 2000), these settlers have few options but to pursue income strategies in addition to oil palm to sustain their families.

Table 4.2. Mean populations and numbers of households per LSS block,
Hoskins, 2000

LSS SUBDIVISION	YEAR ESTABLISHED	MEAN POPULATION PER BLOCK	MEAN NUMBER OF HOUSEHOLDS PER BLOCK
Kapore	1968	11.5	2.5
Tamba	1968	17.4	3.9
Sarakolok	1969	9.8	1.8
Kavui	1972	17.2	4
Siki		11.4	2.6
Total		13.3	2.9

Source: Survey data

4.2 Livelihood Strategies Among Multiple Household Blocks

With a mean of 2.9 households per LSS block, there is increasing evidence of income diversification and other livelihood strategies emerging on multiple household blocks to compensate for falling per capita oil palm incomes. Much of the following discussion draws on data collected from Kavui subdivision where, in response to increasing numbers of households residing on blocks, families are adopting a range of livelihood strategies to sustain them. Our analysis of multiple household blocks concentrates on those blocks with at least three or more households co-residing on a block. Although the data presented here are derived mostly from Kavui subdivision, related issues were identified across all Hoskins LSS subdivisions. Smallholders on other LSS subdivisions often reported similar stories and emphasised economic and population pressures as the most critical issues affecting their lives. These issues are also likely to be relevant to the older LSS subdivisions on the Bialla scheme.

Population pressure is not yet an issue at Popondetta for two reasons. First, the scheme has been operating for a much shorter period and population densities per block are still relatively low. Second, many settlers and their children fled their blocks during the Oro-for-Oro campaign of the early 1990s (Chapter 5.1.2), many of whom have not returned. Those who did return often left family members in their home villages for their safety and/or to retain the option of a

return to their home village should the situation in Popondetta become untenable. However, the following discussion is pertinent for thinking about future plans for the scheme at Popondetta.

At Kavui the mean number of households per block is 4 (Table 4.2). These blocks are often under a great deal of economic pressure which can lead to tensions between block residents. Although grievances are frequently resolved amicably, occasional violence does erupt, especially between brothers, between father and sons and between families. In some cases, violent disputes can lead to the eviction of a block resident and their family, or a family being placed under intense pressure to leave the block. Disputes and violence often occur on payday and usually ignite over the distribution of oil palm income. The underlying cause of these tensions is insufficient oil palm income to support the large numbers of people on the blocks. Growing population density is thus leading to a process that could be described as a shared-down poverty.

The economic pressures and resultant tensions and conflicts are distressing for block residents as they threaten the integrity of the extended family group and undermine reciprocal obligations between co-resident kin. In response to these pressures, and in an attempt to maintain some level of economic and social harmony on the blocks, households and individuals employ a range of strategies aimed at preserving social cohesiveness. These strategies may not be concerned primarily with oil palm production, but are directed first and foremost at maintaining or regaining social stability and kin group cohesiveness. However, they do impact both positively and negatively on oil palm production and the oil palm industry as a whole. Such strategies include:

- Securing off-block employment and on-block economic diversification.
- Return migration.
- Land acquisition.
- Increased reliance on food gardens and markets.
- Adoption of new labour and payment arrangements.

4.2.1 Securing off-block income sources and on-block economic diversification

When several households reside on a block and oil palm income is insufficient to support all block residents, some male residents will pursue off-block employment and accommodation. If successful, they often provide financial support to relatives remaining on the block. It is not unusual in Kimbe to meet people in full-time employment who are subsidising their families residing on the LSSs. They meet large expenses such as school fees, customary payments like brideprices and relatively costly household items, and sometimes assist with “start-up” capital to establish small businesses on the block. Frequently, a portion of their fortnightly pay is regularly given to their LSS families to spend on everyday personal or household needs.

Yet, even without providing a significant external cash subsidy, off-block residence takes pressure off the remaining families on the block by *givem spes* (giving space) to other family members. The term *givem spes* was cited by many smallholders as an explanation for a family member living or working elsewhere. In this context it refers to less pressure on garden land and housing space, less crowding, and less pressure on the block’s resources including oil palm income. In the case of oil palm resources, *givem spes* refers in the broad sense to sharing oil palm work and income amongst fewer families/individuals. It also refers to the opportunity created for another brother to take more control of the block so as to accumulate capital to acquire land elsewhere in WNB (Boxes 4.1 and 5.5).

Some block residents find permanent or short-term off-block employment but remain living on the block, and like non-resident kin provide considerable income support to other block residents (possibly more so). But, off-block employment opportunities are limited and usually only open to males and those with high educational grades or work experience. Consequently, off-block employment is not an option for many living on populated blocks. Although women’s access to formal employment is limited, most are involved with marketing, and this income plays a very important role on densely populated blocks (see below).

Off-block employment is especially important to populated blocks when oil palm prices fall as sometimes there is simply not enough income from oil palm to meet even basic needs. During periods of depressed oil palm prices the numbers of young men from LSS blocks seeking plantation work increases dramatically, but when prices are high their numbers fall off (Waka Wayang, pers. comm.). Where the whole 6 hectares has had been planted to oil palm, and where there is inadequate access to land for food gardens, the situation for multiple household blocks can be very precarious. In these situations off-block employment or supplementary income sources are crucial for block residents.

Many settlers have established small businesses (PMVs, tradestores and chicken businesses) on their blocks to supplement income from oil palm and local markets. If these business ventures are relatively successful, one brother may opt out of oil palm entirely, or make fewer demands on oil palm income. Such a strategy is also described as *givem spes* to co-resident brothers and their families.

The economic pressure on densely populated blocks to develop supplementary income sources is reflected in the increasing numbers of non-oil palm income sources as average block population increases (Table 4.3). An LSS block with one non-oil palm income source (100% local markets) has a mean block population of 11.16, while blocks with three or more non-oil palm income sources have a mean population of 15.88, which supports the hypothesis that densely populated blocks are compelled to develop supplementary income sources. The relationship between numbers of non-oil palm income sources to population density is less clear on the VOPs, though, mean population per block does increase from one or two non-oil palm income sources to three or more supplementary income sources. This relationship on the VOPs is likely to be more complex because of the greater availability of land for subsistence production and because of the more extensive and developed kinship relationships that can ameliorate the impacts of a high population to oil palm resources ratio.

Table 4.3. Mean block population and numbers of non-oil palm income sources, Hoskins.

No. of non-oil palm income sources	LSS Mean population per block	VOP Mean population per block	LSS and VOP Mean population per block
One	11.16	9.69	10.56
Two	13.07	9.2	10.79
Three or more	15.88	14.17	15

Source: Growers Survey data (n=100)

The trend to increased reliance on non-oil palm income sources is likely to continue as population grows and as it becomes more difficult through time for second generation settlers to return home. This is especially the case on heavily populated blocks where employment, marketing and small business ventures provide essential additional income. This trend to income diversification has been observed in other smallholder cash crop areas of South America and Africa (e.g., Reardon 1997; de Janvry and Sadoulet 2001).

The income diversification strategies adopted by populated LSS blocks are very different to VOP blocks (Figure 3.2). On the VOP subdivisions income diversification is facilitated by more than adequate access to land (e.g., land for other cash crops such as cocoa and copra), whereas on the populated LSS blocks diversification is driven by inadequate access to land. In other words, land shortages in the context of rising population pressure compels LSS settlers to diversify income sources, whereas VOP landowners' greater access to land offers opportunities for income diversification that may or may not be taken up.

4.2.2 Return migration

One strategy some heavily populated blocks are relying on is return migration of one or more households to the home villages. This may be on a permanent or temporary basis. The decision to return permanently to the village can be explained by a combination of factors (e.g., a perception of an insecure future in WNB, a desire to return to clan lands, or a perceived lack of access to additional

land in WNB), although relieving pressure and *givem spes* on the block were commonly cited reasons for settlers returning home. Informants told us that those returning “home” permanently tend to be elderly blockowners who are now handing over block ownership to their son/s, and/or second or later born sons who are unlikely to inherit rights in the block. According to the provincial census co-ordinator, there is some evidence from the 2000 census interviews that some young men on the LSS schemes are beginning to return to their home provinces. These young men see their future in WNB constrained by limited land access and the potential for future land conflicts with indigenous landowners (B. Leo, WNB Provincial Census Coordinator, pers. comm.) (Box 4.2).

Apart from these permanent moves, short-term visits to the home village for up to twelve months are viewed, like off-block employment/accommodation, as providing some temporary relief to remaining family members on the block. More importantly, these trips home serve to maintain a person’s social identity in the village and reinforce their claim to village resources (see Curry and Koczberski 1999). Such visits are necessary if migrants plan to eventually return “home” to be re-integrated into village society with access rights to village resources. Hence, the occasional return trip provides an opportunity to reinforce claims to clan resources, and also deters other village lineages from appropriating these resources.

The return option is becoming increasingly constrained for settler families as their ties with “home” weaken through time, and population pressure at home makes village kin less likely to accept the return of long-term absentees. On many occasions second generation settlers told us they had no access to village land and many spoke of failed attempts at re-integration into their home villages (Box 4.3). Returning home is only open to select families who have maintained strong social and economic ties with home throughout their time away, and where sufficient clan land is available in the village¹.

For second generation settlers where the father is deceased and where ties with home were not maintained, return to the village is highly improbable. Second

generation settlers in this position are acutely aware of their predicament, especially those who were born in WNB and have never been to their father's natal village. Many would also be confronted with language barriers as they never learned their father's language having grown up with Melanesian Pidgin, the *lingua franca* of Papua New Guinea. The following quote expresses sentiments we heard on several occasions in discussions of the return migration option with second generation settlers on densely populated blocks:

... Papa graun ifoul long mipela brata..... Ol ino bin lukim pes bilong mipela...ol ino save long mipela, olsem wanem ol bai givem graun long mipela?
...the landowners [in the home village] do not know us [himself and his brothers] . They have never seen our faces...they do not know us. Why would they give us land? (Smallholder, Kavui).

Some smallholders unable to return home have attempted to acquire land in West New Britain.

4.2.3 Land acquisition

Acquiring additional land is the primary desire of most smallholders experiencing population pressure on their blocks. Land acquisition strategies can take several forms:

- Purchasing an LSS block.
- Purchasing a VOP block (usually 2 or 4 hectares).
- Squatting on government or private land.
- Seeking land in another province or moving into an informal (squatter) settlement in an urban centre.

Purchasing an LSS block

Several smallholders told us how they had acquired an additional block with the financial assistance of their father (using long-term savings from oil palm income) or from the savings of a close relative in waged employment. However, opportunities for smallholders to purchase LSS blocks are becoming increasingly constrained for three related reasons. First, as many smallholders highlighted, without substantial off-block income there is little opportunity to accumulate savings, especially when oil palm income is shared amongst several

households. Those families that purchased blocks with money saved from oil palm earnings started saving very early when their children were young. Second, the expansion of LSS schemes has ceased and apart from the recent release of new LSS blocks at Bialla (e.g., at Soi and Kabaya subdivisions), there are few opportunities to buy land on existing LSSs.

The final, and most significant constraint is the rapid inflation of LSS block prices. Whilst there are no comprehensive data on LSS block prices, several sales in 1999/2000 provide an estimate of between K15,000 and K20,000 per block (Table 4.4).

Table 4.4. LSS block sale prices for 1999-2000, Hoskins

Year of sale	Subdivision	Block Details	Sale price
1999	Kapore	6 ha block. 4 ha planted to oil palm.	K15,000
2000	Sarakolok	6 ha planted to oil palm, good house and tradestore on block.	K35,000
2000	Sarakolok	6 ha block. 4 ha planted to oil palm.	K19,000
2000	Sarakolok	6 ha block. 4 ha planted to oil palm.	K30,000
2000	Kavui	6 ha block. 4 ha planted to oil palm.	K20,000
2000	Kavui	6 ha block. 4 ha planted to oil palm.	K25,000
2000 (not yet sold)	Kavui	8 ha block. 4 ha planted to oil palm. Back portion of block hilly and unsuitable for oil palm.	K27,000
2000	Kapore	6 ha block. 4 ha planted to oil palm.	K20,000

Source: OPIC files and smallholder interviews

Average block prices have risen sharply since Hulme's estimate of K3,109 for the period 1976-79 (Hulme 1984, 248). There is anecdotal evidence to suggest that most of the inflation in block prices occurred within the past five years. Smallholders and company sources maintained that LSS blocks could be

purchased for between K4,000 and K5,000 about five years ago. A group of men at Kavui explained that because of the current high prices of LSS blocks, it is only company workers or people in good-paying jobs that can now afford to buy blocks. The current high prices of established blocks they argued, places LSS blocks beyond the means of settlers. Many times informants made references to '*fofnait man*' when describing those now buying blocks on the LSS subdivisions. There were suggestions that many of those now buying LSS blocks are oil palm industry workers acquiring blocks for their retirement/early retirement. While they are in full-time employment, they have relatives or friends caretaking their blocks. Without block transfer details it is difficult to verify the validity of these claims². It may well be the case that the recent rapid inflation in block prices is being driven not by settlers, but by those in formal employment. If this proves to be the case, then an avenue for settlers to adjust people-land ratios is now largely closed to them.

Purchasing VOP land

One result of the highly inflated prices of LSS blocks is that those original LSS settlers seeking to acquire additional land for their sons are now purchasing less expensive land from customary landowners. Customary land is significantly cheaper than LSS land, with prices ranging from K3,000 to K4,000 for a 2 hectare block of undeveloped land. But tenure of these blocks is insecure and these commercial transactions are fraught with risk (Chapter 6.2). Because of a paucity of data on VOP land purchases it is not possible to state conclusively who are buying customary land. Some of the senior clan leaders at Gaungo identified LSS settlers as those buying customary land. They said that land purchasers were mostly settlers' sons or settlers buying land on behalf of their sons. Some settlers' sons have gained access to VOP land through their long associations with local landowners through school, work or friendships developed by their father. However, we also came across instances of non-LSS people buying VOP land. These were men from over-populated parts of the country who had ties with settlers or were long-term plantation labourers seeking relatively inexpensive land on which to settle.

Squatting on government or private land

Another strategy LSS blockholders are adopting is the illegal occupation of government or private land. Unable to accumulate savings on highly populated blocks, some second generation settlers are now clearing government or company land adjoining the LSS subdivisions and planting oil palm. Oil palm seedlings are purchased by using their father's harvesting payment card. We came across several cases where access roads had been cleared to these blocks.

There is also illegal movement onto government reserve land at the community centres at Buvussi and Sarakalok LSS, and parts of the Dagi River floodplain have been planted to oil palm by settlers' sons. Uncontrolled movement onto government and company land has meant that the company and OPIC are now occasionally "discovering" new oil palm blocks. For example, in January 2001, 30 new blocks were "found" at Siki LSS subdivision (F. Lewis pers. comm.), and in an incident at Galai LSS subdivision in 2000, a NBPOL truck was forced to leave company land by smallholders who had planted oil palm in the area. It is estimated that between 10 to 15 growers have planted oil palm in this area of NBPOL land.

Last year, the Department of Lands at Kimbe received several requests from smallholders (via OPIC) to grant them government reserve land, usually adjoining their block, to plant oil palm. In one request received in October 2000, a group of twenty-five growers from Galai LSS submitted a joint application for government reserve land for the development of about 20 new blocks (Box 4.4).

OPIC staff have observed that the smallholders moving onto government reserve land are often young men from the more populated LSS blocks and are those who are likely to have lost access to resources in their "home" villages. The movement onto government reserve land and company land is a reflection of the intense pressures on highly populated blocks. As Boxes 4.4 and 4.5 reveal, the acquisition of additional land is viewed as a means of reducing social tensions and conflicts on the blocks, and for some, illegal occupation of land is their only recourse in these very difficult situations.

Seeking land in another province

Another way in which people seek land is through their ethnic organisations. Some groups, such as Sepiks and Morobeans, have, since the early 1980s, formed pressure groups to lobby the National and/or their home provincial governments to resettle their sons in their home provinces. That such groups have been in existence for almost two decades is indicative of the level of insecurity settlers have about their long-term futures in West New Britain, especially their children's future. For example, at the time of the Landell Mills study (1991, Volume III, 8) at Hoskins four ethnic associations existed (West Sepik Pressure Group, East Sepik Welfare Association, Morobe People's Association and Simbu Association) whose primary concern was for the 'resettlement of sons back to their original areas'. The activity levels of these groups fluctuate depending on current levels of ethnic tensions, group leadership and management, and perceived resettlement opportunities. For instance, at the time of fieldwork, the Sepik Association was actively pursuing opportunities for resettlement or employment in their home province associated with a proposed oil palm development planned in that province

4.2.4 Increased reliance on gardens for food and cash income

As discussed in Chapter 3, smallholders, particularly LSS settlers, have a heavy reliance on gardens for food and as a source of income. For example, as noted in that chapter, 80% of categories of meal ingredients at Kavui were from food gardens, reflecting settlers' dependence on their gardens.

While it was not possible to collect data on the areal extent of household food gardens, anecdotal evidence suggests dependence on food gardens (and market income) increases with block population. Highly populated blocks are possibly more likely to have disproportionately larger garden areas than blocks supporting fewer people. Many of these additional gardens are also likely to be located on other blocks and on government reserve or private company land adjoining LSS subdivisions, as the reserve two hectare sections at the rear of blocks are likely to be overused with consequent lower yields.

Multiple household blocks without off-block employment or supplementary income sources such as tradestores are likely to be highly dependent on garden production. For these blocks, especially the more populated blocks (see below), oil palm is likely to provide a supplementary income to the primary one of garden production. Women through earning income from local markets are, in many cases, providing the main source of family income (Box 5.7).

4.2.5 Adoption of new labour and payment arrangements

In an attempt to reduce social conflicts many multiple household blocks have changed the way that labour is managed and income distributed. An increasingly common way is to adopt a rotation harvesting system (*markim mun*). A rotation (*markim mun*) system is characterised by the allocation of a month's harvest and the monthly oil palm cheque to one of the multiple households residing on a block on a rotating basis. The following month a different household will perform most of the harvesting and collect the cheque. Thus, for example, if there are four households sharing the oil palm income, each household receives three cheques per year with four months between each payment. The household that has been allocated the harvest may or may not receive assistance with harvesting from other households on the block. Both the FFB harvest and the loose fruit collection are rotated on a monthly basis. Typically, one household is allocated FFB and another household is allocated loose fruit collection in any one month.

Many smallholders from heavily populated blocks related how they moved from co-operative family harvesting (*wok bung*) to a rotation (*markim mun*) system following continual disputes over the distribution of oil palm income. It appears that when the number of household units becomes too great for the sharing of oil palm income or when disputes over the disbursement of income threaten social harmony on the block, a rotation system is adopted. During the lengthy period without oil palm income, households rely on alternative income sources or the generosity of the brother whose turn it is to receive the cheque. Although the prolonged gap between oil palm cheques places enormous financial strain on

families, periodic access to a full month's income from oil palm allows families to make relatively expensive purchases such as mattresses, clothes, sheets, school fees, etc. This would not be possible if the cheque were distributed amongst families every month.

4.3 Conclusion and Recommendations

This chapter has highlighted the population and economic pressures emerging on the LSS blocks at Hoskins and the associated changes occurring as households respond to these pressures. New livelihood, oil palm harvesting and payment strategies are emerging as households search for ways to maintain economic security and social harmony among block residents suffering rising population pressure and falling per capita oil palm incomes. These production and livelihood strategies are not simply a direct response to population and economic pressures, nor even concerned primarily with increasing oil palm production, but are part of smallholders' immediate efforts to maintain social stability on the block.

Emerging economic and population pressures and the increasingly diverse economic and social situations operating on blocks presents a challenge to the industry to rethink existing ideas about smallholders, smallholder production and smallholder interventions. The following are just a few issues the industry faces with the increase in the number of persons and households residing on blocks:

- Changes in smallholder oil palm labour and income arrangements.
- Falling per capita oil palm incomes as the number and size of households increase on the block.
- Increasing economic pressure on blocks is leading to the development of a range of supplementary income sources. Where oil palm income alone is insufficient to maintain income levels, oil palm harvesting is becoming just one of many economic activities carried out by smallholders.
- A range of livelihood strategies may be necessary to allow heavily populated blocks to meet their basic household needs.

- The heavy and increasing reliance on gardens questions policies on expanding oil palm plantings to all 6 hectares.
- The growing number of people seeking illegal or insecure access to land presents risks for the stability of the schemes.
- Increasing numbers of under-employed people on blocks, especially youth, are being left out of oil palm production.
- Increasing social instability and conflict on populated blocks is negatively affecting smallholder production.

The above points suggest that interventions that foster economic and social security and community cohesion are vital for the long-term viability of the oil palm schemes. We suggest that there are several potential interventions that will promote the long-term viability of these schemes. These include:

1. Encourage the development of supplementary income sources that do not compete for labour with oil palm. This can be achieved through promoting small business development and other successful business initiatives that already exist on smallholder blocks. As the numbers of block residents increases, smallholders are attempting to diversify income sources to maintain per capita incomes. The fact that this process of income diversification is associated with population density suggests that the development of supplementary income sources is not competing for labour with oil palm production. Therefore, it would be useful to view these developments not as a threat to the industry because of their potential to draw labour away from oil palm production, but as a stage in the evolution of these schemes.

As the schemes begin to pass through a generational change and smallholder blocks become more complex social and economic units, there are opportunities for the industry to capitalise on these changes so that the social environment becomes more conducive (stable) for oil palm production. The aim here is to foster stronger local economies and job growth from the economic base that oil palm already provides. For example, the encouragement of small-scale businesses requiring little start-up capital such

as for the repair of tools, nets and wheelbarrows would help initiate this process of income diversification.

2. Maintain and enhance food security. Because of the priority of subsistence food production in the livelihood strategies of smallholders, particularly on the heavily populated LSS schemes, ways of supporting the sustainability of food production should be explored by the industry. We make several recommendations in this regard.

First, retain 2 hectares of garden land on LSS blocks for food garden production. The reliance of settlers on food gardens questions OPIC's current objective of expanding oil palm plantings to all 6 hectares of LSS blocks – a policy endorsed by a recent World Bank report (ADS (PNG) 2001, 83) (Chapter 7.4). Because food gardens enhance food security and lessen risks associated with fluctuating oil palm prices, we disagree strongly with this policy and urge the industry to reconsider this policy.

Second, develop new initiatives to improve the soil fertility of garden land. After more than 20 years of intensive garden cultivation on the rear 2 hectares of LSS blocks, many smallholders complained of declining yields. In some instances, because of extremely low yields, smallholders had abandoned food production on their blocks and were cultivating food gardens elsewhere (e.g., in oil palm stands poisoned for replanting, on land belonging to other smallholders, private companies and land bordering the LSSs). Falling yields are therefore driving some smallholders to cultivate food gardens on land to which they have no legal right.

One approach to improve soil fertility on smallholder blocks is to encourage the use of fertiliser on gardens, which a small number of smallholders are already doing with impressive results. Extension efforts to promote the use of fertiliser on oil palm are more likely to be effective by using demonstration food gardens where the impacts on yields are immediately apparent to smallholders. We anticipate that the use of food gardens as demonstration plots for fertiliser would translate into increased fertiliser use

on oil palm as smallholders come to appreciate the relationship between fertiliser application and increased yields.

Other potential initiatives to improve soil fertility include extending current NBPOL research on the composting of Empty Fruit Bunches (EFBs) to settlers' food gardens. Composted EFBs, perhaps supplemented with inorganic fertiliser, could lead to the development of permanent food gardens on settlers' blocks thereby easing the demand for garden land by reducing or eliminating the need for a fallow period. The use of compost to establish permanent "kitchen" gardens has proved successful in urban settings in PNG and other South Pacific countries, and may be similarly successful on LSSs where access to garden land is becoming more constrained by population growth. Such an initiative on the LSSs would also require trial demonstration plots to reveal to smallholders the value of EFB compost for increased yields and shorter fallow periods. If such trials were to prove successful and receive the support of smallholders, a series of LSS drop-off points for compost could be identified for the delivery of composted EFBs by fruit collection trucks on outward trips from the mill.

3. Promote family planning and household budgeting. These two areas are important in any integrated strategy to improve the social sustainability of the schemes. Family planning is a particularly pressing issue on the older LSSs. Field days or community meetings where nurses or family planning officers from the Health department give advice on family planning issues are necessary and require the support of both the companies and OPIC.

Equally important is encouraging greater awareness of household budgeting among smallholders. Hoskins OPIC is encouraging smallholders to open bank accounts into which their oil palm income is paid. As many smallholders have little or no experience with banking and have limited budgeting skills, it would be worthwhile to provide smallholders with opportunities to learn about saving and general budgeting. Bank staff should be encouraged to participate in field days as a matter of course given that a large and growing number of their customers are now smallholders.

4. Introduce a scheme that would encourage greater participation of young men in oil palm production. Despite population pressures on the blocks, there is a high level of under-utilised labour (especially young men on the LSSs at Hoskins and probably Bialla), and much under-production. For the industry young men represent an under-utilised resource who, if given appropriate financial incentives, could significantly raise smallholder productivity and output. In Chapter 8 we discuss in detail a potential payment system targeted at young men to increase their participation in the industry and increase smallholder production.

Box 4.1. Off-block employment, Kavui LSS, Hoskins

The original blockowner and his wife are deceased. The title of the block was officially transferred to the first born son, Joe (tertiary educated), who is a supervisor for NBPOL and has lived off the block for several years. Prior to the death of the father in the mid 1990s the parents lived for several years on another smallholder cocoa block in Rabaul. The father had bought the block in Rabaul to relieve the pressure on the Kavui block.

Joe's five brothers live on the block. Two are married, with five children between them and the other three brothers range in age from 11 to 18 years. One of the married brothers (David) gained employment with NBPOL and his family moved to a company compound at the beginning of the survey period. When the parents left their home village in the early 1970s they were accompanied by the wife's brother, Daniel, who lives on the block, with his wife and five children. Another relative, Dennis, lives semi-permanently on the block and has erected a house on the boundary of the adjoining block purchased by Joe several years ago.

During the survey period, two relatives were visiting and living temporarily on the block. Currently there are three households and a total of 17 people residing on the block.

All 6 hectares have been planted to oil palm and the families rely on their brother's neighbouring block for garden land. Some small gardens are maintained on the block.

The family has taken several steps to relieve economic and social pressure on the block. Joe purchased the adjoining oil palm block and obtained off-block employment. David has recently moved off the block into full-time employment. Both these moves were initiated to '*givem spes long ol*' – "provide space" - on the block. Also, the two brothers in employment provide financial support to those remaining on the block and help out on the block if any problems, like illness, arise. Joe also pays the school fees for his youngest brother. The brothers' off-block residences are appreciated for the short breaks away they provide for those remaining on the block.

The third born son returned to their home village a few years ago to see if he would like to resettle there, but returned to West New Britain believing there was too much illness and death associated with sorcery.

Box 4.2. Return migration, Sarakolok LSS, Hoskins

This caretaker block is maintained by the original leaseholder's in-laws. The caretakers (Chris and Sylvia) own a block at the Bialla scheme and were invited recently to look after this block at Sarakolok. They moved to Sarakolok to relieve some of the pressure on their Bialla block and allow the two married sons and their families more 'spes' on the block. Their two teenage sons, Joseph and Michael, moved with their parents to Sarakolok. Joseph works full-time as a shop assistant at Kimbe.

Chris and Sylvia said they gave a lot of thought to their sons' futures in WNB and are concerned about their unmarried son's access to land for oil palm production. Joseph is also well aware of the difficulties that confront him. He has been saving money from his fortnightly pay and would like to "buy" some customary land at Gaungo. However, last year his father refused to give him the additional money required for a deposit on some land and tried to dissuade his son from buying customary land. He told his son that the tenure is too insecure on purchased customary land.

Joseph is now placing pressure on his father to return to his village to plant coffee and vanilla in preparation for the family's return. However, there have been land disputes over Chris' access to village land for cash crops in the past. Joseph, a qualified mechanic, would also like to set up a small vehicle workshop on the highway near his father's village.

Box 4.3. Failed attempts at re-integration into "home" village, Kavui, LSS Hoskins

Seven brothers live on this block. Four are married with children and three are single. A total of 20 people reside on the block. The parents who moved to Kavui from the Highlands are deceased. All the sons were born at Kavui.

The eldest brother, Gabriel, explained that with so many brothers living on the block, the various households experience a great deal of economic pressure. They have a rotation system operating on the block, but disputes often occur on paydays. The brothers are currently looking at ways of resolving the problems on their block and recently some attempted resettling back in their father's village.

At the beginning of this year Gabriel and his three unmarried brothers went back to the village where they had been told by their father that their land boundaries were clearly marked. However, when they returned to the village, clan members denied them access to land as the land had long been taken over and used by other clan members. Gabriel reminded clan members that his father, along with other clan members, fought hard to obtain the present village land and this should be recognised by the clan members. After an unwelcomed short stay in his father's village, Gabriel left the highlands and returned to the block. The three unmarried brothers remain in the highlands where they are waiting for Gabriel to fund their trip back to WNB.

Gabriel is worried about his brothers' return as he will have to revert back to rotating the cheque between all brothers. He will then have a six month wait between cheques.

Box 4.4. Request for Land, Galai LSS, Hoskins

The President,
Mosa Local Level Government,
Kimbe, WNBP

13th October, 2000

Attention: Mr. Peter Robin.

Dear Sir,

INTERESTED IN DEVELOPING FOREST LEASES AND STATE RESERVE LAND FOR OIL PALM CULTIVATION – GALAI ONE SUBDIVISION

Sir, we the leaders of Galai One community who have signatures appeared on this letter have this felt problem to express to you so you assist us press our enquiries to above authorities eg. Governor's office etc for reconsideration and possibly approval.

We are interested in developing the above subject land to oil palm cultivation (see map attached). We would like to advocate such a move in light of increasing population pressure now experienced here on the oil palm project especially in land resettlement scheme blocks eg. Galai Subdivision in the Hoskins project.

We leaders would like this to take place in order to relocate some of our family members at this subject land in order to avoid some hardships and related economic and social problems faced nowadays.

Sir, if our request are taken to consideration and other further actions we definitely will be solving those problems expressed. The area will be accommodating up to 20 blocks plus.

Sir, this will very much depend upon availability of funds and resources but it's a matter of expressing what problems we have so we find ways to solve this problem together.

Finally, if our request is given full consideration your office will be supported thoroughly by us leaders and our people here at Galai subdivision.

LEWIO WINIAS
C.A.C. Representative
Galai One

JOHN MUI
Community Leader
Galai One

NELSON KUMUN
Representative
Galai Community

MICHAEL CHAN
Community Reps.

cc: Governor's Office,
Kimbe, WNBP

cc: Chairman,
HOPGA,
Kimba WNBP

cc: District Officer – Lands,
Kimbe, WNBP

cc: The Secretary,
SBLC Re-forestry,
Buluma, WNBP

PS: The attachment:

- (i) Sketch of Area in Galai One, Block Map.
- (ii) (ii) A copy of letter to Divisional Manager, Buvussi/Galai by OIC Galai Sub division.
- (iii) Intending lists of Applicants

Box 4.5. Movement onto company land at Galai LSS, Hoskins

Boma's parents settled at Galai when it was first established and most of the children were born on the block. There are seven brothers and two unmarried sisters living on the block. Three brothers are married and between them have 10 children. A total of 22 people live on the block. The households rotate the papa and mama card, and a tradestore/bottle shop provides additional income. Their six hectare block adjoins company land. The full six hectares are planted to oil palm, and the adjoining land is used for garden cultivation. The gardens are very important for women to earn additional cash at the local markets.

Last year, Boma planted an additional "4th hectare" on what he refers to as the "reserve" land adjoining his block. Nine of his neighbours whose blocks back onto the company "reserve" land have also extended their oil palm plantings to a "4th hectare". Each have planted 240 seedlings, and hope to eventually get approval from the Lands Department to register the land so that a separate block number and payment card can be issued. Some of the growers have organised and paid for a grader to put access roads through to their 4th hectare and Boma recently paid K760 for the grading of a short but very rough road to his new plantings. Boma and those of his neighbours who have lost access to land in their "home" villages see the additional 2 hectares as providing a brother or son with a separate income which therefore takes some of the economic pressure off the existing block.

Endnotes

1. Several studies in PNG now show that maintaining long-term relationships with home does not always guarantee successful re-activation of resource rights due to rising resource pressure in migrant source areas (e.g., Carrier and Carrier 1989; Zimmer-Tamakoshi 1997; Curry and Koczberski 1999).
2. In one conversation with an OPIC officer he described how his approach to work and dealing with smallholders is changing as he is dealing with more growers who have either high educational grades or long work histories – characteristics not commonly found among original block owners.

CHAPTER FIVE

SMALLHOLDER HOUSEHOLD PRODUCTION UNITS

5.0 Introduction

Chapter 4 drew attention to the changing demographic situation of Hoskins LSS where the increasing numbers of multiple household blocks mean that oil palm income is insufficient to meet income needs. The discussion revealed that multiple household blocks are complex economic and social units and far more heterogenous than the nuclear single families that first settled the scheme in the late 1960s and early 1970s. These multiple household blocks have adopted new oil palm labour and production strategies and pursue diverse livelihood strategies to maintain household economic and social security.

The population and demographic changes occurring on the older schemes and the increasing complexity of household structures questions existing frameworks for understanding and analysing smallholders and smallholder production. While the smallholder high-low production framework used in the Landell Mills study and in the OPIC workshops (Chapter 2), produced valuable information for understanding variations in smallholder productivity, it does not capture the complexity of production strategies now present in the smallholder sector.

Further, a high-low producer framework does not lead to thinking through the everyday processes within households and how individual family members and households on a block interact with each other. Moreover, a high-low producer dichotomy can conjure a static image of a high producer as an individual farmer or single household working together and making rational economic decisions about oil palm production; low producers, on the other hand, may be perceived as economically irrational decision-makers, poorly skilled, uneducated, or lazy (lacking commitment), and thus incapable of shifting to higher levels of productivity without some external intervention. This leaves little room to think

about the socio-agronomic and economic arrangements of growers as they attempt to balance family food security, income needs and loan repayments in the context of fluctuating commodity prices and increasing population pressure.

To overcome some of the limitations of the high-low smallholder framework, this chapter presents an alternative framework for analysis that aims to capture the diverse household types now present on smallholder blocks and the varied ways in which smallholder oil palm labour is organised and remunerated. The framework is based on a simple household typology which is used to identify inter- and intra-household processes to better understand constraints on and variations in smallholder productivity. The chapter begins with a discussion of smallholder household production units (single household, caretaker household, and multiple households) to examine the dominant forms of labour allocation and payment arrangements in oil palm production to understand variations in smallholder productivity. The discussion also draws attention to one of the main findings of the study, which is the transition now occurring in land settlement schemes at Hoskins (and probably Bialla) where single household blocks are giving way to multiple household blocks. This transition is being accompanied by significant shifts in oil palm labour and income strategies which have important implications for how the industry interacts with the smallholder sector.

5.1 Smallholder Household Production Units

As the smallholder sector develops over time diverse household types are emerging to include:

- Single household blocks – usually consist of one household made up of household head, spouse, children and relatives attached to the household such as an elderly parent of the husband or wife, and/or short-term visitors.
- Caretaker household blocks - many caretaker households are single households consisting of the household head, spouse, children and relatives attached to the household, such as a brother or temporary visitor. The type of relationship between the blockowner and caretaker varies. Caretakers can be close kin (e.g., brother, brother-in-law), distant

relatives, friends or merely someone from the same ethnic group as the blockowner.

- Multiple household blocks - often consist of the elderly original owner, his wife, their married sons (and sometimes married daughters) and their families. On some of the older LSS schemes the original owner is deceased and the married sons/daughters now share the block.

Alongside this diversification of household types new ways of organising and remunerating labour are emerging. Two main types of oil palm production strategies found on blocks are the traditional *wok bung* pattern where all household members harvest together and share the income, and a rotation harvesting system where the harvesting and oil palm cheque are rotated among the co-resident households on a block. The rotation system is referred to by smallholders as *markim mun*, and is a recent shift in labour organisation in oil palm production (see Chapter 4.2.5 for more details on the rotation system).

Payment arrangements differ between the two harvesting systems. Blocks with a *wok bung* system share the monthly/fortnightly cheque between family members, whereas on rotation (*markim mun*) blocks the cheque is allocated to an individual household on a rotating basis. The latter tends to emerge when the sharing of income among several co-resident households is disputed. The way in which labour is remunerated also appears to differ between the two harvesting systems. Labour remuneration on a rotation (*markim mun*) system is usually expected to be commensurate with labour input and there is limited in-kind payment for labour. On a *wok bung* system labour remuneration is not necessarily commensurate with labour input, but rather payment is governed more by gender, age, or kinship status. Thus, there is usually more in-kind payment for *wok bung* harvesting labour and/or reciprocal (unpaid) labour.

Taking into account the varied household types and harvesting production and payment systems now found on smallholder blocks, we present smallholder household production units as a framework for analysis based on different household types (single, caretaker and multiple households) and the dominant

oil palm production strategy operating on a block. We identify the following typology of smallholder household production units:

1. Single household (*wok bung*). All or most adult family members work together to harvest.
2. Caretaker household. Usually single household working together (*wok bung*).
3. Multiple household (*wok bung*). Most adult members from each household work together to harvest, and adult women rotate the collection of loose fruit between households.
4. Multiple household (*markim mun*). Harvesting and loose fruit collection are rotated monthly between the different households resident on the block.

The type of smallholder household production unit on a block reveals much about other key household factors/processes affecting block productivity. These other household factors are:

- labour supply and organisation;
- decision-making;
- income distribution;
- family/gender relations;
- the range of livelihood strategies;
- production motivation.

These key household factors have been incorporated into our analysis of household production units to explain variations in block productivity. For example, how labour is organised and mobilised, how income is distributed, and how decisions are made on a block can explain much about variations in productivity between smallholders and household production strategies. Below, we provide a description of the four primary types of smallholder household production units. We describe the dominant characteristics associated with each type.

5.2 Single Household – *Wok Bung*

Single household blocks are predominantly found on the VOPs. These households tend to have a *wok bung* production strategy whereby adult male members harvest the FFB and women and children collect the loose fruit (and sometimes wheelbarrow FFB to the road). Usually, the oil palm cheque is shared among the adult members of the household, but not necessarily commensurate with labour input (see below).

5.2.1 VOP blocks

On VOP single household blocks oil palm harvesting often involves reciprocal exchanges of labour with relatives residing on other blocks or in the village. Much of this labour is unpaid and is considered to be in the realm of customary obligations, and is therefore subject to the rules and obligations associated with customary exchange. Flows of labour in and out of the block also extend to other activities such as gardening, house building, fishing and block maintenance. The sheer volume of labour flows on the VOPs, makes it difficult to think of these single households as bounded production units as they are characterised by interdependence with other VOP blocks and village households.

On VOP single household blocks, income distribution often does not reflect the labour input of individual household members. Instead, income distribution is shaped more by gender and kinship relations, customary obligations and age. Sometimes these culturally specific variables determining payment are disputed, sometimes not. Also, social obligations to share are particularly pronounced on the VOP blocks and it is more difficult for an individual to retain most of the income. Indeed, the social demands and obligations placed on oil palm income by kin can be very high and take a significant proportion of the oil palm cheque.

Single household VOP blocks also tend to have a high level of variability in their commitment to oil palm production. Some growers have limited involvement with oil palm production and harvest occasionally when

supplementary income is required for household/personal needs or to meet customary obligations. In the village setting they often have adequate access to gardening land for subsistence as well as other sources of income. Because of these factors (rather than labour shortages or household conflicts), irregular or incomplete harvesting often characterises these blocks.

On many of the single household VOP blocks visited at Gaungo, when asked about decision-making, most respondents said that the male household head was the “boss” of the block and therefore made the major decisions regarding oil palm.

5.2.2 LSS blocks

Single households on the LSS subdivisions differ from those found on the VOPs and are more likely to be young families or elderly blockowners whose adult children are residing elsewhere. In these instances labour shortages are more likely, leading to incomplete or irregular harvesting. If they have relatives residing nearby they can sometimes call on them for assistance with harvesting, or they may rely on hired help. In either situation, labour availability is likely to be more constrained so that production can vary markedly through time depending on labour availability and their willingness to pay for hired labour.

Oil palm income is usually shared between household members and with off-block relatives who have contributed labour to the harvest. But, some household members’ labour contribution to harvesting gives them limited rights to the income (e.g., younger sons), so most of the income is retained by the male head of the block. This provides scope for disputes and withdrawal of labour (see below).

The dominant form of decision-making authority on LSS single household blocks is centralised (usually the male household head), although there are instances of co-operative decision-making. Sometimes decisions are disputed. For example, on some blocks where the male head has control, his decisions may be challenged by a wife or son. This appears more common on LSS blocks

where sons are seeking greater control of the block and therefore challenging the authority of their fathers (usually elderly). Such tensions between household members can affect oil palm production through the withdrawal of some family labour.

A summary of the main characteristics of single household (*wok bung*) block is provided in Table 5.1. Two case studies of single household blocks are presented in Boxes 5.1 and 5.2.

Table 5.1. Main characteristics of single household (*wok bung*) production unit

MAIN HOUSEHOLD FACTORS	SINGLE HOUSEHOLD VOP	SINGLE HOUSEHOLD LSS
PRODUCTION STRATEGY	<ul style="list-style-type: none"> Family works together 	<ul style="list-style-type: none"> Family works together
LABOUR CHARACTERISTICS	<ul style="list-style-type: none"> All family members contribute labour. Labour exchange with extended kin. Sufficient household labour. 	<ul style="list-style-type: none"> All family members contribute labour. Hired help. Shortage of labour (usually elderly block owner or young family).
DECISION-MAKING	<ul style="list-style-type: none"> Central authority. Co-operative. Disputed authority. 	<ul style="list-style-type: none"> Central authority. Co-operative. Disputed authority.
INCOME DISTRIBUTION	<ul style="list-style-type: none"> Shared within family. Shared with extended off-block kin 	<ul style="list-style-type: none"> Shared within family. Mostly retained by one individual.
FAMILY/ GENDER RELATIONS	<ul style="list-style-type: none"> Egalitarian/social cohesion. Unequal/conflict. 	<ul style="list-style-type: none"> Egalitarian/social cohesion. Unequal/conflict.
PRODUCTION MOTIVATION	<p>high</p> <ul style="list-style-type: none"> Competitive producer. Indigenous obligations. <p>low</p> <ul style="list-style-type: none"> Reasonable alternative sources of income. Subsistence security. 	<ul style="list-style-type: none"> Debt reduction. Competitive producer. <ul style="list-style-type: none"> Low debt. Few dependants.

5.3 Caretaker Household – *Wok Bung*

Many caretaker households are single households consisting of the household head, spouse, children and relatives attached to the household, such as a brother or temporary visitor. In most instances caretaker single households adopt a *wok bung* production strategy where all family members contribute labour to oil palm harvesting.

Household characteristics and oil palm labour and payment arrangements vary considerably on caretaker blocks. Also, the type of relationship between the blockowner and caretaker varies greatly. Caretakers can be close kin (e.g., brother, brother-in-law), distant relatives, friends or an unrelated person from the same ethnic group as the blockowner. Some blockowners maintain close and regular contact with their caretakers, while others may allow many years to elapse between visits to the block or communications with their caretakers.

The strength and nature of the relationship between caretaker and blockowner has a significant influence on block productivity. A good working relationship between caretaker and owner is reflected in regular harvesting and high production. Disputes and uncertainties can shift a block to the low production category for several months or years. A key factor affecting the type of working relationship between caretaker and owner is how income is shared between the two. Again there is considerable variation in the oil palm payment arrangements on caretaker blocks, with some caretakers controlling all or retaining most of the income while some caretakers rely on owners to distribute the proceeds of the oil palm cheque. Whilst the former makes for the most harmonious situation, it can breakdown if, for example, the caretaker begins avoiding bank or company loan repayments on behalf of the owner.

Where payment is made by the owner to the caretaker there is more likelihood of grievances emerging, particularly if payments vary and do not reflect the labour input of the caretaker's family. In some cases, where the kinship relationship between the owner and caretaker is unequal, lower payments to the caretaker may reflect their relative kinship status rather than the labour input of the caretaker. In some situations reduced payments are tolerated, but for many there is an eventual fracturing of the relationship. The unstable nature of many caretaker-owner relationships partly explains why production on caretaker blocks is often disrupted by protracted disputes.

Control over decision-making can also influence production on caretaker blocks. Caretakers sometimes have limited decision-making control over inputs such as purchasing fertiliser, replanting, hiring labour or investing in new tools.

Long delays may be experienced before decisions are made on replanting or the purchase of new tools. On the other hand, where a caretaker has authority to decide block investments and maintenance, there can be a level of reluctance to invest in the block, especially regarding medium and long-term investments such as replanting when the ultimate beneficiary of the investment will be the blockowner. This reluctance to invest increases the higher the level of tenure uncertainty and the longer the delay in investment returns.

Little is known about the mean productivity of caretaker blocks because of the difficulties in identifying such blocks on production data bases. It is likely that there is high variability in commitment to oil palm production and possibly lower productivity given the likelihood of disputes. There is some evidence for this argument at Popondetta where caretaker blocks on LSS blocks are common and where productivity of LSS blocks is lower than VOP blocks – a situation not found at Hoskins or Bialla. Whilst there are other factors explaining the lower productivity on LSS blocks at Popondetta (such as insecure land tenure and a large number of “abandoned” blocks), the high rate of caretaker blocks is likely to be an important contributing factor.

A summary of the main characteristics of caretaker household (*wok bung*) blocks is provided in Table 5.2. Two case studies of caretaker household blocks are presented in Boxes 5.3 and 5.4.

5.4 Multiple Household – *Wok Bung*

Multiple household *wok bung* blocks are often characterised by a high level of inter-household dependence and co-operation and adequate labour supply. Although each household may have its own gardens, separate supplementary income sources and allocate most of their non-oil palm labour to their own household activities, the different co-resident households may also maintain common gardens and regularly share food and subsistence work.

Table 5.2. Main characteristics of caretaker household production unit

MAIN HOUSEHOLD FACTORS	CARETAKER HOUSEHOLD
PRODUCTION STRATEGY	<ul style="list-style-type: none"> • Work together.
LABOUR CHARACTERISTICS	<ul style="list-style-type: none"> • All family members. • Hired help. • Limited labour exchange with off-block kin.
DECISION-MAKING	<ul style="list-style-type: none"> • Shortage of labour. • Central authority. • Co-operative. • Disputed authority. • Limited decision-making control as caretaker.
INCOME DISTRIBUTION	<ul style="list-style-type: none"> • Controlled by caretaker and shared within family. • Controlled by caretaker and shared unequally. • Controlled by owner and shared “fairly” with caretaker family. • Controlled by owner. Shared unequally but not disputed.
FAMILY/ GENDER RELATIONS	<ul style="list-style-type: none"> • Egalitarian/social cohesion. • Unequal/conflict.
PRODUCTION MOTIVATION	<ul style="list-style-type: none"> • Tenure insecurity. • Indigenous obligations. • Obligations to caretaker.

With a multiple household *wok bung* strategy the FFB cheque is shared among the adult males of all the households, and the mama cheque is allocated to a female from one household on a monthly rotating basis. On occasions, the FFB cheque may be allocated to a particular household for a month. With all households working together on oil palm, labour shortages for FFB harvesting rarely occur. An adequate labour supply and harmonious social and working relationships often translate into complete and regular FFB harvesting and loose fruit collection. Usually, where households work together on FFB harvesting, individuals and households receive a share of the primary oil palm income which they consider fair. Disputes over FFB income distribution are infrequent and harvest labour is rarely withdrawn due to conflicts on the block. It is likely that women on these blocks were among those few who collected loose fruit prior to the introduction of the mama card.

To a large extent, co-operative labour arrangements on multiple household *wok bung* blocks reflect either shared decision-making where most household members contribute to production and income decisions, or centralised

decision-making dominated usually by the male head of the block but which is rarely disputed. The multiple household *wok bung* block can be characterised as an egalitarian and cohesive family production unit. These blocks are likely to be the most productive and represent many of the high producing blocks, though further data are necessary to substantiate this claim.

Table 5.3. Main characteristics of multiple household (*wok bung*) production unit

MAIN HOUSEHOLD FACTORS	MULTIPLE HOUSEHOLDS (<i>WOK BUNG</i>)
PRODUCTION STRATEGY	<ul style="list-style-type: none"> • Households work together on FFB harvest and women rotate loose fruit collection.
LABOUR CHARACTERISTICS	<ul style="list-style-type: none"> • All members of households. • Inter-household cooperation. • Limited labour exchange with off-block kin (LSS). • Sufficient household labour.
DECISION-MAKING	<ul style="list-style-type: none"> • Co-operative. • Central authority (strong). • Disputed authority (weak).
INCOME DISTRIBUTION	<ul style="list-style-type: none"> • Shared between households. • Shared unequally but not disputed. • Occasional rotation of income.
FAMILY/ GENDER RELATIONS	<ul style="list-style-type: none"> • Egalitarian/social cohesion.
PRODUCTION MOTIVATION	<ul style="list-style-type: none"> • Debt reduction (LSS). • Competitive producer. • Indigenous obligations (VOP). • Limited alternative sources of income (LSS). • Economic pressure (LSS).

Disputes do occur as conflicts of interest and power struggles play out in the family. This may be the result of brothers disputing their respective shares of the oil palm cheque or a son challenging his elderly father's control of the block. The former may arise following the death of the father when the eldest son attempts to assert control of the block and his younger brothers begin disputing his authority. Disputed inheritance or ongoing disagreements over inputs of harvesting labour between brothers leads to a breakdown in the social cohesion of the family. These disputes can be traumatic for block residents and if they occur regularly the block may shift to lower productivity levels as some brothers withdraw their labour from oil palm production.

In some cases the solution to conflict on the block is a move away from high levels of inter-household dependence and co-operation in oil palm production and gardening to the more individualised system found on blocks with a rotation (*markim mun*) production system (Section 5.5). In this way, the multiple household *wok bung* strategy can be tenuous in the context of population and economic pressure or disputes over block tenure. Thus, in some instances, the multiple household *wok bung* production unit can be viewed as a transitory stage as households shift (mainly due to demographic and generational changes on the block) from co-operative production units to more individualised units of production by adopting a rotation (*markim mun*) system.

A summary of the main characteristics of multiple household (*wok bung*) blocks is provided in Table 5.3. Two case studies of multiple household (*wok bung*) blocks are presented in Boxes 5.5 and 5.6.

5.5 Multiple Households – Rotation (*Markim Mun*)

Multiple household rotation (*markim mun*) production units are predominantly on the LSS schemes at Hoskins where up to five or six households reside on one block. These households may consist of the original blockowner, his married sons and sometimes married daughters. In these situations population pressure is a serious issue and the total population living on a block may exceed 25 individuals. As mentioned in Chapter 4 these highly populated blocks are generally under a great deal of economic and social pressure.

Most respondents reported that the rotation (*markim mun*) strategy emerged as a response to inter-household disputes over allocations of oil palm labour and/or the distribution of oil palm income. It is therefore a response to the increasing number of co-resident households on blocks. When the numbers of household units becomes too great for the sharing of oil palm income they begin to act as separate production units. Co-resident households begin to operate as individual production units with limited inter-household labour co-operation and exchange in oil palm and garden production. They cultivate their own

gardens, develop their own income sources and have their own allocated oil palm harvests.

Further, as households move from a co-operative to a rotation (*markim mun*) production system there appear to be changes in labour remuneration arrangements. On single and multiple household *wok bung* blocks, labour payments often do not reflect labour input, but rather payment is governed more by gender, age, or kinship status, and reciprocal labour co-operation is common. On blocks that have moved to a rotation production system, people expect to be paid for their labour input and there is less in-kind payment for labour. This is exemplified by differences between VOP/LSS single households blocks and rotation (*markim mun*) multiple households on the LSS subdivisions. The former are more likely to use in-kind payment for labour or some form of reciprocal labour arrangement for harvesting, whereas rotation production systems are more likely to remunerate labour with cash.

The way in which harvest labour is allocated on blocks with a rotation (*markim mun*) strategy varies. Generally, one brother/son and his family will be allocated the FFB harvest work and related income from that work for a particular month. The following month another brother will harvest the fruit and collect the cheque and so on. Similarly, the loose fruit cheque is rotated among female heads of households. In this way oil palm labour and income are rotated among co-resident households. On some blocks the household whose turn it is to harvest may seek some labour assistance from other households on the block. With both family assistance and the labour provided by other block residents, this allows for more thorough harvesting. Household members and close kin from co-resident households contributing to the FFB harvest typically receive a share of the oil palm cheque. As mentioned above, there is an expectation that they will share in the proceeds of the cheque, and that the amount of money they receive will reflect their labour input to the harvest.

Decision-making on rotation (*markim mun*) blocks varies and can have a significant impact on block production. In some cases we observed, decisions regarding the allocation of harvests and harvesting payments were made by the

head of the block – either the original leaseholder or the eldest born son of a deceased leaseholder. Their decisions were based on the views of other block residents or were made without consultation. Often an elderly blockowner will try to maintain control and leadership over the block by making all decisions on harvesting and payments, although a married son may begin to challenge his father's authority. Where the father is deceased and "ownership" has passed to the first or second born son, disputes may arise. Hence, decisions on allocating harvests may be challenged by younger brothers and the rotation system begins to break down.

Where disputes over harvesting and income distribution are minimal, and where some labour is recruited from other households on the block, production can be consistently high. Not only is there adequate labour to complete a full block harvest, but the economic pressure on these populated blocks means that it is unlikely that the block will forego a harvest round. These smallholders could be described as "desperate producers" rather than high producers as production is driven by economic necessity resulting from population pressure.

Sometimes, however, if disputes over income or harvesting emerge and remain unresolved, then a household may harvest alone as individuals from co-resident households withdraw labour. With limited labour assistance, the household usually is unable to harvest the full 4 or 6 hectares. Thus, conflicts can lead to the paradoxical situation where there is under-employed labour on a block while there is a labour shortage for harvesting. For instance, as Box 5.7 reveals, although this block has over 15 adult residents, there were never more than three people harvesting, including loose fruit collection.

In the distribution of oil palm income on these blocks, it is difficult to agree on payment arrangements that satisfy everyone. With several households residing on a block, a household may wait three to four months before being allocated a harvest and the oil palm cheque. Therefore, some access to a portion of the oil palm income, by assisting with someone's harvest, helps through the period they are waiting for their allocated pay month. Economic pressure and the need to access income causes many disputes which can negatively affect oil palm

production through disrupted production. There is also a need for income diversification on these blocks.

A summary of the main characteristics of multiple household rotation (*markim mun*) blocks is provided in Table 5.4. Two case studies of multiple household rotation blocks are presented in Boxes 5.7 and 5.8.

Table 5.4. Main characteristics of multiple household rotation (*markim mun*) production unit

MAIN HOUSEHOLD FACTORS	CO-OPERATIVE	CONFLICTED
PRODUCTION STRATEGY	<ul style="list-style-type: none"> • Rotate FFB harvest and loose fruit collection between households. 	<ul style="list-style-type: none"> • Rotate FFB harvest and loose fruit collection between households.
LABOUR CHARACTERISTICS	<ul style="list-style-type: none"> • Adequate labour for harvesting. • Some inter-household cooperation. • Limited labour exchange with off-block kin. 	<ul style="list-style-type: none"> • Limited number of labourers per harvest. • No inter-household cooperation. • Limited labour exchange with off-block kin. • Block labour under-utilised.
DECISION-MAKING	<ul style="list-style-type: none"> • Central authority with programmed harvests. 	<ul style="list-style-type: none"> • Disputed authority and disputed rotation. • No leadership.
INCOME DISTRIBUTION	<ul style="list-style-type: none"> • Shared within household. • Small portion shared with members of other households. 	<ul style="list-style-type: none"> • Mostly retained by one individual.
FAMILY/ GENDER RELATIONS	<ul style="list-style-type: none"> • Egalitarian/social cohesion 	<ul style="list-style-type: none"> • Unequal/conflict.
PRODUCTION MOTIVATION	<ul style="list-style-type: none"> • Economic pressure. • Competitive producer. • Indigenous obligations. • Limited alternative sources of income. 	<ul style="list-style-type: none"> • Economic pressure. • Indigenous obligations. • Limited alternative sources of income.

5.6 Smallholder Households in Transition

The typology of smallholder production units outlined above permits an alternative way of examining smallholders and smallholder production strategies. It raises questions regarding household dynamics, such as how labour is organised and mobilised, how decisions are made, what influences income distribution, how households and household members maintain social stability, and how all of these, separately and conjointly influence oil palm production and productivity. If we begin to think in terms of households rather than individual producers, then we can begin to think about the dynamics operating within and between households to access income and thus influence

production. The framework, therefore, enables further scrutiny of household dynamics and can be used in conjunction with the high-low producer framework (Landell Mills 1991) to provide another layer of analysis. The household framework could also be of use to extension officers to better address problems on blocks through a greater understanding of the intra-household processes operating in each type of smallholder production unit.

By considering the different smallholder household production units a better sense can be gained of the varied smallholder production strategies present on LSS and VOP blocks. An outstanding feature of the LSS and VOP subdivisions is the diversity of household types and production strategies that have emerged as the smallholder schemes develop over time. Block population, household size and organisation, gender relations, production strategies, labour availability, household co-operation and conflict, while diverse show some correspondence with our typology of smallholder household production units. Our framework, therefore, captures some of the diversity and complexity of smallholder production today.

Finally, the various types of household production units reflect a recent transition on the older LSS schemes such as Hoskins where single household blocks are being replaced by multiple household blocks and as a consequence labour arrangements, harvesting practices and methods of payment are changing in a variety of ways. Since the establishment of the oil palm smallholder sector over thirty years ago, the uncomplicated single household block has become the complex multiple household block of today.

It appears that the rotation (*markim mun*) system is a recent change in production practices that has occurred over the last decade as population pressure has begun to exert an influence on LSS blocks at Hoskins. Long-serving OPIC extension officers and employees in the Smallholder Affairs section of NBPOL recalled that the rotation system emerged around the mid 1980s when settlers' sons began to marry and form their own households (Waka Wayang and Tapas Pokus pers. comm.). It did not become widespread until more recently. In the 1991 Landell Mills Hoskins smallholder study there was

no mention of the rotation system, although blocks with a population above 20 persons were omitted from the study due to data collection difficulties. The agro-sociologist involved in that project does not recall the rotation system being a significant feature of harvesting practices at the time of the study (C. Benjamin pers. comm.). At Popondetta this study did not come across the rotation (*markim mun*) system among smallholders on the LSS, and OPIC officers identified only a small number of blocks that had adopted the system.

The multiple household rotation (*markim mun*) blocks operate very differently to the less populated blocks and VOP blocks where communal harvesting and inter-household garden labour exchange remain common. As mentioned earlier, when the number of household units becomes too great for the sharing of oil palm income they begin to act as separate production units. Also, on these multiple household rotation blocks, reciprocal labour and in-kind labour are increasingly being replaced by cash payments that are likely to be commensurate with labour input. This differs from the single household blocks, where money received for harvesting assistance often does not reflect the labour input of individual household members, and where reciprocal co-operation is the norm.

The changes observed in harvesting arrangements and income distribution appear to be driven primarily by generational and demographic changes on the schemes. However, it is likely too that socio-cultural change, increased demands for cash and economic pressure on blocks are also contributing to these changes. For example, young men at Kavui LSS now want to be paid well for their work, whereas in the past food or some other small payment was considered adequate remuneration.

The shift to a rotation (*markim mun*) rotation system on highly populated blocks where households are operating more like nuclear family units and where labour payment arrangements are changing is a major socio-agronomic transformation occurring on the land settlement schemes at Hoskins (probably Bialla too where population pressures are also a factor). However, it should be remembered that

many multiple household blocks continue to work together and share income and food, but the rotation system appears common and is increasing.

The transition that is occurring in smallholder household types and production strategies presents new challenges to the industry. Although there are only limited data to support the following claims, we suspect that the move to the rotation (*markim mun*) system has four important implications for block productivity and smallholder interventions:

1. Oil palm productivity is higher on highly populated blocks that have not moved to the rotation (*markim mun*) system. Families that harvest together tend to have more people involved with the harvest and therefore can harvest more of the crop. In a rotation system fewer block members may participate in a harvest round so harvesting is more likely to be incomplete.
2. Under a rotation (*markim mun*) system, there is a higher probability that block maintenance (or replanting) is neglected or disputed (the tragedy of the commons argument). For an individual household wishing to minimise its labour expenditure while maximising its income, it makes more economic sense not to engage in block maintenance as the benefits from such labour (higher yields) are dispersed amongst all resident households including those that did not contribute to block maintenance.
3. Under a rotation (*markim mun*) system, where economic pressure exists, it is more likely that there will be a reluctance to poison old palms and replant. The loss of income may be considered, in the short-term, too great.
4. Under a rotation (*markim mun*) system there is probably more incentive to abuse industry credit schemes or the mama card (Chapter 7.2 and 8.3) as individual households seek to maximise their oil palm income during their allocated payment month. On blocks where each household is receiving only three or four oil palm cheques a year, then the temptation to avoid loan repayments or to place a significant quantity of fruit on the mama card

could be irresistible, especially since the costs of such a decision (e.g., loan repayments) are shared amongst all block households.

Potential interventions for highly populated blocks are explored in Chapter 8.

Box 5.1. Single household (*wok bung*), Gaungo VOP, Hoskins

Bernadette and Bill reside on Bill's sister's block. They have a 4 year old daughter. Currently two adult male in-laws, Mark and Steven are temporarily living on the block. Mark and Stephen are supported financially by their brother who works as a supervisor with NBPOL, and they also occasionally receive a share of the oil palm cheque on the block. During the survey period, the visitors were building a chicken house to start their own poultry business. Their brother provided the money to start the business and they will share the profits with him.

Bill and Bernadette harvest oil palm only once a month, and decisions on harvesting are made jointly. Although only a 2 hectare block, they usually receive help from close kin at harvesting and the number of kin involved in the harvest is relatively large. A harvest during the study period involved:

Bill – cutting fruit;

Bernadette – wheelbarrowing fruit and stacking bunches;

Steven cutting fruit and collecting and wheelbarrowing loose fruit;

Anna (Bill's brother's wife) collecting loose fruit;

Peter (brother) cutting fruit;

Lucy (niece) wheelbarrow fruit

Loose fruit was weighed on Anna's mama card and the money will be shared with her family. According to Bill and Bernadette the main reason for inviting relatives to harvest is to promote solidarity amongst the kin group, as sharing wealth is instrumental in maintaining kin and social relationships. This social aspect of oil palm production is very important.

The oil palm income is controlled by Bernadette. She collects both the papa and mama cheques and distributes the household income. Bernadette gained control of the household income after they moved to Madang where Bill worked previously. Bill respects his wife's claims on the household income and acknowledges that he would fritter the money away if he kept the papa cheque. At times there are disputes over the income but overall it seems to work. Bernadette manages the income well, and it was the only household in the survey (including Kavui) where each week at least K10 was spent on store foods.

Because Bernadette has control of the papa card, it means that she can often allocate the collection of loose fruit (and the mama cheque) to female relatives. Being able to distribute income was seen by Bernadette as one of the main benefits of the mama card.

There is great variation in the amount of fruit harvested each month. This is explained by several factors such as competing activities occurring in the village, the need for cash and the availability of labour. The block also has several sources of alternative income:

- selling clan land to settlers (mainly the sons of LSS settlers);
- timber royalties;
- fishing;
- currently establishing a chicken business on the block;
- one small pig.

As expected in a village context much energy is oriented towards kinship-based activities and transactions, most of which is mundane daily exchanges of food and gardening help.

Box 5.2. Single household (*wok bung*), Igora LSS, Popondetta

Kathie and Luke migrated from the Sepik to Popondetta in 1979. Currently five children live on the block: two adult unmarried sons (Paul and Robert), a teenage daughter (Susan) a 10 year old son and 6 year old daughter. Also living on the block is their first born daughter's 5 year old son. Kathie's brother has been living on the block since June 2000. Their two eldest sons work in other provinces and provide financial assistance to the family when necessary.

Four hectares are planted to oil palm. The family harvests for most pick-ups, with all family members working together to harvest the block, including the young children. Paul and Robert do most of the harvesting as their father is too old to do the physically demanding task of cutting fruit. Luke usually helps wheelbarrow the fruit. Kathie and Susan and the two youngest children collect the loose fruit.

Because of the number of male adults on the block, labour shortages are not a harvesting constraint. Luke told us that before they finished re-paying their loan, the family harvested for every pickup. Now he does not feel the pressure to harvest every round and claims he only harvests when he feels like it. The sons will usually harvest if their parents are not interested.

The oil palm cheque is deposited in Luke's bank account and then shared with the sons. This appears to work well as the sons continue to do most of the work on the block, including maintenance work. The sons usually accompany their father to town on pay days. Paul believes the amount of money he receives is reasonable. He acknowledged that some young men are not pleased with the small amount they receive for their labour and relayed how on other blocks, some young men have disputed their father's control of the block. In some cases the sons have taken control of the income on the block and the parents are now dependent on the son for money.

Kathie has control over the mama cheque and shares it with Susan and the younger children. The remaining money is spent on food for the family and other household items. Kathie sometimes sells food at the community market, but the main income source on the block is oil palm. The customary landowners, through intimidation and threats, discourage settlers from other areas from establishing small businesses on their blocks.

Box 5.3. Caretaker household, Sorovi LSS, Popondetta

This block is owned by Raymond, an employee of Higarturu Oil Palm Ltd who lives on a company compound. Patrick and Rita from Morobe Province have been caretakers for 5 months and live on the block with their six children – all under the age of 15 years. Prior to being caretakers they lived on Rita's brother's block at Sorovi. They heard that Raymond was looking for caretakers for his block and approached him. Rita is from the same village as Raymond's wife and they all belong to the same ethnic group. Before Patrick and Rita moved onto the block, Raymond paid a youth group to harvest the block.

Four hectares of oil palm are planted, but Patrick never manages to fully harvest the block as he is the only adult male on the block. Without control of the block income (see below) he cannot afford to hire labour. He works alone cutting fruit and is helped by his younger sons in transporting the fruit to the road. Cutting the palms on this block is arduous work as the palms are very tall and ready for replanting. Rita and the eldest daughter collect the loose fruit and the young sons help in transporting the loose fruit to the road. There is no mama card on the block. During the survey period, they missed two harvest pick-ups because their wheelbarrow broke and they were waiting for the caretaker to visit the block so that they could request a replacement.

The oil palm cheque is deposited into the owner's account and he then allocates some of the cheque to Rita and Patrick. The amount of money they receive varies depending on the price of oil palm. According to the caretakers, if the price of oil palm is reasonable then they may receive K100 or more, but if the price falls they can receive as little as K50 and, on occasions, they have received only store bought food and no cash. A few times the owner has given them a 5kg bag of rice rather than cash payment for their harvest labour. Both are unhappy with the remuneration they receive. Patrick said that his main concern is that he will not have enough money to pay his children's school fees this year (around K290). The payments they receive for their labour from the owner is used to buy food and other essential household items. The family tries to save a little of each payment to put towards school fees.

Patrick and Rita have gardens on the block which they rely heavily on for most of their food and for the sale of garden crops for some additional income. Rita and the eldest daughter also supplement the diet by fishing regularly in a nearby creek.

In the last week of the survey period the owner visited the block to ask Patrick to prepare two hectares for replanting.

Box 5.4. Caretaker household Gaungo VOP, Hoskins

This 2 hectare block was bought by a “settler” who currently resides at the new subdivision of Soi at Bialla LSS. The owner has his widowed brother, Simon, as caretaker of the block. Simon has two young sons. Also living on the block is Paul. Paul’s brother owns a block nearby, but following a dispute with the brother, Paul was evicted and Simon took him in. Paul helps with harvesting and block maintenance. Paul has lived away from his village for over a decade and claims that it would be very difficult for him to return and access land as both his parents are deceased and he is the youngest brother. For most of the survey period Simon had two young male relatives visiting him and his mother also arrived for a two week visit.

Simon and his brother have agreed that the primary harvesting card be used to pay off the debt for the recently purchased block at Soi and the mama card became Simon’s income. The primary cheque is deposited directly into Simon’s brother’s bank account. To increase Simon’s share of the oil palm income, fruit bunches are also placed on the mama card, and for most of the survey period the tonnage was higher on the mama card. Simon decides how much fruit is to be weighed on the primary card. Whilst the amount of income he allocates himself varies depending on his family’s needs (e.g., hosting visitors from his home village) or the price of oil palm, he stressed it is important to give his brother a share which his brother views as fair and reasonable. In this way, disputes over income will not emerge and there will be no reason why his brother should want to evict him (a common problem on caretaker blocks).

Simon said that once the debt on the Soi block is reduced to a reasonable level, then he will increase the amount of fruit weighed on his mama card, giving him a higher income. It is likely, according to Simon that his brother will remain living at Soi and Simon will take control of the block at Gaungo. As there is no debt on the block, the mama card provides the brothers with a very convenient way to share income.

Simon is a high producer and harvests every pick-up. Because of the frequent harvesting and small area to be harvested, the harvest is usually completed in one day. The general pattern is that Simon cuts the fruit and Paul collects loose fruit and transports the fruit to the road. If additional labour is required, a visitor will help cut and transport fruit. Sometimes if relatives in his home village need money, Simon will “mark” a month for a family member to visit and harvest the oil palm.

Simon has two large gardens. Most crops in his garden were planted by village relatives who have little access to garden land. When the crops are ready they return to Gaungo to harvest them. The food is used for household consumption and a large section of tobacco is often planted for sale at local markets. To maintain high garden yields Simon applies oil palm fertiliser. His last purchase of fertiliser from the company included two extra bags for his garden.

Box 5.5. Multiple household (*wok bung*), Kavui LSS, Hoskins

The original blockowners, Martin and Lina from Morobe Province, reside on the block with their six sons. The eldest son Michael is married and lives on the block with his wife Patricia and six children. Robert (18yrs), David (approx 16yrs), Julius (approx 13 years) all live and work on the block. Yoan lives on the block and attends school – grade 8. Last born Api, 8 years lives on block. A total of 15 people live permanently on the block.

Two single sons are currently working for NBPOL and live elsewhere in West New Britain and another daughter is temporarily visiting a sister in their home village. The third born son lives permanently in his wife's village in Morobe province. Links with children living off-block are maintained as are links back to Martin's village.

All family members sleep in the one house and work together in gardening and harvesting. Unlike many young men at Kavui, the young males on this block spend little time away from the block, but rather are active in gardening, block maintenance and harvesting work. The explanation for such "disciplined" behaviour is partly found in the strict behavioural codes associated with their religion which espouses a strong work ethic, family unity and self discipline. Their religion also opposes the consumption of tobacco, alcohol and betel nut - which are very popular among young males.

The family harvests together for every pick-up and all members of the family contribute to the harvest. It is not unusual to have 7 or 8 family members working on a harvest. If family members are sick, then relatives living on other blocks are called upon. The father controls decisions regarding harvesting and has put a system in place whereby all members of the family will cut and transport fruit from one section of the block before moving onto the next section. In this way no one individual is given an easier or more difficult section to work on.

The large number of people working on a harvest means that all 6 hectares of oil palm are harvested each harvesting round which places the block in the top high producer category. In 2000, the average monthly income was K531.45 (papa card) and K241.05 for the mama card. The family identified several reasons for their "high producing" status. One, they only cut ripe bunches - these are the heaviest (highest oil content). The father learnt this while working for the plantation many years ago. Second, there is no conflict between the brothers and the family has not moved to a rotation system which they see as an inefficient production system because of the limitations it places on the number of labourers per harvest. Finally, they cut fruit just before the truck pickup (fruit bunches begin to lose weight after they are harvested).

The oil palm cheque is paid into the father's bank account and part is distributed among the family. Some income is used to buy food for the family and some of the proceeds remain in Martin's bank account. For example, during the survey period the block received an oil palm cheque (papa cheque) for K390. K212 was disbursed among 9 male members on the block and one cousin who helped with the harvest. Individual shares of the cheque ranged from K10 to K40 depending on the level of work carried out on the harvest and the age of the son. After spending some money on food for the family and putting aside K70 for the father and son to attend a religious retreat, the balance remained in Martin's account as savings.

The father appears to make all decisions over the disbursement of the papa cheque. Although there is some discontent with this system (see below), it obviously works well as the young sons continue to harvest. Whilst the distribution of income by the father provides some income to all members of the family, a few family members complain that the small share they receive prevents them from saving any money. Michael and Patricia, for example, would prefer that the father occasionally allocate them a month for the papa card to allow them to save some money to visit relatives in other provinces. Also Robert would like his father to open a bank account for him so he can save to buy an oil palm block as he is concerned about future pressures on oil palm income with so many brothers living on the block.

Cont...

Box 5.5 cont.

The mama cheque is rotated monthly between Lina and Patricia. When it is Lina's month, Patricia helps her mother-in-law with the collection and transporting of the fruit to the roadside— this is expected in her role as daughter-in-law. Occasionally, Lina will help Patricia collect loose fruit. Lina and Patricia tend to use the mama cheque in the same way. Both use the money to buy food and clothes for the family and will distribute some of the money to their children. According to the women, they were collecting loose fruit regularly prior to the introduction of the mama card and they were receiving a share of the papa cheque. '*Martin em scalim* [papa cheque] *gut long ol pikinnini na meri*'.

A further characteristic of the block is that there is much garden labour cooperation between. Additional income is earned by the women at local markets. There are three small peanut gardens on the block which provide block residents with a good source of extra cash. There are no other businesses on the block.

Box 5.6. Multiple household (*wok bung*), Igora LSS, Popondetta

Rex and Grace are the "owners" of the block and are from the neighbouring village of Horihita. They were given the block by Rex's brother-in-law as part payment for a brideprice. Rex and Grace reside on the block with their three children, and Rex's widowed mother. Their last born child, Giona is married and lives on the block with her husband, Francis, and two young children.

The block has four hectares planted to oil palm and some reserve land for gardening. Rex and Francis share most of the harvesting and on occasions are helped by Rex's sister's husband who lives nearby. If they are short of labour they receive help from relatives in Horihita village. Rex makes all decisions on block harvesting and maintenance. He also works on a casual basis as a carpenter and is regularly undertaking off-block work. Sometimes when he is absent he will allocate the harvest to Francis. If Rex has not allocated a harvest to someone in his absence, the block is usually left unharvested, so irregular harvesting can be partly explained by Rex's frequent absences from the block. The block has very low production with very few harvests over a period of several years.

Oil palm payment arrangements vary. Francis claims that sometimes when he cuts the fruit with Rex he receives only a small portion of the cheque while Rex receives the rest. Sometimes if he harvests alone in Rex's absence he is given all the cheque. At other times if Rex needs the money he will keep all the proceeds of the oil palm cheque, despite the help received from Francis. Towards the end of the survey period Grace was issued with a mama card. The mama card will be shared with her daughter Giona. It would be expected that as a daughter-in-law Grace would also share the proceeds of the mama card with Rex's mother living on the block.

Being close to their village, they remain involved in customary exchange transactions. Sometimes they will either give cash from oil palm income or invite someone to work and harvest their block and let them keep the oil palm cheque.

For the last two weeks of the survey period the family was preoccupied with preparing for a *Pondo* (feast) exchange. The *Pondo* is for the adoption of their youngest child. The biological parents were to be presented with a selection of store bought foods, a pig and a substantial quantity of garden food - mostly taro and banana, as well as coconuts, betel nut, pumpkin, sweet potato and sugar cane.

The store bought food and the pig were purchased by Rex. On the last two visits to the block during the survey period many relatives had contributed garden food for the *Pondo*. Most brought taro, betel nut, and tobacco – valuable contributions. Most relatives were staying on the block until the *Pondo* exchange was completed. Other relatives were expected to arrive closer to the day with food for the exchange. Nearby blockholders from other provinces (e.g., Morobe and Sepiks) have also contributed food to the *Pondo*. Similar to other large *Pondo* events, this exchange was planned months ahead to allow gardens to be prepared. Cont...

Box 5.6 cont.

Grace told us that because of the prevalence of *Pondo* amongst the local population, oil palm production is intermittent. Some people may not harvest their block for several months but then will do a complete harvest to help with a *Pondo*, or they may harvest and weigh the harvest on another card (when this occurs no production is recorded on the block).

Box 5.7. Multiple household rotation (*markim mun*), Kavuii LSS, Hoskins

Twenty six people reside on this block including the elderly owners Agus and Wutnia, some of their children and close kin. Agus and Wutnia left their Sepik village in 1958 and have 10 children. Two sons live in their home village and 2 daughters have married and live on nearby blocks.

Three sons (Aron, Wemen, Terrence) and one daughter Dominica are married and reside on the block with their spouses and children. The youngest daughter is single and lives with her parents. For the second half of the survey period, Terrence, his wife and three children were temporarily absent - visiting in-laws in Madang. Two male relatives (David and Phillip), both with their wives and children also live on the block. A total of 7 households reside on this 6 hectare block. Each household acts as an individual production unit. While there is the usual sharing of food among kin, each household has its own gardens and income sources. There is limited exchange of garden labour and very little co-operation among households in oil palm harvesting (see below).

The large number of households places great economic pressure on the block, which appears to be relieved by households moving off the block for short periods. For example, for most of the survey weeks, at least one of the seven households was absent for more than five days.

Agus holds authority on the block and maintains control over harvesting labour and the flow of oil palm income. Because of the large number of households on the block a rotation (*markim mun*) system of harvesting is used. Agus makes all decisions regarding harvest allocations to particular individuals/households on the block, for both the mama and papa card. This is said to reduce conflict on the block. His decisions relating to the harvest rotation are often based on the needs of individual families, and are an attempt to distribute equally the income between households on the block.

Although there are no set rules on how income should be distributed on the block, there is an expectation that people should show generosity if there are not great demands on the income. The rotation system, whilst acting to distribute the income to all families, is not a very efficient harvesting system because the allocation of a harvest to one household results in only two or three adults from a particular household working on a harvest at any one time. The outcome is that the block is usually not fully harvested. Another problem on this block is that a family whose turn it is to harvest tends to put more fruit on the mama card to avoid loan repayment deductions on the papa card. This explains why the tonnes recorded on the mama card are often equal to or about two-thirds of that placed on the papa card.

Although Agus carries out all block maintenance, he and Wutnia do not harvest oil palm. They do receive a small share of the oil palm income, but rely mostly on money Wutnia earns at local markets. Wutnia often sells cassava "sago" which is undertaken by both Wutnia and Agus. Money earned from selling cassava "sago" can be significant— sometimes earning as much as K20. Agus and Wutnia spend a great deal of time gardening and working together and sharing domestic tasks such as collecting firewood. Mutual co-operation and respect is a marked feature of their relationship.

Cont...

Box 5.7 cont.

The mama card is in the name of the eldest daughter living on the block and like the papa card is rotated among households. A month is allocated to a particular female head of household, and it is expected she will distribute part of the income to her husband, children and sister-in-laws. Marketing and gardening are also important as they provide an area where women have complete autonomy and control over the income derived. Wutnia and Katarine (Aron's wife) described themselves as '*meri long market*' – identify strongly as market women. They market at least once or twice a week and the income is the household's main source of cash while they wait for the papa cheque.

A considerable amount of time is spent on gardening by women. Twenty-six gardens in various stages of cultivation were recorded. . Many of the gardens surveyed were planted with produce to be sold at local markets. Also, the block backs onto company (SBLC) land and this provides the households with additional land for gardening. Some gardens are also cultivated on the adjoining block owned by Agus' brother.

The block residents have extensive social and kinship networks with other blocks. There are many closely related and more distantly related kin living on blocks at Kavui and on other land settlement schemes in the Hoskins project and in the town of Kimbe. Also the family maintains ties back to the village. Hence, customary exchange is important and occasionally places demands on people's time and finances.

Towards the end of the survey period, Phillip (visitor) opened a small tradestore on the block and planted over a dozen betel nut palms. The tradestore and betel nut is anticipated to provide most of his household's income in the future.

Box 5.8. Multiple household rotation (*markim mun*), Kavui LSS, Hoskins

The original blockowner and his wife migrated from the Highlands to the land settlement scheme in the early 1970s where they raised five sons. The parents are now deceased. Three sons are married with children and two are single (of marriageable age). Until March 2000, all sons and their respective families lived on the block. Presently, one married son and his two younger single brothers are visiting the Highlands and intend to return early next year. The brothers have no links to their home village; nor do they have rights to village resources. They are visiting in-laws. Two married brothers, Yopo and Nali remain living on the block with their respective wife and children. The block population during the survey period was 6. When the brothers return, there will be four households totally 11 people residing on the block.

When the father was alive he made most decisions on the block relating to oil palm harvesting and income distribution. Oil palm was harvested with all sons working together (*wok bung*). After the father died conflict over ownership and control of the block emerged between the brothers, when the first born son (Francis) was "officially" given title of the block. As Francis attempted to take on the leadership of the block, the other brothers disputed and resisted his new role. Yopo took over the role of '*mausman*' (spokesman) for the block. With all five brothers living on the block a rotation harvesting system was introduced. At harvest times the brothers would work together to cut the fruit, but the heavy and time-consuming task of carting fruit to the road was carried out by the brother who was allocated the cheque for the month. Although a cheque was allocated to a particular individual, the holder of the cheque was obligated to reward the other brothers for their help at harvest time by giving them a small portion of the oil palm cheque.

Box 5.8 Cont.

While this system aimed to distribute the income to all households on the block, there were problems. Often a brother would dispute the allocation of a "month" to a particular brother, or one of the brothers would collect the oil palm cheque when it was not his allocated month. Also, the distribution of oil palm income regularly resulted in fights between the brothers, and no one brother would take responsibility for block maintenance. Finally, the rotation system meant that each brother would only receive a cheque twice to three times a year, resulting in families relying on other sources of income and/or relying on the generosity of the cheque holder of a given month. It was a fight over the oil palm cheque earlier this year that resulted in Yopo evicting his three brothers from the block. Yopo now claims ownership of the block.

Yopo and Nali sometimes work together to harvest the block, though Yopo does most of the harvesting as Nali has off-block income. With Yopo doing most of the harvesting and block maintenance on his own, he rarely is able to harvest the full 6 hectares of oil palm. On his own, and sometimes with the help of his young son, he will harvest two hectares. With his brother Nali, or with the help of friends, he may harvest the full 6 hectares. For block maintenance and fertiliser application Yopo often relies on the help of young single men. They are sometimes paid with cash or provided with cooked food.

Ruth (Yopo's wife) has two sweet potato gardens on the block and a peanut garden on a nearby block belonging to an in-law. The peanuts will be sold at local markets. Currently, Ruth does not sell food at local markets as she says she does not have adequate garden space on her block. Most food in the garden is used for consumption and part of the sweet potato production is fed to her pig which will either be sold or used in exchange. Ruth also has a chicken business which she shares with her son. She collects loose fruit, and her husband (or others) transports the loose fruit to the road. Yopo also collects loose fruit and shares in the mama cheque. There is no strict division of labour for loose fruit collection. On one harvest during the survey period, Yopo collected most of the loose fruit, but the money was shared with Ruth. Ruth does not exercise complete control over the loose fruit collection nor the distribution of oil palm income. Instead, the mama card appears to be used as a convenient way to earn more cash when loan repayments are very high. Ruth rotates the mama cheque with Dorothy (Wemen's wife).

Both the mama and papa cheques are deposited into Yopo's bank account and Yopo appears to control the distribution of income from both cheques - although this is not always the case. For most months during the survey period, the mama cheque provided the main source of income on the block because more fruit was placed on the mama card than the primary card. Approximately 70% of the gross income on the papa cheque is deducted each month to repay a bank loan taken out in early 2000 to fund the brothers trip to the highlands.

CHAPTER SIX

LAND TENURE AND LAND DISPUTES IN THE SMALLHOLDER SECTOR

6.0 Introduction

This chapter focuses on land tenure issues and conflicts over land on the LSS and VOP subdivisions at Hoskins and Popondetta. The study identified land issues as key factors currently affecting smallholder production. These issues pose potential problems and major challenges for the future viability and sustainability of the smallholder sector.

Land conflicts take many forms in the oil palm smallholder sector, from the large compensation claims demanded by customary landowners for land alienated for estate plantations and land settlement schemes to inter- and intra-household disputes over block ownership. Land conflicts are critical production issues as they have the capacity to cause short-term disruption of oil palm production to protracted disruption of oil palm production for individuals, groups and plantation companies. The following discussion outlines some of the main forms of land conflict and associated issues identified in Hoskins and Popondetta.

6.1 Customary Landowners and Land Settlement Schemes

As discussed in Chapter 1.2, land for the LSSs in West New Britain and Oro Province was alienated from the customary landowners to resettle people from other parts of Papua New Guinea. Grievances over the amounts of compensation originally paid for alienated land periodically surface in West New Britain and Oro Province in the form of demands for monetary compensation, the return of alienated lands and the forced repatriation of settlers. These recurrent demands exist alongside ongoing simmering tensions

between indigenous landowners and settlers on the LSSs. Such grievances and tensions take various forms in Hoskins and Popondetta.

6.1.1 Hoskins land settlement scheme

Whilst there are some hostilities between settlers and landowners, overall, for most settlers their everyday activities and oil palm production are not constrained by outward aggression and intimidation by landowners, and there are no obvious signs that such conflicts are currently affecting LSS production (c.f. Popondetta discussion below). However, this is not to suggest that resentment among the local landowners towards settlers does not exist. Opposition to settlers can manifest itself in regular and ongoing intimidation of settlers, periodic calls for their repatriation and/or large-scale acts of group violence/protest against settlers. Generally, intimidation of settlers is spatially restricted to blocks bordering local villages. In these border areas, hostility to settlers is most often expressed through theft of garden food, tree crops, especially betel nut, tools and occasional damage to property. These acts serve to undermine a sense of social well-being and long-term security amongst settlers.

Since the early 1990s, there have been several confrontations between settlers and migrants, and calls for the repatriation of settlers. The most prominent incident occurred in 1993 at Kavugara sub-division when settlers from the 173 leased blocks abandoned their block following harassment by the customary landowners. The eviction, which came after several years of animosity between settlers and landowners, resulted in settlers being repatriated to their home provinces, moving to live with relatives elsewhere in WNB or PNG, or settling in informal settlements at Kimbe. Within a few weeks of the eviction, local landowners had removed houses, water tanks and other assets from the leaseholders' blocks¹. The Kavugara subdivision has since been handed back to the two landowning groups in the area and one group has developed part of their land as a mini-estate.

The Kavugara incident is etched deeply in the minds of smallholders both in the Hoskins and Bialla schemes, and as a reminder of their vulnerable position as government leaseholders. Whenever discussions relating to land security emerged in conversations with LSS smallholders, Kavugara was raised to illustrate the uncertainty of their future tenure. The violent nature of the eviction, the loss of livelihoods, the lack of provincial and National government support for the Kavugara leaseholders and the failure to be properly compensated for their blocks have contributed to a sense of insecurity amongst many settlers.

Landowner resentment of settlers varies, and the following grievances are not universally held by landowners. A common grievance is the perceived inadequacy of compensation paid to landowners for land alienated for LSSs and company plantations. There is a feeling among some landowners (especially younger landowners) that because their forefathers who negotiated the land deals were uneducated and unaware of the value of their lands, then they were exploited and cheated by government and company officials into handing over their land for token compensation. In a meeting with landowners at Mosa VOP, they told how their educated children have made the older village people aware of the injustices that occurred with land alienation. They would like to see the government and company reconsider the issue of compensation or consider paying a royalty to landowners.

Existing alongside these compensation grievances appears to be a growing ethnic divide that has helped create an “us” and “them” division between settlers and landowners. The single most important concern among landowners is the increasing law and order problem that they attribute to the large number of migrant youth on the settlement schemes. The rape of local women, the drunken and intimidating behaviour of young male settlers on paydays and the perceived fear of attack by young settlers are fuelling resentment among the local population. One landowner, discussing how the people in his village no longer feel safe, felt bitter that villagers could no longer feel safe ‘in their own place’. This feeling of marginalisation was humiliating to landowners and felt to be unjust.

Of course, many settlers are equally concerned with crime issues and are often the victims of crime themselves. Also, many settlers blame blockowners' "undisciplined" sons for provoking anti-settler sentiments. Many pointed out that most confrontations between settlers and the local population² were sparked by crimes committed against the local population by settlers. For example, a three week road block in 1998 on the Kimbe/Bialla road by landowners near Buvussi LSS and their demands for the repatriation of settlers, followed the killing of an elderly man from Laveke Village by suspected young male settlers from Buvussi/Galai LSS. Although the provincial government was rumoured to have put together a package to repatriate the settlers, nothing eventuated.

The growing intolerance and resentment towards settlers is also partly linked with wider feelings of unease held by indigenous landowners at the high rates of in-migration in WNB, and a new generation of young landowners who see "outsiders" as the cause of growing land shortages in the area.

6.1.2 Popondetta land settlement scheme

Disputes over land alienated for LSS and the plantation estates and opposition to settlers is currently more intense in Popondetta than Hoskins and is recognised as partly explaining why productivity is lower on the LSS than on the VOP blocks (ADS (PNG), 2001). Landowners' resistance to the land settlement schemes is evident in all the land settlement schemes and demands for compensation are ongoing. Among landowners there is a feeling of marginalisation, disadvantage and loss, and intense, long standing distrust of the oil palm company. There are several indications that suggest grievances over land threaten the viability of the industry and hinder the industry's future development in the province. For example, the reluctance to replant by some LSS smallholders (Chapter 7.5) and the large number of abandoned blocks has long-term implications for oil palm development in the province.

Unlike the situation at Hoskins, Popondetta landowners that lost land for oil palm development, have long been organised into united land pressure groups – although their level of activity is extremely variable. In 1982, after numerous failed compensation bids by a range of landowning groups, a landowning pressure group (Sangara Pressure Group – representing several villages) was awarded K200,000 for land alienated for the land settlement schemes and company plantations. Landowners continue to seek monetary compensation from the government as some see the 1982 settlement as “unfair” and further compensation necessary to overcome perceived problems of land shortages emerging as a result of being deprived access to customary land.

Presently a landowning company Hammwek Holdings – representing eight villages is preparing a case for the National Court to seek compensation for land and environmental damage, and to force the government and company to comply with decisions and recommendations set out in the 1982 court settlement. Amongst these recommendations is the return of some state land, and for landowners to receive preferential commercial opportunities from the oil palm company. The land owning company is also currently negotiating with the National and provincial governments to receive some of the National government’s share dividends in the company. Representatives from the landowning company told us they would like to receive compensation packages similar to those that other landowning groups are gaining from large resource development projects elsewhere in Papua New Guinea (mining was highlighted).

Representatives from the landowning company and other indigenous landowners feel that they have lost out in the development of the oil palm industry in the province as their interests and needs are not being met or considered by the company. There is also widespread resentment that “outsiders” are benefiting from the oil palm industry more than the local population, especially in regard to employment in the company. These perceived inequalities fuel jealousy and discontent. Also, for some landowners there are certain expectations and obligations to local landowners that the company is not fulfilling. For example, preferential employment and

commercial opportunities (such as transport contracting, store leases on company compounds) and the payment of land royalties were all raised in interviews with landowners. While the company has responded to some landowner demands, the relationship between the company and landowners remains fragile.

A bigger problem is the landowner-settler relationship. All stakeholders in the oil palm industry in Popondetta identify the tense landowner-settler relationship as a major constraint on smallholder production. In 1992 during the provincial election campaign, the current governor of Popondetta, Sylvenius Siembo, incited anti-settler sentiments by running on an “Oro-for-Oro” campaign. The campaign was based on the tenet that Oro Province should be developed and controlled by Orokavians and not outsiders (including expatriates). Oil palm settlers from outside the province were targeted by local landowners and several hundred were forcefully and violently evicted from their blocks or fled their blocks in fear. Some blockholders remained on their blocks but were intimidated during the campaign. Many settlers, particularly women and children, left the province, some placing caretakers in charge of their blocks (often male relatives married to local women). Whilst many settlers later returned to their blocks when the violence subsided, many others lost their blocks and now reside in their home villages, or in other provinces in PNG. Some live with relatives in Popondetta and are seeking compensation from the local landowners now occupying their blocks.

Unlike the large-scale eviction at Kavugara, Hoskins, the evictions at Popondetta were not restricted to one LSS subdivision nor one area, but occurred across all the LSS subdivisions and extended to “outsiders” living and employed in town. Although the scale of destruction varied between subdivisions, the harassment of settlers was widespread and continues in various forms today. As one settler remarked *‘Oro-for-Oro igo iet’* – Oro-for-Oro continues. Since the 1992 evictions there have been several small-scale localised evictions or attempts at evictions, involving short periods of intense intimidation of settlers and attempts by some landowners to extract land rentals from LSS blockowners in several sections of Iseveni and Igora LSS. For many

settlers, these events sit alongside ongoing harassment and economic restrictions imposed on settlers by landowners (Box 6.1 and Box 6.2).

Settlers are acutely aware that they can increase their risk of intimidation and violence by:

- Establishing small businesses on their blocks. Settlers who start businesses such as tradestores, transport or poultry enterprises are targeted with violence and forced to close the business. For this reason very few settler blocks have supplementary income sources.
- Appearing to earn high incomes from oil palm. Settlers who are observed to regularly harvest several nets for collection and are seen to be successful growers are more likely to be harassed and their houses burgled than low producers.
- Improving the block by replanting. This can be interpreted as reasserting one's claim on the block.
- Buying a block from a settler, selling a block to a settler or placing a settler as a caretaker on a block can all result in attempts by some local landowners to reclaim the block.
- Having no young men on a settler block increases the risk of intimidation and burglary as these blocks are perceived to be more vulnerable to attack.

These restrictions and acts of intimidation appear to stem largely from the intense feelings of loss and disadvantage experienced by landowners, and are a visible expression and reminder to settlers that landowners consider themselves to have sovereign control over "their" land. These types of problems faced by settlers place obstacles in the way of improving smallholder productivity. Many settlers feel insecure and uncertain about their future in Popondetta and many are also keen to see landowner grievances addressed by the government and company.

Hostility towards migrants in WNB and Popondetta is not out-of-step with what is happening elsewhere in Papua New Guinea, particularly at sites of high in-migration such as urban centres and mining sites. Opposition to rural-to-urban/rural migration and to “outside” migrants is growing in many provinces in Papua New Guinea and there have been several attempts over the last few years to reintroduce the Vagrancy Act³ (Curry and Koczberski 1999; Goddard 2001; Koczberski *et al* 2001). Thus, anti-settler sentiments on the oil palm schemes are part of a wider trend in Papua New Guinea (and other Pacific Island nations such as Solomon Islands and Fiji) where sharpening ethnic identities and rising land and resource pressure are contributing to new tensions surfacing between landowners and migrant groups. It would be worthwhile therefore for those oil palm schemes that have an LSS component to develop long-term strategies that work to ameliorate these tensions.

6.2 Customary Land and Village Oil Palm

6.2.1 Hoskins VOP

At Hoskins, significant changes are occurring to land tenure practices in several VOPs. That rules of land tenure are changing is neither new nor different from what is happening in many areas of PNG (see Crocombe 1972; Ward and Kingdon 1995). However, in the case of villages planting oil palm, it is the rapidity of change and the trend to “selling” two to six hectare blocks to “outsiders” for oil palm production which is of concern. “Purchasers” are most often migrants to the province. Land sales are occurring in several VOPs (e.g., Morokea, Dagi, Mosa, Siki) and although all land remains under customary tenure, landowners are allowing customary land transactions to take place under Section 73 of Chapter 185 of the Land Act (1984) which allows for the transfer or lease of customary land.

At Hoskins, there is enormous demand for land for oil palm production. LSS settlers see the purchase of land as a means of relieving population pressure on their existing LSS blocks and securing futures for themselves and their sons. For many settlers the purchase of VOP blocks is their only means of acquiring additional land for oil palm production as the price of LSS blocks (between

K15,000 and K20,000) is far beyond their reach. Also, the acquisition of land on the VOPs is even more critical for second generation settlers who have either lost access to village land or have no village “home” to which to return. Similarly, company employees who have spent much of their working lives away from “home” and identify more closely with WNB (their children may have been raised in WNB), see an opportunity to secure a livelihood for retirement in WNB through the purchase of VOP land. Intermingled with some of these land transactions is an element of land speculation.

The following discussion is confined to Gaungo where most of our data were collected. The extent of land sales to non-clan members can be gauged by examining the year of planting of blocks by ethnicity. From the available data the first record of planting by an “outsider” was in 1985. The last five years has witnessed significant activity in land sales at Gaungo and settler oil palm blocks now outnumber those of local landowners. At least 60% of blockholders are “outsiders” and this is a conservative estimate as the WNB ethnic category includes settlers from other regions of the province, most notably, Bali Island. Nearly 20% of “outsiders” are from the ESP, and one of the roads in this VOP is known locally as Sepik Road.

Two major consequences are emerging from this “sale” of land to outsiders.

1. A realisation by some clan members that land shortages are emerging in their village and that many young clansmen will no longer have access to land for oil palm production. Access to land for oil palm is highly unequal in Gaungo as out of the seven clans, only two clans have primary land rights to plant oil palm. The members of the other five clans have secondary rights and must seek access to oil palm land through the land-owning clans. However, much of the land has been sold to “outsiders”.

Without a detailed land survey, this study is unable to determine the area left under customary use for food production. However, when an application was submitted to NBPOL in 2000 by some Gaungo landowners for a 100 hectare mini-estate, the Company Mini-Estate Officer advised against the development. He cited possible future

shortages of gardening land if such an area of land were to be alienated for oil palm production (A. Barnes pers. comm.). Anecdotal evidence of brothers sharing blocks and others recognising that their sons will be denied access to land due to emerging restrictions on and shortages of land for oil palm are further evidence of real or perceived shortages of land and growing disparities in land ownership at Gaungo. These perceptions of land shortages, common amongst the younger generation, are fuelling suspicion of and dissatisfaction with senior men in the village for what people perceive as being “cheated” of their “birth right” to land (see below). Such grievances open the way for some landowners to feel justified in reclaiming their “birth right” to alienated land.

2. A further consequence of the “sale” of land to outsiders is the emergence of increasing land disputes and insecure tenure of “outsiders”. Land purchases at Gaungo are not governed by strict rules or protocols, but rather tend to be loose and informal, often based on verbal rather than written agreements between the vendor and purchaser. Generally, no detailed land survey is undertaken to mark or record the boundaries of the purchased land, and instead land marks, like coconut palms are used to delineate the boundaries.

Once an area of land and purchase price has been agreed upon, several different steps may follow. The purchase may be recorded on an official Transfer or Lease of Customary Land Form, a Customary Land Transaction Form and/or Notice of Change of Ownership Form, and then executed and registered at the Provincial Lands Office (prior to January 1999, OPIC was also executing customary Land Transfers on VOPs). These officially executed forms lack land survey or payment details. However, many land transactions remain verbal agreements thus open to interpretation, and some do not have written records of payment instalments. Landowners say that in these cases the land will be registered when the full purchase price has been paid.

Although the sale price is said to depend on the size and quality of the block (e.g., bush, cleared, planted to oil palm), there is great variation in land prices. This is partly explained by the different types of relationships between the vendor and purchasers (see below). Also, with the rapid inflation of block prices over recent years, attempting to estimate average block prices is extremely difficult.

Over time, transfers of land can often end in dispute, and increasingly this appears to be the case at Gaungo where there is conflict between land being viewed as a commodity and as an inalienable resource held by the kinship group.

Land disputes take several forms, but the three most common forms recorded during fieldwork include:

- Initial agreed purchase price is increased by the landowner. Many blockholders who purchased their blocks several years ago and who mostly have completed or near completed payment for land, are now finding that the landowners are revaluing blocks. The new value, which can be one or two thousand kina above the initially agreed purchase price, must be paid by the blockholder if they wish to remain on the block. Often the new price reflects the component of inflation since a price was initially agreed upon. The landowners demanding the new price are often not the same clan members the blockowner initially dealt with when the block was purchased. These new landowners are often younger members of the clan (Box 6.3).
- Blocks, or parts thereof, are resold to another purchaser without the knowledge or agreement of the block owner (Box 6.4). Most of the initial blocks purchased were 4 hectares in size. Generally 2 hectares were planted to oil palm with 2 hectares reserved for food gardens. Some blockholders are now losing their 2 hectare garden area as landowners repossess the land for resale to another purchaser. The reasons why land is repossessed are extremely diverse and may

include lack of regular and adequate land payments to landowners, disputes over purchase price, and/or failure of the blockholder to engage in indigenous exchange with landowners (see below).

- Monetary demands placed on blockowners. A recent trend to emerge is the demand by landowners for money from blockholders who have either completed or part-completed block purchases. These monetary requests usually occur when blockholders receive their monthly oil palm cheques.

Several factors help explain why these problems are emerging. Some members of the land owning group, mostly young men, feel that the money obtained from land sales has been unfairly distributed within the group. To some of these young men, the bigmen (senior males) in the village are treating the land as *bisnis* and in so doing favouring their own individual interests over those of the wider land-owning group. By not sharing the proceeds of land sales as expected, bigmen are seen as foregoing their customary obligations and responsibilities and denying the larger kin group their shared rights to the access and disposal of land. It is not surprising then that some landowning members are now reclaiming land or demanding additional payments from settlers.

Mixed with these grievances is the continuing perception that as kin group members they still retain certain rights in the land. The concept of exclusive individual “ownership” of land by the settlers and the idea of land being lost in perpetuity is difficult to embrace in the village context where land has been held communally with members having inalienable rights of access. This creates tensions between some settlers and land-owning members as the former views their purchase as providing them with absolute rights of ownership whereas the landowners view the transaction more as use-rights over the land for an extended period.

Moreover, these use rights are not guaranteed by finalising payment of the purchase price, but rather are conditional on continued participation in

customary exchange and fulfilling other “traditional” obligations. Settlers are thus expected to act like members of the landowning kin group and share some of their wealth and contribute to bridewealth and mortuary payments and other forms of compensation. These obligations serve to acknowledge that settlers have no absolute right to their land, and that whilst a commercial land transaction occurred, this does not free them from customary obligations. Failure to meet these obligations results in harassment, theft and demands for money. Many settlers who have bought land at Gaungo, do participate in indigenous exchange with land-owning members and have good relationships with Gaungo villagers, while others, for a range of reasons, interact less with landowners and experience greater insecurity of tenure.

These informal “sales” of customary land at Gaungo and other VOPs at Hoskins need to be addressed by the industry to ensure that both settler smallholders and landowners have secure access to land in the future.

6.2.2 Popondetta VOP

Most VOP blocks at Popondetta are located on customary land with a small number converted to Land Tenure Conversion (LTC) blocks. In the mid 1960s in an attempt to individualise land tenure and encourage export cash crop production in Papua New Guinea, the colonial administration introduced the Land (Tenure Conversion) Act 1963. This allowed for customary tenure to be transferred to individual or freehold title. In Popondetta, some areas of clan land were subdivided and registered as individual cash crop holdings. The early LTC blocks were planted to coffee, cocoa, or rubber and later some were planted to oil palm. When smallholder oil palm production expanded into villages, some clan leaders allocated oil palm blocks to non-land owning members, such as in-marrying males, sisters’ sons and in some cases, to men with whom they had long standing friendships. Some of these blocks were on customary land and others on Land Tenure Conversion blocks. Increasingly rights of access to these blocks are now being challenged by “core”, often younger, clan members with the result that some blocks are being reclaimed by clan members or a “rental” fee imposed on current block residents. Many of

these problems emerge following the death of the blockholder or the clan leader who allocated the oil palm block. In either case the “ownership” of the block is subsequently challenged for two main reasons:

1. Sons of the deceased clan leader may claim that the blockholder did not adequately contribute to the mortuary payments or participate sufficiently in mortuary-related activities of their deceased father, and/or
2. a blockholder or a deceased blockholder may be perceived to have inadequately fulfilled their customary obligations in indigenous exchange practices such as *pondo*, or may be chastised for not sufficiently sharing enough of the wealth gained from oil palm with land-owning clan members. In the case of a deceased blockholder, his sons or other male relatives’ moves to take control of the block will be challenged and sometimes denied.

Thus, the principal element in securing ongoing access rights by non-clan members is through continuous obligatory gift giving and the more informal distribution of wealth. Such acts strengthen social relations and hence security of tenure. At another level the ongoing expectations and obligations of non-clan blockholders reinforce the concept of landowners’ inalienable rights to customary land, and in particular their rights to the wealth generated on “their” land. Like the landowners at Gaungo, and landowners in other parts of Papua New Guinea, the idea of land being lost in perpetuity is inconceivable.

Land disputes have resulted in an increase in the number of “abandoned” blocks. Conflicts on the LTC blocks have been highlighted recently in the replanting programme at Popondetta where some smallholders have been refused permission by traditional landowners to replant unless a land “rental fee” is paid by the smallholder. Such disputes often mean that these blocks go out of production for prolonged periods. These “abandoned” blocks (both on the LSS and VOP) are now recognised as a major constraint on oil palm production. There are approximately, 2,000 hectares of “abandoned” blocks at

Popondetta, which has reduced average yields to as low as 12 tonnes/hectare (ADS (PNG) 2001, 65).

6.3 Disputes Over Individual Titles on LSS Blocks

Disputes over block ownership and lease transfers on the LSS schemes are a common problem, especially as the original leaseholders age and die. Disputes over ownership and lease transfers most often erupt after the father dies when the eldest brother attempts to assert absolute control over the block. This often alienates younger brothers. In some cases where the leaseholder has two wives the lease transfer can also be disputed by sons from the two marriages. The disputes surrounding deceased estates can result in the block being under-harvested for several years until some resolution is found.

Other forms of disputes over lease titles can include: incomplete payment for a block by a new purchaser; the sale of a block by a son/daughter/caretaker without the consent of family members; widowed leaseholders remarrying; the public tender of a block by the Rural Development Bank; and, claims of block ownership by caretakers. Caretakers are often in disputes with the registered leaseholder if the caretaker has looked after the block for many years while the leasee has resided elsewhere. In some cases the caretaker has undertaken poisoning and replanting, improved housing, repaid loans and planted fruit trees, coconuts and betel nut on the block. In these situations, the caretaker sometimes views this investment in the block as a claim to ownership of the block and will strongly resist any attempts by the original leaseholder or descendants to reclaim or sell the block. Monetary compensation is often demanded by a caretaker if they cannot remain on the block⁴. Such disputes can result in reduced oil palm productivity for a protracted period.

6.4 Conclusion and Recommendations

There is a diversity of ways conflicts over land are emerging between different ethnic groups, between clan and non-clan members and, in the case of the LSS blocks, between family members. At every level there are numerous opportunities for disputes to occur. Disputes and issues surrounding land and

land tenure on the oil palm schemes are very complex and in this chapter we have briefly outlined some of the main areas of concern:

- Growing intolerance and resentment of migrant settlers by indigenous landowners, and the occasional anti-settler sentiments expressed by provincial governments.
- A sense of insecurity and uncertainty regarding future tenure by many migrant settlers, most notably amongst LSS settlers at Popondetta.
- Perception of future land shortages among younger customary landowners.
- Volatility associated with the commoditisation of customary land at Hoskins.
- A limited concept by customary landowners of land being lost in perpetuity (despite acceptance of payment and formal agreements for land sales).
- Commercial land transactions do not necessarily escape customary norms and obligations.
- Principles of land tenure undergo change and reinterpretation over time.
- Landowner values of their land and other resources, and their relationships with companies/settlers change over time.

How these issues are dealt with and how adept the industry is at solving land issues will determine the future growth of the industry. Popondetta is a pertinent example of how land tenure disputes can have a serious impact on smallholder production and threaten the future viability of the scheme due to the large number of “abandoned” blocks and the reluctance of growers who have insecure tenure to replant and invest in their blocks. Thus, land conflicts and insecure tenure are critical production issues as they act to reduce smallholder productivity by:

- removing oil palm stands from production;
- impeding replanting;
- undermining smallholder confidence in and commitment to the industry; and
- limiting broader economic development.

Devising effective corporate and OPIC strategies to address the emerging land problems will be a major challenge for the industry. There are no simple answers, and potential solutions will require time and commitment from all stakeholders. However, some of these land tenure issues are more amenable to resolution than others, and the industry should begin to put in place mechanisms to assist with the resolution of land disputes. With the ageing of the smallholder schemes, many blocks have changed hands through inheritance or sale, and the records are very much out-of-date. Hoskins OPIC has recently employed a former Lands Officer to update its register of LSS leaseholders and to register the “owners” of oil palm blocks on customary land. As the register of leaseholders is updated disputes over block ownership are being identified and frequently resolved with OPIC’s assistance. When the record of current LSS leaseholders is complete, future disputes over individual LSS leases should occur less frequently and be resolved more quickly thus increasing smallholder productivity. We recommend that smallholder lease/purchase records be updated for all LSS and VOP subdivisions, and these records be maintained and regularly updated.

More difficult to resolve from the industry’s perspective are macro-scale disputes between customary landowners and the residents of LSSs which sometimes cause major disruptions to smallholder production when whole subdivisions are involved. Such disputes in the past have led to significant disruption of smallholder production at Hoskins, Popondetta and Bialla. Political solutions to these problems appear unlikely in the foreseeable future, but there may be opportunities to improve communication between the representatives of landowners and settlers for speedier resolution of disputes before they erupt into more widespread communal violence. While these problems have deep-seated causes related to land alienation and have been issues for many years, violent conflicts are often triggered by unresolved localised incidences of criminal offences inflicted on one side by the other. Bringing landowner and settler leaders together at an early point to mediate such grievances, may help prevent the diffusion of a sense of grievance through one side and contain the potential for communal violence. Through appropriate

mediation and not excluding customary compensation payments, the risk of social unrest may be lessened or averted. How such a conflict resolution mechanism would be established cannot be answered here, and further investigation of appropriate conflict resolution strategies is recommended.

Box 6.1. Settler intimidation, Igora LSS, Popondetta

John is from a village near Kokoda. He and his family vacated their Igora LSS block in 1993 due to criminal activities, intimidation and land disputes with the local landowners. Their block adjoins landowners' VOP blocks. They were threatened many times with factory and home made guns. The landowners would also come around at night and steal tool and household items like clothes and pots. They also stole from their food gardens and often demanded money from growers.

With this intimidation by landowners some settler families at Igora LSS moved to blocks owned by friends near the main road where they were away from the landowners. They moved onto blocks in groups so that there are several families living on the block for security. They only return to their blocks for harvesting and gardening and usually go in groups for protection. The women do not visit their gardens on their own as they fear attacks. These threats have also made it difficult for smallholders to set up other businesses on their blocks.

We were told that some settlers who abandoned their blocks because of threats from local landowners now have caretakers on their blocks and some "abandoned" blocks have been taken over by landowners who either have moved onto the blocks or visit the block to harvest.

Box 6.2. Land disputes, Iseveni, LSS, Popondetta

The block was leased in 1978 to a Morobe man. He is currently living in another province and his parents are looking after the block with their six children: four adult sons and two daughters

The block relies mostly on income from oil palm and some supplementary income from selling items at local markets. Anna and her sons do not have any businesses on their block. They explained that by starting a business, like a chicken business one risks being targeted with violence by the landowners. Anna told of a nearby settler who was killed a few years ago when some landowners came to his block and killed his pigs and then shot him when he tried to defend himself. After this incident Anna and her family decided to close their pig business. Because of these problems with landowners Anna said that markets or off-block employment are the only way to earn a supplementary income.

In 1998 the landowners tried to evict the settlers in this section of Iseveni. Young and old men from Iseveni VOP came onto the blocks and threatened the settlers with tomahawks, knives and spears. They vandalised the houses and cut down coconuts and betel nut palms. They told the settlers that the government did not adequately compensate them for the land when it was initially sold, and now the settlers had to leave. After this incident several settlers abandoned their blocks. Landowners then moved onto the blocks. Later some of the blockowners returned to their blocks because they found it difficult to access land in their home villages. Some are still fighting to reclaim their blocks. They have approached OPIC and the Lands Department to sort out the ownership disputes.

Anna said that they experience continual threats and acts of intimidation by landowners. A few days before the survey period the young girl (grade 6) on the adjoining block was dragged from her bed and taken by a group of men and raped. They came armed with shotguns and stole bush knives, a spear and a torch leaving the family with no way to defend itself. Following this incident settlers held a meeting to establish community policing on the blocks. They want young men to form a group to police the area at night.

Anna told us that settlers who wish to sell their blocks and return to their home villages often face difficulties. If a blockowner attempts to sell the block, the customary landowners may attempt to reclaim the land before it is sold. If the block is sold and the complete purchase price is paid before the blockowner leaves for another province, then this will be the end of the problems for the blockowners, but will mean a new set of problems for the new blockowner as he/she tries to maintain ownership rights over the land. If a blockowner sells the land and only part of the purchase price is paid, then the new blockowner will be harassed by the customary landowners to pay the outstanding purchase price to them, not the previous blockowner. In some cases the new owner has been evicted from the block by the landowners.

Box 6.3. Change in purchase price, Gaungo VOP, Hoskins

Martin bought 4 hectares in 1987 for K2,500 after working for NBPOL for several years. Martin has six children, one of whom is currently in full-time employment at Kimbe. Martin explained that some “outsiders” have completed payment for their block, but some landowners still visit the block to request more money for the land. He told of some settlers who were evicted after paying in full the agreed purchase price. The disputes begin when some members of the landowning group place a higher value on the land after seeing the block developed with oil palm. They demand the settler pay the new price. If they fail to pay the new price they are threatened with eviction.

In Martin’s case, after paying in full the agreed purchase price of K2,500 he was approached by landowners in 1999 to “buy” the block again (*sekon taim mi baim graun*). The landowners asked him for a further K1,500. However, he refused and eventually they agreed on the sum of K1,000 which he is currently paying off in instalments. The second time he “bought” the land, he was dealing with another sub-clan who also has ownership rights to the land.

Box 6.4. Resale of oil palm block at Gaungo VOP, Hoskins

In 1985 this 4 hectare block was bought by Tom for an agreed price of K3,000. A few years ago, prior to completing the payments on the purchase price, the initial purchase price of K3,000 was raised to K6,000. After some negotiation, a price was eventually agreed at K5,000. However, after negotiations were completed the 2 hectares reserved for gardening, was reclaimed by the landowners after some dispute over the purchase price and the lengthy period of payment for the block.

The 2 hectares have since been “sold” for K3,000 by the customary landowners. Tom now “borrows” land for gardening on other blocks “owned” by kin or friends. The recent trend of reclaiming sections of land purchased by “outsiders” is a serious problem according to Tom, several other settlers, and OPIC extension officers working at Gaungo. The land being reclaimed is usually not planted with oil palm, but has been set aside for gardening. By reclaiming the “reserve” section, settlers are being denied access to gardening land, and will find it very difficult when their two hectare block requires replanting.

Because of his insecure tenure, Tom is reluctant to invest in a permanent timber house. His house is small and made of bush materials. Generally, settlers have poorer housing than Gaungo villagers living on their blocks. Settlers often refer to their housing standards as evidence of their lack of security.

Endnotes

1. The Kavugara evictions occurred just prior to provincial elections. One electoral candidate was running on a “West for West” campaign that stirred up anti-settler sentiments at the time.
2. For example, the Kavugara 1993 evictions, the burning of about a dozen houses at Kapore 1994, and the Buvussi 1998 road-block by customary landowners, were all in response to “crimes” by settlers against the local population.
3. The Vagrancy Act was first introduced in the colonial period and was enforced until around 1973. The Vagrancy Act restricted movement of Papua New Guineans between provinces and into towns and cities. The Act was declared unconstitutional by the Supreme Court in 1986. Recent calls for the reintroduction of the Vagrancy Act aim to stem the flow of rural-to-urban migration as a means of reducing law and order problems in urban centres.
4. Many ownership disputes between caretakers and absentee leaseholders in West New Britain and Popondetta were concerned with the compensation level payable to the caretaker for vacating a block. In most cases, caretakers were seeking compensation for their labour in establishing, maintaining and paying off loans on the block, including compensation for other assets such as structures erected on the block and other economic resources such as coconut and betel nut palms.

CHAPTER SEVEN

INDUSTRY AND OPIC INTERVENTIONS

7.0 Introduction

This and the following two chapters review the major company and OPIC interventions that have recently been implemented to increase smallholder production at Hoskins and Popondetta (Appendix 1.1 lists OPIC's strategic objectives for 1999-2003 for the two schemes). The industry's goal is to increase smallholder production to 50% of total national production by 2003 (OPIC 1998). To achieve production increases in the smallholder sector the industry relies mainly on:

1. Increasing smallholder productivity.
2. Developing new areas of oil palm.

In this chapter we briefly review smallholder credit schemes, fertiliser incentive schemes, top-up (infill) oil palm plantings on LSS blocks and the replanting programme. In reviewing the main initiatives for smallholders, we highlight the potential of interventions to maintain or enhance household economic and social security while increasing smallholder production and/or productivity. The positive or negative effects of smallholder interventions are assessed by giving consideration to their impact on income levels and distribution, risk reduction, access to resources, people's capacity to meet their needs, the range of options and choices available to households, gender relations, and household social cohesion. The analysis is not always straightforward as some interventions, such as replanting, may increase household economic and social security in the long-term, but may be perceived by smallholders to have short-term negative effects on household income levels. Yet, acknowledging how interventions impact on household economic and social security assists us to anticipate

peoples responses to certain interventions and therefore can lead to better formulated policies and intervention strategies.

7.1 Increasing Smallholder Productivity

Chapter 3.1 indicated that smallholder yields per hectare are much lower than those for the plantation sector and average yields per hectare for the VOPs are consistently lower than those of the LSS subdivisions, with the exception of Popondetta (ADS (PNG), 2001). Whilst there have been recent increases in smallholder yields at some of the oil palm schemes (such as Hoskins, Bialla and New Ireland), there is scope for further improvements in productivity.

Over the last five years several company and OPIC smallholder interventions aimed at increasing smallholder productivity have been introduced with varying success. Some of these have been advanced in part due to the strengthening and reorganisation of the smallholder affair units at both NBPOL and HOP. On the other hand, deteriorating infrastructure, especially roads, minimal State and provincial government support and the increasing ratio of smallholders to OPIC extension officers have made potential productivity gains more difficult to attain.

The most important recent company and OPIC initiatives include:

Short-term

- ◆ Mama Lus Frut Scheme (Hoskins and Popondetta)
- ◆ Smallholder Credit Scheme (Hoskins and Popondetta)
- ◆ Fertiliser Incentive Scheme (Hoskins)

Long-term

- ◆ Top-up plantings on LSS blocks (Hoskins and Popondetta)
- ◆ Replanting programme (Hoskins and Popondetta)

The Mama Lus Frut Scheme is discussed in detail in Chapter 8.

7.2 Smallholder Credit Schemes

NBPOL and HOP advance interest free short-term, in-kind credit to growers with loans repaid through deductions from grower FFB income. At Hoskins, in-kind credit is given for tools, fertiliser and seedlings with repayments made at 50% of gross FFB income over periods of 3 months, 12 months and two years respectively. The credit scheme was introduced in 1994/95 following a report (Campbell 1994) recommending easier access to credit for seedlings, tools and fertiliser to boost smallholder production. According to company smallholder officers, prior to the scheme, lack of or damaged tools for regular harvesting and limited use of fertiliser by smallholders were significant factors explaining low productivity among smallholders. King *et al.* (1998, 2) claim that increases in yields among Hoskins smallholders between 1994 and 1998 were due in part to the increased application of fertiliser as a result of the introduction of the credit scheme.

At Popondetta, interest free credit facilities are available for fertiliser (for established blocks), tools and nets. Repayments are deducted from grower FFB income at a rate of 50% of gross income where no other deductions are being made. However, due to supply problems of fertiliser in the Popondetta scheme and transport difficulties, improvements in fertiliser use have not been as noticeable as in Hoskins. Presently, at Popondetta loans for block development and replanting are funded through the World Bank Oro Expansion project. Loans are recovered by HOP with deductions of 30% of FFB gross income. Access to project loans closes at the end of December 2001 and other sources of credit will need to be arranged (Section 7.5). There are no indications that HOP will extend credit for block development.

At Hoskins and Popondetta, the credit schemes suffer from growers avoiding debt repayments and both companies have made modifications to oil palm payments to reduce levels of debt avoidance (Chapter 8.4 and 8.6). However, at Popondetta, the problem of debt avoidance is more difficult to manage as growers can sell their fruit to private transport contractors where their production is recorded under the name of the contractor.

Despite problems with debt avoidance, interest-free in-kind credit to smallholders remains very important for maintaining and enhancing smallholder productivity and for ensuring the future growth of the smallholder sector. Because smallholders generally have difficulty securing loans from commercial banks, it is recommended that the interest free credit schemes currently provided by the companies remain in place.

7.3 Fertiliser Incentive Scheme (Hoskins)

In 2000, to further increase fertiliser application rates, NBPOL introduced an incentive scheme that refunded growers with K3.00 cash per bag of fertiliser applied. This K3.00 refund was added to the total cost of the loan. The cash refund provided a financial incentive to growers short of labour to employ youth groups, church groups or women to apply the fertiliser. The incentive scheme was being introduced during fieldwork and therefore it was too early to assess the full effectiveness of the scheme. Based on interviews with extension officers and growers and our observations at Kavui and Gaungo where the scheme was being introduced, the cash incentive was acting to free up labour and improve fertiliser application rates by smallholders.

Prior to the introduction of the cash refund for fertiliser application many growers did not apply fertiliser and often bags of fertiliser were left stacked under growers' houses, sometimes for many months, or remained at the roadside verges of blocks where they had been delivered. Within weeks of the introduction of the cash incentive scheme, Kavui and Gaungo growers were applying their fertiliser within a week of delivery, the stipulated period within which fertiliser had to be applied for growers to obtain their cash refunds. The apparent success of the scheme says much about the cash needs of smallholders and the strategies they employ to access cash. Cash-short growers, especially during depressed oil palm prices, will choose strategies that meet their immediate short-term cash needs. The fertiliser cash incentive worked because it provided immediate cash benefits even though, in the longer term, overall debt levels increased. This is very different to the situation described below (Section 7.5) where Popondetta growers are reluctant to take out replanting

loans. The fact that growers were willing to go further into debt to gain immediate access to cash reflects not only the economic plight of smallholders during depressed prices for oil palm, but also how responsive smallholders can be to appropriate financial incentives that meet their needs.

7.4 Infill Plantings on Existing LSS Blocks

The industry is also increasing smallholder production by encouraging LSS growers with blocks of 6/6.5 hectares or more to plant 6 ha to oil palm. Most LSS smallholders with 6 hectares or more plant 4 hectares to oil palm and retain 2 ha for gardening land.

Some growers in the Hoskins scheme have planted all 6 hectares to oil palm. These tend to be blocks where garden soil fertility is perceived to be very poor, or where several households co-reside on the block, and/or have relatively good access to additional gardening land adjoining or near the block. While some smallholders clearly see advantages in planting the whole block to oil palm, many do not.

This study briefly assessed the 6 hectares expansion initiative and found smallholders held mixed views. Many growers with whom we spoke did not feel that it was appropriate for their own block, but recognised that for some families it could relieve some of the financial pressures on the block, where, for example, the soil was poor or unsuitable for gardening.

The most common reason why smallholders did not view expanding oil palm planting to 6 hectares as appropriate for their own situations related to the impact such an initiative would have on gardening and household food security. Because of the importance of gardening for household food consumption and income, many smallholders felt that household food security would be threatened by allocating more land and family labour to oil palm production. At Sorovi sub-division, Popondetta, we interviewed some smallholders who attended an OPIC field day last year where infill planting was encouraged. One Sorovi smallholder felt that the suggestion by OPIC to plant all the block to oil

palm illustrated how out of touch the organisation was with the everyday situation of blockholders. He remarked:

Gaden kaikai em wanpela bikpela samting long ol blok man na meri. Ol OPIC lain ino save long laif long blok olsem na ol tok long planim wel pam long blok.

Garden food is something that is very important to male and female smallholders. OPIC staff have no understanding of life on the blocks and that is why they talk about planting the full block to oil palm.

He also referred to the recent drop in oil prices to highlight the risks involved in planting the whole block to oil palm. He added that at least with a garden one could rely on garden food and selling food at markets when the price of oil palm falls. His wife who had also attended the OPIC meeting recalled:

Olgeta settler komplain na tok prais bilong wel pam save go antap sampela taim tasol, na suppose prais igo daun tru bai mipela kisim kaikai long we na kaikai?

All settlers complained [to OPIC] and said the price of oil palm is known to fluctuate, but if the price drops significantly, then where will we find food to eat?

Another female smallholder at the meeting expressed her concerns with OPIC's message to plant all the block to oil palm:

...ol ino tingting long how bai mipela istap long block. ... Mi wari long ol pikinnini bilong mi, ol bai kaikai wanem samting sapos nogat kaikai long gaden.

...they [OPIC] don't think about how we will cope on the block. ... I worry about my children. What will they eat if we don't have garden food.

These sentiments, especially those of the women, are indicative of the strong resistance many have to planting their full blocks to oil palm.

Restricting women's access to garden land may not be in their interest. Women are expected to provide food for their families, and reduced access to garden land would add to their burdens as wives and mothers. Also, women usually have control of income earned from selling garden food at local markets, unlike oil palm income which is more open to the claims of male kin. Limiting access to garden land and market income has, therefore, the potential to disadvantage not only women, but all members of the household. Moreover, it is probable that some women would seek gardening land elsewhere (e.g., on State or

company land), which may result in increased environmental pressure on State reserve land. If gardening land is located at some distance from the block, it may mean that women have less time to devote to oil palm production and block maintenance. Because gardens are viewed as a means of maintaining household food security and lessening the risks associated with fluctuating oil palm prices, extension efforts may be better directed to supporting not undermining gardening. This study therefore disagrees with the recent recommendations of a World Bank report (ADS (PNG) 2001, 83) to develop oil palm on the rear 2 ha of garden reserve land on LSS blocks.

Another initiative to expand LSS oil palm plantings is the creation of new subdivided blocks on the larger LSS blocks. The newly created “expansion” blocks are owned by relatives and/or the offspring of the original leaseholders who are issued their own harvesting card. Because the initiative is not suitable for all blocks, the number of these “expansion” blocks is limited to 140. Approximately 63% of “expansion” blocks are between 7 and 12 hectares (ADS (PNG) 2001, 33).

Because of time constraints, this study was unable to examine the socio-economic impacts of these new “expansion” blocks. However, it is possible another harvesting card on a block may have the effect of redistributing income between family members and strengthening household economic security. For some blocks, the economic and social merits of the scheme are promising, although a more detailed analysis of the impact on access to garden land and inter-and intra-household social relationships is recommended.

7.5 Replanting Programme

To maintain the productivity and viability of the smallholder sector, the older oil palm schemes at Hoskins, Popondetta and Bialla are undertaking poisoning and replanting programmes as the palms mature beyond the peak production age of 15-20 years (Table 7.1). The focus on replanting is a recent move. For example, the Bialla scheme began a replanting program only in 2000, and Popondetta’s replanting program was delayed until 1998.

At Hoskins, approximately 3,000 hectares have been earmarked for replanting, although the rate of poisoning and replanting over the last two years has been well below expectations (F. Lewis pers. comm.). Hoskins OPIC has a replanting target of 500 hectares per year over the next few years. The low replanting rate can be partly explained by the low priority it has been given by the OPIC extension services. The OPIC field manager also reports that replanting has been stalled by some smallholders reluctant to forego oil palm income during replanting, and by younger male growers who show little interest in oil palm production. On the Hoskins LSSs, reluctance to replant is likely to be a function of population density where highly populated blocks are struggling already with low per capita incomes and any cut to oil palm income through replanting is likely to worsen their situation.

Table 7.1 Area (ha) identified for replanting at Hoskins, Bialla, Popondetta

	HOSKINS	BIALLA	POPONDETTA
Total area targeted for replanting (ha)	3,000	3,600	3,600

Source: ADS (PNG) (2001)

At Popondetta a replanting program has been funded under the Oro Expansion project which commenced in 1993. The replanting program began in earnest in 1997/98 with field days and meetings with smallholders to promote the programme and increase growers' awareness of replanting. The blocks targeted for replanting were those planted between 1977 and 1985, in the Sorovi, Igora, Saiho and Aika sub-divisions. The rate of replanting has been much lower than anticipated (Table 7.2) and the original replanting target of 3,600 hectares has since been reduced to 1,250 hectares due to lack of interest in replanting (ADS (PNG) 2001, 66). By 2000, 732 hectares had been replanted.

Table 7.2 Popondetta replanting targets and area (ha) replanted
1998-2000

YEAR	REPLANTING TARGET (ha)	REPLANTING ACHIEVED (ha)
1998	500 ha	28
1999	500 ha	238
2000	500 ha	566

Source: OPIC statistics

The low rate of replanting among existing Popondetta growers is in stark contrast to the enthusiasm shown by local landowners to join the industry and plant oil palm. This lack of interest in replanting places doubt on the future viability of the scheme. It therefore warrants some attention as to why growers are reluctant to replant. As part of this study we examined replanting issues in interviews with smallholders, OPIC officers, company representatives and the Lands Department. Smallholders were reluctant to replant for several reasons including high debt levels, potential short-term loss of income, tenure insecurity, rental arrears, poor road conditions and a view by some smallholders that replanting is unnecessary. Each is discussed below.

7.5.1 Smallholder avoidance of high debt levels

Under the Oro Expansion Project, credit is made available for existing smallholders to purchase a 2 hectare replanting package at a cost of between K2,500-K2,900, including interest and depending on the inputs purchased (OPIC replant budget). This covers the cost of poisoning old palms, new seedlings, fertiliser, chemicals and lining. The cost has increased substantially from 1997 when the package was just over K1,072. An 8% interest rate is charged on the replanting loan package, and loans are recovered by deductions of 30% from the gross income of growers.

Some smallholders are unwilling to take out what are perceived as large loans and therefore are reluctant to replant. For these smallholders, they may have existing loans with the Rural Development Bank or credit with the company,

and many feel that living expenses are already too high to accommodate further loan repayments. Smallholders with loans from the Rural Development Bank are largely those with Oro Housing loans. In January 2001, there were 105 blocks with outstanding housing loans that were initially taken out in the late 1970s – early 1980s when the Popondetta scheme was established. The typical loan was for K7,851 (Table 7.3) and only 17 loans have been repaid in full.

Table 7.3 Popondetta Rural Development Bank loan arrears as at January, 2001

	AMOUNT BORROWED (PNG KINA)	BALANCE OUTSTANDING (PNG KINA)
Mean	8,061	6,322
Minimum	7,851	359
1 st Quartile	7,851	2,655
Median	7,851	5,575
3 rd Quartile	7,851	8,843
Maximum	11,110	26,700
Total amounts	846,405	663,860

Source: Rural Development Bank data

In January, 2001, average loan arrears stood at approximately K6,322. Because of the poor repayment rates, large loan arrears and smallholder difficulties in repaying these loans, interest has not been charged on these loans since 1995. According to the Rural Development Bank, many of these loan arrears accumulated rapidly when the Oro-for-Oro campaign emerged in the early 1990s, when many settlers abandoned their blocks following harassment from local landowners. Also, the negative experience of these smallholders is widely known in the subdivisions and may be a disincentive to other growers taking out replanting loans.

Moreover, as Table 7.4 shows, for smallholders who take out a replanting loan and already have credit with the company and/or a Rural Development Bank loan (Grower A), repayments can take a substantial proportion of their gross income. Replanting package loans are deducted at 30% of gross income, and sundry loans from the company (after the development phase for tools, fertiliser, nets, etc.) are deducted at 50% of the remaining balance after deductions for the replanting package. If a smallholder has a Rural Development Bank loan, then this and credit loans with the company are deducted at 30% each of the

remaining balance after deductions for the replanting package are made. Hence, the reduction in net income from loan repayments can be substantial, especially if growers take out loans for replanting.

Table 7.4. Popondetta, smallholder budget for replanting loan repayments

	GROWER "A"	GROWER "B"
Gross monthly income	K100	K100
Less payment for replanting package (30%)	-K30	-K30
Less RDB loan repayments	-K21 (30% of K70)	
Less credit repayments to company	-K21 (30% of K70)	-K35
Net monthly income	K28	K35

Yet, there is an urgent need to encourage growers to purchase replanting packages. World Bank funding of these loans ceases in December 2001, leaving the availability of low interest loans in doubt, as it is unlikely that HOP will extend subsidised credit for replanting. It is also anticipated that by 2002 seedlings will rise in price from K2.50 to K4.00. Those blocks that do not undertake replanting before December 2001 are therefore likely to be confronted with increased costs for replanting and higher interest rates on loan repayments. Any additional replanting expenses may further discourage growers from replanting.

7.5.2 Smallholders averse to foregoing income

Many Popondetta smallholders are averse to poisoning mature palms because of the forgone income this will involve, and their already high levels of debt. Smallholders can expect to wait up to three years before the new 2 ha plantings mature sufficiently to generate reasonable incomes. They consistently expressed the view that the loss of income was a major disincentive to replanting. This was especially the case on the 2 hectare VOP blocks where growers would need to rely on alternative income sources. For VOP smallholders access to adequate gardening land and possibly other cash crop income may, however, make it easier to forego oil palm income during

replanting compared with LSS smallholders who have limited access to gardening land and very restricted alternative sources of income.

On 4 hectare blocks, replanting is arguably an easier option when 2 hectares remain in production. However, the low price for FFB at the time of fieldwork, is certainly a major disincentive to replanting for several reasons. Growers repeatedly stressed that they were reluctant to remove two hectares from production because their reduced income would be insufficient to cover basic household needs. From November to January 2001 some Popondetta growers said that they were postponing replanting until school fees were paid and many claimed they would be unable to meet the educational costs of their children if they replanted. As indicated above, this is particularly true on the Popondetta LSS blocks where alternative income sources are limited. Growers are also reluctant to acquire loans when prices are low as it means their net incomes after loan repayments are often insufficient to meet their basic needs.

Further, as pointed out by OPIC officers, people begin to lose interest in oil palm production during prolonged periods of low oil palm prices. Efforts by extension officers to encourage growers to replant are thus less likely to succeed when oil palm prices are low and when growers may be struggling to maintain their livelihoods. The replanting logic of smallholders is the reverse of that of the plantation companies. For the company, it makes sense to replant while prices are low as potential revenue losses are minimised. For the smallholder, the replanting option becomes more viable as oil palm prices rise because they are more able to reach a minimum income at which basic needs can be met. It is likely that the demand for replanting will increase as oil palm prices rise over the next few years.

7.5.3 Land disputes on LSS and VOP subdivisions

A major constraint on meeting replanting targets at Popondetta is the problem of land disputes on LSS and VOP blocks as outlined in Chapter 6. Insecure and uncertain tenure of some settlers on LSS and VOP blocks creates a disincentive to make long-term investments in their blocks. On the LSS subdivisions, where intimidation of settlers occurs, many smallholders expressed little interest in replanting. Smallholders were concerned that re-investment and development of their blocks would attract the attention of local landowners and were fearful that they would become targets of landowner anger.

In most areas of Papua New Guinea, the planting of economic trees and plants gives the cultivator ownership rights to the resources as distinct from the land on which they are grown. As such, investment in replanting may be viewed by landowners as a challenge to their authority and claim to “ownership” of land alienated for LSS. For this reason, some settlers are concerned that replanting may trigger a new round of efforts to evict “outsiders”. Also, at present, intimidation and harassment of settlers discourages them from establishing supplementary income sources on their blocks, such as PMVs, tradestores and poultry projects. Landowners claim that settlers were only ever granted rights to plant oil palm and thus they have no right to earn alternative income on this alienated land. Many settlers, though, believe that these restrictions also extend to the replanting of oil palm and believe that landowners would interpret their efforts to replant as attempts to establish new businesses which would be opposed vigorously. Although not presently harassed by landowners, some settlers claim that Oro-for-Oro sentiments still run deep at Popondetta, and as a consequence they are discouraged from replanting and making other long-term investments in their blocks.

There are a large number of abandoned and caretaker blocks at Popondetta as a result of land tenure disputes. Replanting is less likely on these blocks. Presently, there are approximately 2,000 hectares of “abandoned” blocks at Popondetta and interviewees from the Rural Development Bank, Lands Department and OPIC indicated that caretaker and abandoned blocks are a

legacy of the Oro-for-Oro campaign of the early 1990s when settlers fled their blocks. While many settlers have since returned, it seems that a proportion of them never returned and such blocks have been managed by caretakers; or occupied by squatters, mostly from local landowner groups. Many caretakers are living on the blocks with the consent of the leaseholder, but according to OPIC and HOP these blocks are not likely to be replanted. While the absentee leaseholder retains “ownership” of the block and therefore can either sell the block or return to live on it, caretakers are unwilling to invest in replanting when the benefits of replanting may not accrue to them. Also, absentee leaseholders may not be inclined to permit caretakers to replant because, as pointed out above, throughout much of PNG, the planting of economic trees/palms confers ownership rights on the cultivator. Further, if the caretaker works to repay the loan for the replanting package, this will build up their ownership claim to the block.

Disputes over ownership of VOP/LTC blocks are usually between landowning groups and settlers from other parts of Oro Province. These settlers may have married into the landowning group, and the sons are now finding their inheritance rights challenged. Such disputes have resulted in many “abandoned” and under-productive blocks. Like the LSS blocks, opportunities for replanting have led to the local landowners reclaiming blocks from non-clan members, or demanding a “rental fee” before allowing the block to be replanted. Often these demands are made by a younger generation of landowners and in many cases the block is either out of production or replanting is delayed well past the stage when it is necessary.

7.5.4 Rental arrears

All LSS blocks are subject to a land rental fee (land tax) payable to the Lands Department. For a variety of reasons, many LSS blocks are heavily in arrears. For example, some leaseholders have not paid rental fees since the Oro-for-Oro campaign and now have rental arrears in excess of K1,000. In 1999, the Lands Department collected only K20,000 out of the K90,000 owing from the LSS scheme.

Rental arrears have been a disincentive to replanting for two reasons. First, many blockholders already have high levels of debt and are reluctant to take on further debt. Second, until 1999, the Lands Department refused to grant approval for replanting of LSS blocks that had land rental arrears. This slowed the progress of replanting in the early years of the program. Under pressure from OPIC, the Lands Department has relaxed these restrictions and now permits growers to replant if they have rental arrears less than K1,000. Despite this policy change many growers still believe that they must first clear their debt with the Lands Department before they can obtain permission to replant.

7.5.5 Smallholders view replanting as unnecessary

The palms targeted for replanting are those planted between 1977 and 1985. However, many growers with palms 15-20 years old (planted 1980-85) do not think that their palms are too tall to harvest. These growers say that they will not replant while their palms are producing well and they can still harvest them. Given that funding for replanting will cease in December 2001, it is important that extension officers make growers aware of this situation as OPIC will come under pressure from smallholders for replanting packages when their palms become too tall for efficient harvesting or when the price of oil palm increases.

Another group of growers who do not see the need to replant are those that can be described as “hobby” farmers. These growers are more likely to be low to medium producers who have only a partial commitment to and interest in oil palm production. For these growers, oil palm is a resource that can be tapped into occasionally as the need arises. Thus for these growers to commit to a substantial investment of almost K3,000 for replanting is a difficult decision.

7.5.6 Road infrastructure

An ongoing problem affecting smallholder production and grower commitment to oil palm production is the poor and deteriorating road infrastructure that hinders fruit collection (Plate 1.1). Several industry stakeholders identified poor road conditions in the Popondetta scheme as a major constraint on smallholder

productivity and was also a factor explaining the reluctance of smallholders to replant.

Road maintenance has been neglected by the provincial administration for several years now, resulting in many smallholders not having their fruit collected for lengthy periods, particularly during the wet season. For example, in March 1999 almost 25% of roads were inaccessible and in the last week of January 2001, approximately 774 smallholder blocks were cut-off from transport collection due to impassable roads. Almost 300 of these smallholders had been without a harvest pick-up for nearly three months, and another 244 had no fruit collected the previous month. Whilst HOP continues to do patch-up work on the roads, road infrastructure is in urgent need of maintenance and upgrading. Also, poor road conditions mean that company and contractor trucks require continual repair work, resulting in fewer trucks available for FFB collection and less reliable schedules for FFB collection¹.

OPIC and the company acknowledge that smallholder frustration with unreliable fruit pick-ups and impassable roads (in some areas for up to four or five months) act as disincentives for growers to replant. When growers have continual problems with harvest pick-ups, the relationship between the company/OPIC and smallholders is undermined and OPIC officers are often blamed for the transport problems. Thus the role of OPIC to encourage growers to replant is made even more difficult and frustrating under these circumstances. Moreover, for growers affected by transport problems, it is understandable that they question both the purpose of replanting and their commitment to the industry.

These factors are often operating together to discourage replanting. Tenure security, levels of debt, potential income foregone, poor road infrastructure and unreliable harvest pick-ups, either singly or in some combination are major disincentives to replant. These problems will not be easily overcome and issues such as tenure security and road maintenance require long-term solutions that are largely outside the control of the industry.

7.6 Development of New Areas for Oil Palm Production

Alongside efforts to increase smallholder productivity, the industry is also encouraging the opening up of new areas to expand smallholder production. Development of new areas is largely restricted to VOP expansion and the development of mini-estates on customary land. Expansion of LSS schemes is unlikely because of the difficulty of alienating land for these purposes. VOP expansion and the development of mini-estates are discussed below.

7.6.1 VOP expansion

In all project areas VOP plantings are increasing (Table 7.5). At Hoskins, for example, OPIC has identified 3,000 hectares of land for potential VOP development over the next few years, and Popondetta is currently experiencing rapid growth in the VOP sector. The major expansion of VOP is occurring in villages that have not been part of the industry, although many are likely to have other cash crop holdings (Chapter 3.2.1). Infill is also occurring to a lesser extent in some existing VOP areas.

Table 7.5. Numbers and areas (ha) of VOP blocks in PNG. For 2000 and projected expansion

VOP BLOCKS	HOSKINS	BIALLA	POPOND-ETTA	MILNE BAY	NEW IRELAND
2000 number (ha)	1,634	1,067 (2,552)	4,448 (7,404)	536 (1,338)	648 (1,285)
Projected expansion ha*	3,500	NA	4,000	600	800

* projected expansion area – data from ADS (PNG) 2001

Popondetta currently has a large VOP expansion programme under the Oro Expansion Project funded by the World Bank. VOP planting has increased by over 7,840 hectares since the project commenced in 1993 (ADS (PNG) 2001), far exceeding the initial project target of 3,500 hectares.

Enthusiasm for oil palm at Popondetta may be a partial reflection of the protracted depressed prices for other commodity crops such as cocoa and copra.

As mentioned in Chapter 3.1, smallholders actively attempt income diversification as a means of increasing income security. In this way, VOP expansion has the potential to provide benefits to smallholders by raising incomes, promoting income diversification and reducing risks. Also, with the recent introduction of a separate oil palm harvesting and payment card for women, there are potentially significant economic and social benefits to be gained (see Chapter 8).

VOP expansion has been so rapid in Popondetta that the provision of extension services and transport infrastructure has not kept pace with the new blocks coming into production. In some parts of the project area, road construction has been delayed leaving smallholders with no means to sell their fruit. Those within a few kilometres of a road have resorted to carting their fruit by wheelbarrow to the nearest collection point. At the beginning of 2000, OPIC reported that approximately 6,000 tonnes of FFB/month were being “lost” as producing blocks were unable to get their fruit to the mill because of access problems (L. Ruki pers. comm.). The lack of infrastructure development and deterioration of existing infrastructure is a serious constraint on VOP productivity in Popondetta.

7.6.2 Mini-estates

A new initiative of the industry is mini-estate development on customary land. Mini-estates are arranged under lease, lease-back regulations in which customary landowning groups register as Incorporated Land Groups (ILGs). The ILG then leases the designated land to the State which then leases it back to the ILG (the lease is registered under the Land Registration Act). The ILG then sub-leases the registered land parcel to the company on a 20 or 40 year lease. The company manages the estate, and the land owning group receives annual land rental fees and royalty payments. At Hoskins, ILGs are also issued with company shares. The shift to mini-estate production is driven largely by the restrictions on private companies obtaining alienated state land for plantation development and in part by the interest of local landowners to enter agricultural sub-lease agreements with the oil palm companies².

In 2000, NBPOL had seven mini-estates totalling approximately 7,128 hectares (Table 7.6). The company also has plans to develop a further 19 mini-estates in the near future, in total an area of approximately 11,900 hectares. In 1998, Higaturu Oil Palms negotiated their first mini-estate agreement and now have six mini-estates totalling 2,051 hectares. Proposals for further mini-estates are being assessed which include up to 6,000 hectares on the Dobuduru grasslands (ADS (PNG) 2001). Both companies report enthusiastic interest in mini-estates by customary landowners. Milne Bay Estates and Poliamba have also recently entered into mini-estate arrangements with ILGs, and have plans to expand mini-estate production over the next few years. At Milne Bay, mini-estates occupy almost 2,000 hectares and plans for a further 11,000 hectares are under consideration (ADS (PNG) 2001).

Table 7.6. Mini-estate development in 2000 and proposed expansion

	HOSKINS	BIALLA	POPONDETTA	MILNE BAY (Alotau)	NEW IRELAND (Lakuramau)
Total mini-estate area (ha)	7,128	N/A*	2,051	1,975	309
Proposed expansion (ha)	11,900	N/A	6,000	11,000	3,000

Source: interview data and adapted from ADS (PNG) Report 2001

*Customary landowners have not entered into mini-estate arrangements with HOPL. Instead four Landowner Development Corporations have pooled their land and are self-managing their own oil palm plantation (ADS (PNG) 2001).

Mini-estates are a recent development and are undergoing rapid expansion. Yet, the long-term socio-economic impacts are little understood and difficult to predict. In a recent World Bank report (ADS (PNG) 2001) on the smallholder oil palm sector in PNG, several concerns were raised relating to current mini-estate arrangements. These included:

- No obligations for the company in some lease arrangements to replant palms at the end of the 20 year lease period (Popondetta and Milne Bay)³.
- Limited financial/investment advice and assistance offered to landowners to ensure long-term economic development and security.
- Landowner dependency on royalties and rents encouraged by non-participation of landowners in mini estate management.
- Possible environmental impacts.

Landowners' ongoing reinterpretation of land tenure principles, the changes in landowner interests over time and inter-generational issues all pose potential risks for the future of oil palm developments on leased land. Studies of Incorporated Land Groups (ILGs) in other industries in Papua New Guinea, such as mining and forestry, point to some of the flaws and problems that have emerged under the conventional method of ILG incorporation (e.g., Kameata 2001; Duncan and Duncan 1997; Kalit and Young 1997). Problems identified in these studies include: lack of information or knowledge among ILG members to make informed decisions on lease arrangements; exclusion of secondary right-holders from sharing in benefits; inter-generational issues under long-term contracts; and, the individualisation of communal land. All have the potential to lead to land disputes and/or ongoing conflicts among clan members. Whilst lease, lease-back arrangements enable customary landowners to develop oil palm on their land, we recommend further analysis of the various mechanisms currently used in Papua New Guinea to address customary land ownership and resource development before more mini-estate arrangements are finalised.

A particular concern is how to ensure that the benefits from mini-estate development flow to women and groups holding secondary rights in the resource. Women, for example, risk being marginalised from the financial benefits of mini-estate development, given the way cash crops are generally incorporated into rural households in Papua New Guinea where men tend to claim ownership of the crop and the resultant income. Mini-estates therefore may have adverse effects on women and may widen existing income and

resource access disparities between landowning males and women/secondary right-holders.

7.7 Conclusion and Recommendations

One of the greatest obstacles to increasing smallholder productivity in the long-term is the reluctance of smallholders to replant. Although there is still a need to increase smallholders application of fertiliser, there are indications at some locations that appropriate interventions are resulting in higher application rates of fertiliser amongst smallholders. Devising suitable incentives for replanting is more difficult as the factors explaining the reluctance of smallholders to replant are complex and vary between LSS and VOP smallholders. A key reason is the short-term loss of income as 2 hectares of oil palm are removed from production. Many VOP smallholders have only 2 hectares of oil palm, so unless they have alternative income sources to support them until the new palms come into production they will delay replanting as long as possible, and certainly well past the point where yields have begun to decline. On the Hoskins LSSs, reluctance to replant is more likely to occur on highly populated blocks with low per capita incomes.

Smallholders' propensity to replant is also influenced by tenure security, existing and projected debt levels, income foregone, quality of road infrastructure and the reliability of harvest pick-ups. The relative importance of these factors varies between Popondetta and Hoskins and cannot be overcome easily, particularly in Popondetta where tenure insecurity and road maintenance are proving difficult to resolve and require long-term solutions that are partly outside the control of the industry. However, there are several initiatives that the industry could adopt to encourage replanting. These include:

- Extend credit to Popondetta smallholders beyond 2001. Many Popondetta smallholders expressed the view that oil palm prices in late 2000 were too low to allow them to replant. Therefore, with recent price rises in oil palm, demand for replanting packages will increase as growers are more able to secure an acceptable minimum income. With this in

mind, it may be appropriate to consider extending credit for replanting for the next few years and concentrate extension efforts on replanting stands of oil palm planted before 1980. A staged replanting effort over the next five years would ensure that oil palm smallholdings established in the initial burst of oil palm expansion are all replanted.

- Restructure loan repayments during periods of depressed oil palm prices so that loan repayment rates are lower. The value of credit schemes to smallholders could be enhanced significantly by making repayment rates more flexible to take account of fluctuations in oil palm prices. When prices are low, loan repayment rates could be reduced to lessen the impacts on growers. This would help maintain smallholder interest in oil palm production during periods of low prices and also reduce incentives to avoid loan repayments.
- Promote income diversification. The development of supplementary incomes would increase the propensity of smallholders to replant and assist them to develop a long-term perspective on oil palm investment and production rather than on immediate short-term returns to meet their immediate and pressing needs.
- Encourage the cultivation of profitable market crops on newly replanted blocks to provide an income source until new palms come into production. In areas poisoned for replanting, many smallholders already cultivate garden crops for sale at local markets. This should be encouraged by the industry and ways identified to promote the cultivation of high value crops (e.g., tobacco, peanuts, bananas, green leaf vegetables and chillies) to compensate for short-term losses in oil palm income.
- Rather than poison a full 2 hectares of palms, remove three rows per year and replant them from the age of 15 years (J. Chester pers. comm.)⁴. This would probably be much more attractive to smallholders as they would not lose the income of a full 2 hectares of oil palm.

Easier access to credit and interventions that enhance household income security in the short-term are likely to increase replanting rates amongst smallholders.

Resource disputes between the companies and Incorporated Land Groups have not emerged in relation to mini-estates. However, given the expansion of mini-estates and the conflicts that have arisen between landowners and other private resource developments based on the lease, lease-back model (e.g., mining and forestry), future disputes cannot be ruled out. We therefore recommend that the industry undertake an investigation of the land tenure issues and potential long-term risks associated with the introduction of mini-estates. We suggest that the investigation also examine how other industries and landowners using the lease, lease-back model are resolving conflicts. This would provide useful information for the oil palm industry.

Finally to maintain the productivity and future viability of the smallholder sector, the industry must be mindful of the importance of ensuring smallholder initiatives do not inadvertently act to undermine social stability in the smallholder sector. The promotion of infill on LSS blocks where smallholders are encouraged to plant 6 hectares of oil palm is a case in point. This initiative while perhaps increasing total smallholder production, has the potential to undermine food security by removing land from food garden production. During periods of depressed oil palm prices, the potential for social instability in the smallholder sector is likely to increase as the insurance value of food gardens is eroded by the 6 hectare policy. Smallholder discontent and social instability on LSS schemes inevitably leads to lower productivity.

For the long-term sustainability of the smallholder schemes it is imperative that the industry give more priority to enhancing smallholder food security. Some key points relating to food garden production were identified in Chapters 3 and 4 and are worth restating here:

- Gardens provide most of the daily household food needs, especially on the LSS schemes.

- Access to food gardens reduces the vulnerability of smallholders to fluctuating oil palm prices and increases food security.
- Garden produce is an important source of supplementary income, especially for women.
- Exchanges of garden labour and garden food plays an important role in strengthening social relationships and building a sense of community.
- Women's social status is closely linked to their gardening activities and skills.

In light of the above we recommend that the industry reassess its 6 hectare policy on LSS blocks. Also, these issues should be taken into account when planning future developments in the smallholder sector, especially when devising initiatives to expand smallholder oil palm plantings. In Chapter 9 we stress that social stability and household security in the smallholder sector equally are important for the long-term viability of the industry as more direct strategies to raise grower productivity levels.

Endnotes

1. The recent introduction of a skip bin system at Popondetta where tractors with trailers collect smallholder FFB and cart it to a central truck collection point has helped overcome some of the problems of poor accessibility.
2. In Papua New Guinea non-citizens cannot legally engage in direct dealings for access to customary land. They can only access customary land that has been registered under the Land Registration Act. Once registered, the land is no longer under customary tenure, but is alienated to the State. Under the lease, lease-back system the state foregoes its use rights to the land when it leases the land back to the registered land owners (ILG). The ILG can then enter into joint business ventures with a company.
3. The decision not to replant at Milne Bay was seen by the company as a way to allow a choice to be made by landowners at the end of the lease. If landowners wish the company to replant then the lease will be extended or they may choose to end the lease and undertake another enterprise, or replant for their own account (J. Chester pers. comm.).
4. This only works if palms are felled or poisoned in an east-west direction as this allows the maximum amount of sunlight to reach the seedlings (J. Chester pers. comm.)

CHAPTER EIGHT

MAMA LUS FRUIT SCHEME AND PROPOSED NEW PAYMENT SCHEME

8.0 Introduction

A long-term concern for the oil palm industry has been the high rate of loose fruit wastage among smallholders. When fruit is harvested, or over-ripe, oil palm fruitlets become dislodged from the main bunch and can account for up to 14% of the harvest. Until recently, much of this loose fruit was left to rot on the ground. The loss of revenue has long been recognised by the industry (Turner and Leach 1980; Landell Mills 1991), and in a report on the West Nakanai scheme almost 20 years ago, poor loose fruit collection by smallholders was estimated to result in oil losses valued at K1.2m per year (Turner and Benjamin 1982).

Efforts to improve loose fruit collection have been attempted with little success at Hoskins over the last two decades (see Turner and Benjamin 1982). Rates of loose fruit collection varied among smallholders, with high producers collecting more loose fruit than low to medium producers (Landell Mills 1991). Conservative estimates suggest that between 60-70% of loose fruit was not collected (Lewis 2000).

In 1997 to improve loose fruit collection OPIC at Hoskins introduced the Mama Lus Fruit Scheme (MLFS) which involved direct payment of women for collecting loose fruit. Women were issued with their own harvest nets and harvesting payment card (B card) which enabled them to sell loose fruit and receive their own monthly payment cheque. This chapter presents an assessment of the MLFS.

The research findings indicate significant financial benefits of the scheme for the company and women, and greater participation of women in oil palm production. As the first part of the chapter reveals, the benefits of the mama card have been much more than increased income and involve more qualitative improvements in quality of life for smallholders. The mama card has increased the range of options and strategies that households can pursue thereby strengthening household economic and social security. The additional income has been especially beneficial for blocks with several co-resident households and blocks with diverse family types and needs.

This discussion of the MLFS is largely confined to the Hoskins scheme where it has been operating since 1997. At Popondetta the scheme was being introduced at the time of fieldwork, so little information is available to assess its impact. A very brief overview of the Popondetta scheme is provided.

In the second part of the chapter we identify the factors that underpin the success of the MLFS and which might be useful for devising other types of payment schemes to address under-harvesting and increase the flexibility of smallholder production systems. One of the main benefits of the mama card is that it has helped increase the range of production strategies available to families and has opened up new ways of allocating oil palm labour and income. We examine the principles of the mama card and consider how these could be applied in a new payment system to bring young men, whose labour is currently under-utilised, into oil palm production.

8.1 Mama Lus Frut Scheme - Hoskins

The collection of loose fruit on smallholder blocks is considered to be a female task. There is a clear gender division of labour in oil palm harvesting, with males responsible for the physically demanding task of cutting the oil palm bunches, and women, the collection of loose fruit. An important factor explaining poor loose fruit collection by women was the lack of financial reward for their work. Prior to the MLFS, smallholder production was recorded on a primary payment card (A card) held by the husband or male head of the

block and payment made to the male primary cardholder. On most blocks, little of this income filtered through to women because wives received lower priority than other claimants to the income from oil palm (see Section 8.1.3). Because of the lack of certainty of payment for their labour women, understandably, withdrew most of their labour from oil palm production to concentrate their efforts in gardening where they had greater control over production and the income derived from selling food at local markets. Thus, a harvesting card for women aimed to entice women into oil palm production by remunerating them directly for their labour.

After an OPIC smallholder survey identified strong support among both men and women for the Mama Lus Frut initiative, ten women from Sarakolok LSS were selected to trial the scheme in early 1997. As other women became aware of the trial and the opportunity to earn their own income from loose fruit, they were eager to join the scheme and approached OPIC for their own nets and harvesting cards. What was initially planned as a six month trial of the MLFS was abandoned after two months due to the overwhelming interest and pressure from women to join.

By the end of September 1997 over 500 LSS women had joined the scheme and by the end of the year the number had risen to 1,612 (Figure 8.1). With the introduction of the scheme to the VOPS in 1998, numbers further increased to just over 2,800 women by the end of December 1998. At the end of August 2001, 3,271 women had their own payment cards, representing 67% of all smallholder blocks. The harvesting card has become known amongst smallholders as the “mama card” and the primary card is now called the “papa card”.

NUMBERS OF "LUS FRUT MAMAS" HOSKINS

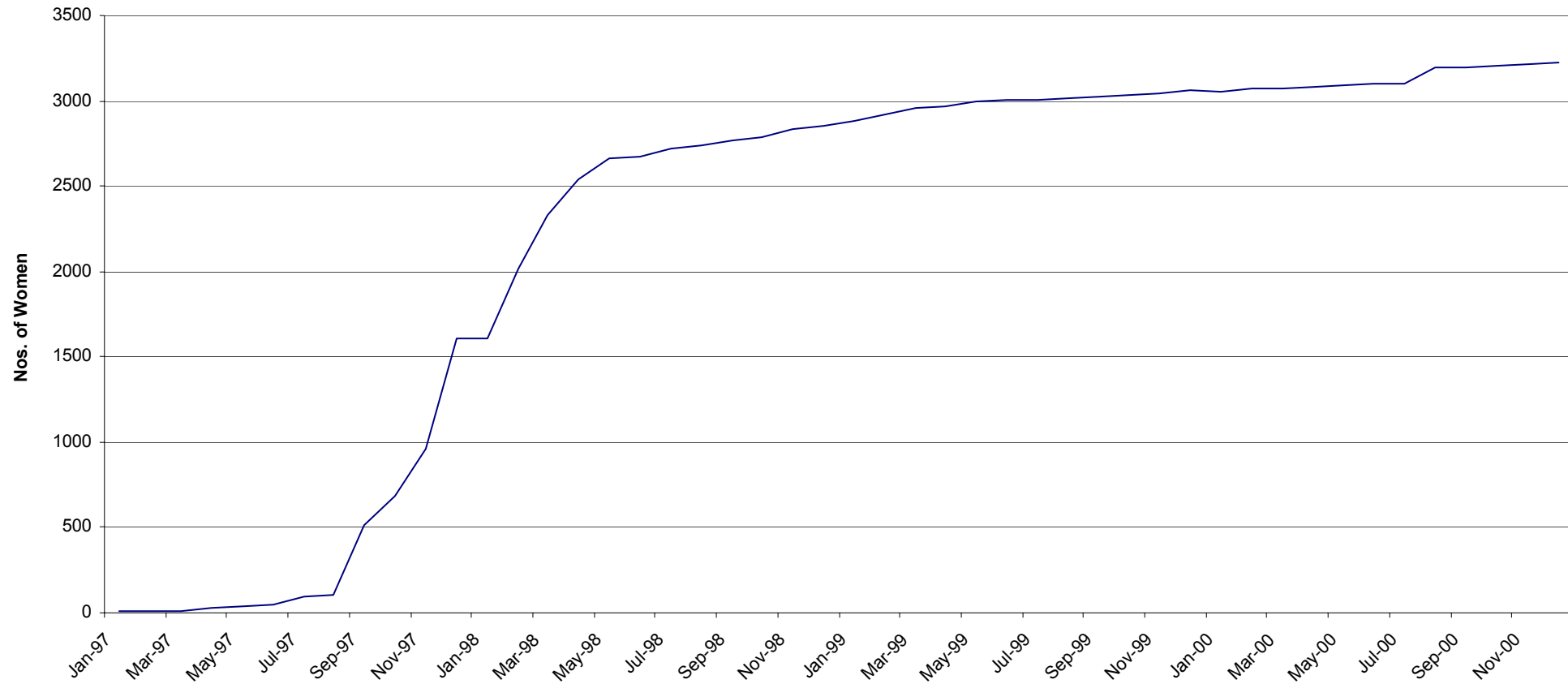


Figure 8.1. Numbers of Hoskins women in the Mama Lus Frut Scheme 1997-2000.

8.1.1 Financial benefits of the Mama Lus Frut Scheme

The financial benefits for the company and women have been substantial. NBPOL has experienced large increases in production and revenue. In 2000, approximately 60,686 tonnes of loose fruit were collected, representing a value of just over K4.5 million (OPIC data). Approximately 26% of smallholder oil palm income is now paid to women through the mama card, and in 2000 women earned an average weekly income of K27.75 per person which is 93 per cent of the average weekly wage for low-skilled rural workers in formal employment in Papua New Guinea. Given that 79% of all rural workers in formal employment in Papua New Guinea are “low-skilled” (Levantis 2000, 79), there is little income disparity between women collecting loose fruit and the majority of rural workers.

Prior to the LFMS, women’s main source of income was marketing garden foods at local markets. This income was usually supplemented with a small portion of the oil palm cheque given to them by their spouse. The amount they received varied greatly. Whilst some women received what they considered a reasonable share of the cheque, most spoke of the meagre contribution made by their spouse to the household budget. Many women said the cash received from their husbands was only enough to buy some store food for the family a day or two immediately following pay day. Additional money to buy personal items, children’s clothes or durable household goods such as pots or mattresses was rare. Men on the other hand, according to women, had enough cash to indulge in personal consumption (significantly, beer consumption and gambling) which was viewed by women as wasteful and irresponsible.

The financial independence accorded many women by the mama card has made it much easier for women to provide for their families. As one extension officer explained, women no longer have to worry if their husbands disappear into Kimbe (town) after they receive the oil palm cheque as women now have their own money to buy food and other essential household items. One female smallholder remarked:

Nau mipela ol mama, mipela ino moa wari long ol papa, bikos mipela nau ihamamas bikos mama card ikatim daun olgeta hevi insait long wanwan family. Nau mama ifeelim hamamas bekos em igat inap moni long usim long em iet nau... Taim mama card ikamap, bikpela senis ibin kamap long mipela ol mama na pikininni meri. Nau ol mama ihamamas bekos ol ikisim moni long mama card. Long papa card ol isave bekim long dinau long bank, long kompani long tools, seedlings na sharim wantaim pikinini man. Mama em "concentrate" long mama card moni bilong em. Wanem samting mama ineedim or ilaik mekim, em ino inap askim papa.

Now, we women don't need to be concerned about the men because the mama card has reduced all our family burdens. Women are happy because they have their own money to use. When the mama card was introduced, major changes occurred for us as mothers and daughters. Now, women are content because they are earning money from the mama card. With the papa card, loans must be repaid to the bank or to the company for tools and seedlings, and the [papa] cheque is shared with sons. Women concentrate on the mama card [and with this economic independence there is no need to] bother men about what [women] need or want to do.

The final comment regarding women's greater financial autonomy was highlighted by most women in interviews. For women, greater access to cash was welcomed, but it was the fact that they had more control over the income and hence less financial reliance on their husbands that was most important.

Although many women commented positively on their increased control of income, there are certain obligations on women regarding the expenditure and distribution of the mama cheque. For example, the majority of women interviewed referred to the expectation that the money should be shared with immediate family members and kin. Not to do so would result in the woman being labelled 'greedi'. Also, the consistency of responses to queries on what the mama cheque was spent on suggests that there are well-defined notions of how 'mama moni' should be used. Most women, for example, spent the money on a limited range of goods such as food, clothes for household members, cooking utensils, durable household items such as mattresses or sleeping mats, repaying store credit, and school fees. Gifts to kin, and cash channelled into customary exchange were also important. Some women receiving relatively large mama cheques were able to save part of the income (Box 8.1).

To assess the new expenditure patterns arising from the introduction of the mama card we interviewed tradestore owners from Buvussi, Kavui (2), and

Buluma subdivisions, and the manager of the “New Didiman Stoa” at Kimbe. Because of the difficulties in gaining a quantitative measure of the impact of the mama card we asked each store manager/owner to identify changes they had observed in their business since the introduction of the Mama Lus Frut Scheme. All noted significant changes, though not always expressed in terms of increased sales. Some of the changes they identified included:

- Increased sales of food and/or household items such as saucepans, plates and cups. The New Didiman Stoa manager noted a marked increase in sales of mattresses in the first two years of the scheme.
- Increased use of credit by women at local tradestores.
- More female customers.
- Some women by-passing local tradestores on paydays to travel to town to shop in the larger and less expensive stores to purchase food, clothes and household items (noted by two LSS tradestore owners).

In summing up the changes to his business following the introduction of the MLFS one Kavui tradestore owner remarked:

...ol papa ikisim pei ol igo hamamasim ol iet long drug na spak. Mama isavim moni long famili....Nupela kago ikam insait long stoa, olsem bepo mi baim liklik kago, nau mi baim planti. Dinau long meri igo antap nau, bikos ol igat moni....Bepo mama card ikamap ino planti meri tumas isave dinau long stoa.

...Men spend their cheque on cigarettes and beer while women allocate their money to family needs. In the past, I purchased only a few items for the store, but now I buy more. Store credit limits for women have been increased since women have more income now. Not many women had access to store credit before the mama card was introduced.

Another Kavui tradestore owner recalled:

... Bepo ol meri istap long market moni na oli save kam long stoa wanwan taim. Nau ol igat moni long mama card, na planti isave kam long stoa bilong mipela. Ol papa isave baim smok tasol, ol mama isave baim kaikai, rais, tinpis na bisket...

Before, women relied on market income and seldom made store purchases. Now, they have their own money and many of them come to our store. While men buy cigarettes, women buy food like rice, tinned fish and biscuits.

Differences in male and female expenditure patterns are illustrated nicely in the above comments. That women do spend a higher proportion of cash income on

food and family needs partly explains why the introduction of the Mama Lus Frut Scheme has been viewed by most smallholders, OPIC and company smallholder officers as improving the social environment on blocks. Also, as both women and men told us on numerous occasions, for women the mama card has greatly enhanced their ability to meet their household responsibilities and expectations as wives, mothers and sisters. Because women are more inclined to share their income and buy food for the household, even though the amount of money earned from loose fruit is less than the FFB income, the net benefits to families are disproportionately higher. As a general statement, a kina paid to women has more impact on family well-being than a kina paid to men. However, as mentioned below, women do not always have complete control over the mama card, and do not always firmly assert their ownership over the use of the mama card, the collection of loose fruit or the money earned.

For some women the increased financial independence has enabled them to start their own small businesses or additional income earning activities. Those we noted were poultry businesses, purchases of bales of second-hand clothing for sale at local markets, purchases of kerosene stoves for selling cooked food at local markets and the development of informal credit schemes for women. Most of these economic activities had only recently emerged and it is expected that such small businesses will expand in the future as women develop new ways of increasing the benefits from the MLFS.

8.1.2 Increased participation of women in oil palm production

The increased participation of women in loose fruit collection has resulted in a more general interest in oil palm production amongst women. Extension officers noted a change in their relationship with female smallholders. They contend that prior to the MLFS, most women were not interested in issues pertaining to block management and maintenance. Several female smallholders told us that previously if extension officers visited their blocks in their husbands' absence they would ask them to return later in the day when their husbands returned. Many women, she said, were not especially interested in extension officers' visits and did not really see why they should be involved in

discussions of oil palm production when, after all, their main efforts were in garden production.

Although men retain control of the block, women say they are now more involved in block management. The smallholder Mama Lus Frut representative (a female smallholder from Kapore) on the OPIC Hoskins Local Planning Committee, commented in reference to the changes in women's attitudes to oil palm:

...Narapela senis ibin kamap long mipela ol mama, em bipo mama ino konsern long wok long blok. Tasol nau em iken wok long blok bekos tru long dispela mama card em ken managim wok blok sapos papa bilong em ino stap. Sapos igat hevi long blok olsem ol ino bekim dinau na ol bank ikam long askim long papa, mama iken toktok wantaim ol wokman long bank long wanem hevi istap long blok. Nau mama na papa isharim responsibility long blok.

...One of the changes that happened to us women since the mama card was introduced is that before the introduction of the card women were not really involved with [oil palm] production. Now, because of the mama card, she can work on the block even if her husband is not around. If problems arise on the block such as bank officers visiting to see the male head about late loan repayments, women can now deal with them. Now men and women share responsibility for [management] the block.

Although not all men and women now share responsibility for the block, extension officers have observed more women weeding and applying fertiliser and have also noted their increased attendance at field days. Some women are now using chisels to harvest small bunches from young palms to place on their nets. The MLFS has opened opportunities for women to influence oil palm production and agronomic strategies, and it is likely that with the growing involvement of women in oil palm production, such changes will continue as new agro-socioeconomic strategies develop amongst smallholders in response to the increased participation of women.

8.1.3 Mama Lus Frut and the broadening of livelihood strategies

In terms of what the scheme was supposed to do, that is, increase loose fruit collection, bring women into oil palm production and increase their income, it has been an outstanding success. For the remainder of this section we discuss the ways in which households have adopted the mama card to meet their everyday needs and desires. The mama card has helped households meet their

needs and strengthened livelihoods through improving income distribution and labour arrangements within households, opening up new avenues for men to contribute to the household economy, reducing reliance on garden income, and enabling households to meet short-term cash demands and social obligations.

New income distributional mechanisms

On blocks with two or more households, the mama card has been extremely beneficial in spreading money across families and in particular to women where a rotation (*markim mun*) system is operating (Box 8.2). Before the introduction of the mama card there was only one cheque rotating among households. The mama cheque means there are two cheques each month rotating on a block. Many multiple household blocks now have the papa cheque going to the male head of one household and the mama cheque going to the female head of another household. This has meant more frequent income for households. On these blocks where the mama cheque is rotated among co-resident households, women are often expected to share some of their cheque with other women on the block. In some cases a revolving credit system has evolved among the women on the block whereby credit is extended until the borrower receives her mama cheque. The revolving credit system means that there is a continual flow of money among women.

On multiple household *wok bung* blocks, loose fruit collection is usually rotated monthly among the resident adult women. The loose fruit income received by the female head of the household can exceed the share of the FFB cheque received by her husband. Some of the loose fruit income received by women is spent on their husbands, adult sons, or shared with younger children or other women on the block.

The mama card has been especially helpful where diverse family types and needs exist on a block as it has enabled family members to arrange more equitable and convenient ways of allocating income. In one case, a blockowner had acquired a new block at Bialla and his widowed brother remained as caretaker on the original Hoskins block (Box 5.4). The brothers had arranged for the papa cheque from the Hoskins block to be deposited into the

blockowner's bank account to repay the loan on the new Bialla block, while the mama card was used by the caretaker. When the circumstances of the two brothers changed, such as hosting visitors from home, the income distribution could be altered by adjusting the proportions of fruit allocated to the two cards.

In another case, a couple and their children lived on the block with the husband's elderly widowed mother who looked after the three young children of her deceased daughter. The mama card, although in the name of the blockowner's wife, was given to the widowed mother to help her feed, clothe and look after her grandchildren. The husband and wife shared the papa cheque. At Gaungo VOP, we found several instances where the mama card was given to widows residing on blocks with their sons or daughters' families. By giving elderly widowed women the mama card, it has given them some economic independence, thus enabling them to continue to be involved in their communities in culturally meaningful ways.

Female autonomy in oil palm production

One obvious outcome of the mama card is that women now have more control over their own labour processes - they can decide when and if they collect loose fruit and they can now organise their own cash and labour transactions. Among our survey households there were several instances of women engaging in labour exchange by inviting female relatives from other blocks to assist with the collection of loose fruit and share in the proceeds of the mama cheque. For example, a woman may invite her brother's wife or a daughter-in-law from another block to collect loose fruit and share the proceeds of the mama cheque. This may be to help other female relatives short of money, but more importantly, in the eyes of the women, it is done for social and cultural reasons. It may also provide some women with access to more frequent incomes if these labour exchanges occur between LSS or VOP divisions with different paydays and between blocks using rotation payment systems. The net effect of the resultant increase in labour flexibility is improved oil palm production as inter-block co-operation in production increases. Increased labour flexibility is therefore one way of overcoming under-harvesting as a result of illness or short-term labour shortages.

New ways for men to contribute to the household economy

The mama card provides an avenue for women to be rewarded for their work on the block and to be recognised financially for their role in the household. One of the unexpected outcomes of the introduction of the mama card is that most men put FFB bunches on the mama card as a contribution to the up-keep of the household¹. When asked about this contribution, men generally reply '*mi halpim mama tasol*'. They recognise that the money from the mama cheque is spent mostly on the household - food, children's clothing, household goods, and to pay for health services.

An important reason why husbands do not mind placing fruit bunches on the mama card is that the cash is unseen. Men find it much easier to hand over fruit rather than cash. Bunches are not as fluid as cash and, therefore, the demands on bunches are less. When fruit is converted to a monthly pay cheque there are numerous demands on the cash, such as debt repayments, store credit to be repaid, money owing to hired labourers, the financial demands of immediate and extended family, and social pressures to gamble and participate in beer drinking parties. Often these demands greatly exceed the value of the cheque and this is when conflicts emerge within the family or with others over the disbursement of the cheque. The cashless transaction where the husband places FFB on the mama card (worth maybe K5, 10, K20) circumvents these competing demands.

It is also likely, that by putting fruit bunches on the mama card, it frees the husband of any further obligations to give some of the papa cheque to his wife. Women say they no longer worry if their husbands disappear all day after collecting the papa cheque as they now have their own money to feed the family. Oil palm resembles other cash crops introduced to Papua New Guinea (like coffee) where men claimed ownership of the crop and control over the income (see Overfield 1998). This is particularly true of oil palm where men have a strong feeling that they "won" the block. Women now have their own source of income and many families have clearly distinguished the different

roles and ownership of the cheques and this has helped reduce intra-familial conflict while enhancing the economic independence of women.

Increased access to credit for women

Another outcome of the Mama Lus Frut Scheme is that women now have improved access to store credit. Although women did have access to store credit prior to the mama card, amounts and frequency of purchases on credit were low. Because of their improved financial position women often seek store credit to buy store food when their oil palm cheques have been spent. According to tradestore proprietors, women are much more likely than men to repay credit and repay it on time. One tradestore owner noted when discussing women and credit:

*...ol [women] igo long town na pinisim moni long kaikai. Orait nogat moni nau, na ol istap long garden. Long namel long lus wik ol ineedim tinpis, or rais samting, ol ikam dinau long stoa bilong mi... Long payday, ol itingting long dina, na ol ikam bekim.... Sampela man ino save bekim dinau hariap...
...women go to town and spend their money on food. When the money runs out they rely on their gardens. Between monthly [oil palm] payments when money is short and they need tinned fish or rice they come to my store for credit. On paydays, they come and repay their debts. Some men don't repay their store credit quickly...*

The increased use of store credit has provided women with greater choices and more flexibility to meet their domestic responsibilities.

Conflict resolution

Smallholders referred repeatedly to the role of the mama card in reducing inter- and intra-familial conflict. Women and extension officers referred to the drop in family disputes, especially domestic violence since the scheme was introduced. Previously, with only the papa cheque there were disputes over its disbursement. Many men clearly saw it as “their” money, while their wives also saw it as being partly “theirs”. For many women it was this constant struggle for cash to purchase essential household items while their husbands frittered away oil palm income that caused many arguments over the distribution of oil palm income. Thus, the denial of what women saw as their rightful claims on oil palm income was a constant source of conflict in many households, often leading to domestic violence around payday. The economic independence the

mama card has accorded many women, and the greater flow of cash into a block, has significantly reduced social conflict within many smallholder families.

The mama card appears to have been very helpful for women on blocks where conflicts occurred regularly between brothers. For example, on blocks where three or more brothers were disputing their shares of the papa cheque, the women were unlikely to get a look in at all. Hence, the mama card has not only resulted in less conflict between men and women, but also less conflict between brothers.

Decreased reliance on garden income

Where women reside on LSS blocks that have limited access to garden land the mama card appears to be especially beneficial. For these women experiencing land shortages, growing food for sale at markets has always been restricted and they have relied heavily on their husbands for money. The mama card has increased their income options, provided a much needed alternative income source and has created some financial independence.

Meeting short-term needs and social obligations

On many blocks, the mama card is used to meet specific short-term needs. For example, school children are sometimes allocated the card for a month to earn money to pay school fees, or it is allocated to a married son/daughter or close relative for a month to help them out of a financial difficulty. The latter we were told is more common on VOP blocks where kin networks are more extensive. In a meeting with women at Gaungo, they provided examples of the mama card supporting relatives and married sons/daughters living in Kimbe or on company compounds. The card is “loaned” to them to meet unusually high expenses such as school fees, travel, or for large store purchases. Other women at the meeting referred to the card being given to a relative for a month to help raise a brideprice or for some other customary payment. One woman added in reference to the mama card being “loaned” to relatives said:

...dispela pasim em yu bai painem long ol planti assples lain. Mipela save lukluk long ol wantok na famili igat hevi or wari.....Sampela laik baim skul fee bilong ol pikininni, ol save kam na askim long usim card. Mipela givim ol. Planti wok kastom kamap long ples, em mipela wokim olsem. Husat i laik wokim custom, olsem baim meri, stretim dai man, first born pikinini em mipela givem card long ol.

...this behaviour is found mainly in the villages. We look after members of our immediate and extended families who are having problems. Some of them need to pay school fees for their children and they will come and ask to borrow our card which we lend them. We still have many traditional customary obligations in the village that we meet in this way [by using the mama card]. Whoever needs to fulfil customary obligations such as brideprice payments, mortuary payments, or customs for the first born child, the card is given to them.

One of the reasons why the mama card can be used in a range of ways is that it is unencumbered with loan deductions. Most smallholders either have credit with the company or commercial banks, and monthly loan repayments are deducted from the papa card. These deductions can be as high as 50% of gross earnings which limits the ways the papa card can be used.

To conclude this section, it appears that the mama card has been very beneficial because it has expanded the options and choices open to families and given them greater flexibility in how work and income are allocated. This flexibility is especially useful given the complexity of family situations and diverse family needs and has enabled smallholders to better manage their own situations. By strengthening people's ability to meet their household needs and desires, the mama card has improved social stability and economic security on the blocks. The ways in which the mama card has opened up new methods of allocating oil palm labour and income, provide important insights for thinking about other smallholder payment systems to increase smallholder productivity by expanding further the range of labour and income opportunities for smallholders. This is explored in Section 8.5 below.

8.2 Problems of the Mama Lus Frut Scheme

There is no evidence to suggest that the Mama Lus Frut Scheme has socially or economically disadvantaged any specific group of smallholders. Indeed, the data overwhelmingly suggest that smallholders, especially women, have experienced marked economic and social benefits since the scheme's inception.

However, several problems have begun to emerge that have the potential to undermine the viability of the scheme and limit the economic rewards for women.

One emerging problem is the abuse of the MLFS by blockowners with debt. This has implications for female smallholders, the companies and the commercial banks. Because the mama card is free of loan deductions, some men are regularly placing all or most of the FFB on the mama card to avoid loan repayments. This has created some difficulties for the company and commercial banks in recovering loans from smallholders. In these instances, women lose control of the mama card and may also be denied income earned on the card. If this misuse of the card continues to expand, the benefits of the scheme for women will be lost and may lead to women once again withdrawing their labour from oil palm production. Women may therefore revert to putting more emphasis on garden production for local markets because they have more control of this income source. Also, should this scenario develop, loose fruit collection will decline as a consequence.

It needs to be noted that many smallholders, including men, are strongly opposed to this abuse of the scheme, and feel that the actions of these individuals may lead the company and OPIC to cancel the scheme. Many to whom we spoke argued that the majority who are not abusing the system should not be penalised for the actions of a few errant individuals. Some smallholders made suggestions as to how the situation could be addressed (see below).

A related problem that has emerged is the theft of the mama cheque by male household members, usually younger sons. OPIC and the company are working to overcome these problems by encouraging women to open bank accounts. In late 2000, approximately 18% of women had their cheques paid direct to their bank accounts. Also, from January 2001, loan repayments will be deducted on the mama card where misuse of the scheme is occurring. NBPOL's computer payment system first attempts to recover the monthly loan repayment from the papa cheque. If insufficient fruit has been weighed on the papa card to meet the minimum monthly loan repayment, the programme then checks the mama

payment to recover the balance of the outstanding minimum loan repayment. It should be noted that deductions from the mama cheque only occur in instances where production has deliberately been shifted to the mama card to avoid loan repayments.

Smallholders opposed to the misuse of the mama card have suggested other strategies for strengthening the identification of loose fruit collection as women's work. These include:

- strengthening the gender identity of the scheme by having a separate truck (painted red) that collects only loose fruit. The truck would become known locally as the “mama truck” and would collect loose fruit one day after FFB collection, thus allowing women extra time for more thorough loose fruit collection.
- providing separate scales for the weighing of loose fruit. Trucks would have a smaller set of scales weighing up to a maximum of 800kg. This would make it more difficult for men to have their one tonne nets of FFB weighed on the “mama” scale.

Although the misuse of the mama card is being addressed it is likely that for some women their increased economic independence will be continually challenged by male household members resistant to the new economic relationships emerging within households. .

A further issue which the company and OPIC is addressing is the problem of poor quality loose fruit being placed in the nets for collection. An OPIC awareness programme is in place to resolve this problem and several OPIC field days for female smallholders have been conducted.

8.3 Explaining the Success of the Mama Lus Frut Scheme

Despite the problems identified above, the MLFS at Hoskins has been a resounding success. The scheme is one of the few examples in export cash crop production in Papua New Guinea where a gender-focused agricultural extension initiative has translated into significant economic and social benefits for women and the wider community. Understanding why the scheme has been so successful can assist with the identification of principles that underpin effective smallholder interventions in the oil palm industry and, potentially, other smallholder export crops. The key principles we identified as contributing to the success of the scheme related to:

8.3.1 Payment for labour guaranteed

As mentioned in Section 8.1 low rates of loose fruit collection by women prior to the MLFS were the result of limited remuneration for their labour and lack of payment certainty for their labour contribution to loose fruit collection. Women relied on their husbands to give them some of the oil palm income on paydays, but the social pressures on men to redistribute this income and engage in beer drinking meant that wives, who received less priority in this redistribution than other claimants, often missed out or received an amount less than the value of their labour contribution.

The under-utilisation of women's labour was correctly identified by OPIC as resulting from an ineffective payment mechanism for their labour. OPIC saw that this problem could be overcome by a payment system that guaranteed direct payment to women for their labour. Because loose fruit collection is a separate process from harvesting fresh fruit bunches (FFB) and loose fruit can be easily distinguished from FFB, it was relatively easy for the loose fruit to be stacked and weighed separately from the FFB, thereby making it possible to guarantee payments to women. Thus, a "labour contract" between the company and women was able to be fulfilled.

The separate payment card for women also means that it is easier for men to remunerate women's labour for other forms of work such as block maintenance (and also to contribute to the upkeep of the household). Payment for work in

fruit by placing FFB on the mama net means that men are able to circumvent the often considerable social pressures on them to redistribute income when this income is in the form of cash. In this way, payment in fruit rather than cash is more likely to lead to the “labour contract” being fulfilled between husband and wife.

8.3.2 Significant financial and social benefits for women

A major factor that helps explain the success of the scheme is the significant financial and social benefits it has delivered to women. The increased economic independence of women, their greatly improved ability to meet their everyday household responsibilities of feeding and caring for their families and the new ways of allocating labour and income have vastly increased the choices and options available to women. These benefits have strengthened household livelihood security, and the success of the MLFS indicates how responsive smallholders can be to financial incentives that meet their needs.

8.3.3 The way it was introduced

Prior to the scheme’s implementation, OPIC surveyed and assessed the views of both male and female smallholders on the idea of a separate payment system for women. Following widespread support from smallholders, a small group of women were chosen to pilot the new payment system which allowed OPIC to assess the feasibility and viability of the scheme and identify potential problems before formally introducing it to all subdivisions. These initial planning procedures ensured that, first, there was a need and a desire in the community for such a scheme; and, second, because smallholders’ views were taken into account in planning the intervention, their acceptance and uptake of the scheme was much more likely.

Also, OPIC hosted a series of meetings at the various subdivisions during the introductory stages of the scheme to explain how the scheme would work to the benefit of both men and women. During these meetings the new scheme was promoted as women’s work and income. However, extension officers were careful to engender support for the scheme amongst men by stressing the wider

family benefits to be obtained. The latter was crucial for the success of the scheme.

8.3.4 Employment of female extension officers

With the introduction of the scheme OPIC employed a female extension officer to administer and support the scheme. With the rapid growth of the MLFS, two more female extension officers were employed and a “Women’s Extension Unit” has been incorporated into OPIC’s organisational structure at Hoskins. By employing female extension officers OPIC was able to promote the scheme directly to women which helped reinforce the MLFS as an initiative for women. The female extension officers also conducted field days and community meetings with women, which publicly demonstrated to all smallholders OPIC’s commitment to women’s participation in the oil palm industry.

Moreover, female extension officers provide a direct link to OPIC for women smallholders to voice their concerns and opinions. Previously, women’s concerns about oil palm would, if at all, have been raised with male extension officers through their husbands. This access to female extension officers has helped OPIC to identify and respond to problems as they emerge, often in association with female smallholders.

It is not surprising that the employment of female extension officers is a factor in the success of the MLFS. Evidence from the wider rural development literature suggests that the employment of female extension officers plays a considerable role in encouraging the involvement of women in agricultural development. However, as pointed out by one female extension officer at Hoskins, there is little doubt that the high level of acceptance and support given to female officers by senior staff and male extension officers has been an important factor in the success of the scheme at Hoskins. Whilst there are usually difficulties for Papua New Guinean women employed in male-dominated workplaces, the acceptance of female officers by male field staff is attributable to the strong and emphatic support from the senior divisional managers, field and project managers. The leadership shown by senior OPIC

staff at Hoskins in incorporating female staff into the organisation has facilitated their acceptance by male colleagues and smallholders alike.

8.3.5 Continued support of the scheme by OPIC and NBPOL

The scheme has been carefully monitored and informally evaluated during its three years of operation. Continual monitoring of the scheme has enabled problems to be addressed as they arise. For example, as discussed above, since the scheme's inception, OPIC and the company have worked to counter attempts by some men to take control of the mama card. As a result, there have been some modifications to the scheme and each modification has served to maintain the MLFS's viability and to ensure that the benefits of the mama card continue to flow to women. In modifying and developing the scheme, OPIC has worked closely with the community seeking their input through community consultation during meetings, field days, and informal discussions with smallholders. The recent appointment of a "Mama Lus Frut" smallholder representative to the OPIC Local Planning Committee has strengthened the input of women smallholders. The representative is a voice for female smallholders bringing their concerns and problems to Local Planning Committee meetings for discussion (Box 8.3).

The successful working relationship between OPIC and the community in the development and modification of the scheme ensures ongoing community support for the scheme. Community participation has engendered a sense of shared ownership and responsibility for the scheme amongst smallholders. This sense of shared ownership and responsibility for the scheme often came through in interviews when smallholders suggested how to prevent men from misusing the scheme (Section 8.2). Their ideas and enthusiasm for the MLFS reflected strong community support for the initiative.

8.3.6 Few structural/cost barriers to participation in the scheme

The relative ease with which women can join the scheme is also important in its success. To participate in the scheme, all that is required is a harvesting net, a payment card issued by the company, and a strong bag or access to a

wheelbarrow to cart the fruit to the roadside collection point. There is no significant financial outlay nor specific skills or special training required and no special agricultural tools needed which makes the scheme open to most women. Also, the fact that elderly widows are participating in the scheme suggests that age is not a significant barrier to participation.

Similarly for the company, there were relatively few modifications required to their operating systems to implement the MLFS, and any changes that have occurred have been well rewarded by substantial increases in revenue.

8.3.7 Easy incorporation of loose fruit collection into existing gendered work roles

Oil palm harvesting has a distinct gender division of labour, and loose fruit collection is considered women's work. Yet, very few women collected loose fruit prior to the introduction of the mama card. Thus, the loose fruit mama scheme did not challenge male work roles in oil palm, nor did it require a major shift in women's labour patterns which may have stifled uptake of the scheme. Loose fruit collection continues to be viewed as *wok bilong ol meri* [women's work] and, to date, men have not contested this female work domain. While some men are challenging women's new economic independence there is no evidence to suggest that men are encroaching on loose fruit collection because of its separate remuneration. On the other hand, since the introduction of the mama loose fruit scheme, more women are using chisels to harvest younger palms. This labour shift by women to harvest younger palms with the fruit weighed on the mama card appears to have evolved independently. Where we observed this, it went unchallenged by husbands.

Not only has loose fruit collection fitted well with existing gendered work roles, but it has not entailed a substantial increase in women's workloads. In the post-harvest surveys conducted among smallholders at Hoskins, Kavui women spent on average 1.5 to 2 days per harvest collecting loose fruit and Gaungo women, approximately 1 day. Young children often assisted with collecting the loose fruit and at Kavui, men often helped to wheelbarrow the loose fruit to the road.

The less time spent collecting loose fruit among Gaungo women can be explained by the smaller block size and more extensive kin networks drawn upon for loose fruit collection. Rarely was the issue of hard or burdensome work raised in discussions with women (including elderly women) regarding the collection of loose fruit. Only a few women mentioned the strain on the back from bending over collecting loose fruit and none mentioned time or work conflicts between loose fruit collection and their other work roles. Also, for most women on multiple household blocks where the mama card is rotated between the households, loose fruit collection may only take place every second or third month. To what extent the collection of loose fruit has added to (or reduced) women's overall work burden cannot be quantified. It is reasonable to suggest though, that the Mama Lus Frut Scheme has improved livelihood security for women and probably lessened pressure on garden production for local markets.

That women so enthusiastically incorporated loose fruit collection into their existing work routines suggests that they recognised the financial advantages of any additional work associated with loose fruit collection and/or the value of shifting some of their labour away from food gardening or other economic activities. On the basis of last year's average annual income from loose fruit collection (K1,443), and with an average of 2 days per harvest by LSS women, women are earning K27.75 per day in loose fruit collection. This compares very favourably with the average income per market day of K10.91 (Chapter 3.1.5). Given that labour expended in garden production is not included in this figure for market income, the returns to women's labour in oil palm production are substantially greater.

The additional work of loose fruit collection is not so burdensome that it has required women to forego or substantially reduce labour input into other activities like subsistence gardening or marketing food to the detriment of household welfare. Where women may have reduced their labour inputs in other activities, it is likely that it is not as a result of competing demands for labour, but because the significant additional income has enabled them to reduce their total workloads. All women we interviewed on the LSS schemes

continued to sell food weekly or fortnightly at local markets. While marketing remains an economic necessity for many women, though offset to an extent by loose fruit mama income, it remains a highly valued social activity for women where they gather to gossip, exchange stories and catch up with news. It is unlikely that women would forego marketing because of the high social value that they attach to it. Conceivably, if loose fruit collection were to curtail women's participation in marketing then there may have been limits to their involvement in oil palm. Thus, the additional labour of loose fruit collection has been incorporated into existing work routines without adverse impacts on women's other work roles and responsibilities.

8.4 Mama Lus Frut Scheme - Popondetta

The Mama Lus Frut Scheme was initially trialed in June 2000 among a group of women at Sorovi LSS and Sarakuata VOP. The trial followed from a 1999 survey of women at Sorovi and Aeka subdivisions which indicated that 98% of women were interested in such a scheme. Like Hoskins, the Mama Lus Frut Scheme was welcomed by women, with some collecting loose fruit before being issued with a harvesting net or harvest payment card. Following the trials in August 1999, 300 women registered for mama cards. During the initial months of the scheme, meetings were conducted with women smallholders to promote the scheme. By January 2001 there were 1,050 women in the scheme. In 2000, 728 tonnes of loose fruit were collected with a total value of K38,659 (ADS (PNG) 2001). Two female extension officers have also been recruited.

Whilst the economic and social benefits of the scheme are beginning to emerge at Popondetta, the MLFS has encountered more difficulties than at Hoskins. Soon after its introduction, men began using the mama card for FFB to avoid loan repayments. The avoidance of loan repayments in Popondetta has been an ongoing problem for some time, and the introduction of the mama card (at a time of low oil palm prices) has provided an additional means to do this. To address this problem the company is now making deductions on the mama card if loan repayments are not met on the primary card. Also, to overcome the

problem of placing FFB production on the mama card the company has placed an upper limit of one tonne per pick-up on the mama card.

The less successful introduction of the mama card at Popondetta has to be placed within the broader context of problems at Popondetta. There has been a high level of debt avoidance in Popondetta for several years and this is probably due to several inter-related factors. As discussed in Chapter 7.5.1 on replanting, Popondetta growers tend to have higher levels of debt associated with World Bank loans, Oro housing loans and relatively high arrears of rental fees owing to the Lands Department. Also, with the introduction of private contractors for FFB collection, many growers are able to avoid loan repayments by selling their fruit directly to contractors rather than the company (several of our sample blocks had little or no production recorded against them). The mama card provided another opportunity to avoid loan repayments.

Further, since the Oro-for-Oro campaign of the early 1990s when local landowners attempted large-scale evictions of settlers, many smallholders feel their tenure is insecure. In these circumstances, they tend to maximise short-term returns at the expense of long-term investment in their blocks. Thus defaulting on loan repayments is a rational response to what they perceive as an uncertain future in Popondetta.

At the institutional level there appears to be less commitment to the MLFS by OPIC. In some respects this is understandable given the priority of the World Bank Oro Expansion Project in Popondetta. With funding due to cease in December 2001, OPIC is concentrating its efforts on achieving the project's planting and replanting targets. This means institutional support for the scheme has been less strong than the support for the scheme in Hoskins, with the result that OPIC and the company are not able to respond as effectively to problems as they emerge. Difficulties experienced at Popondetta relate largely to the timing of the introduction of the Mama Lus Frut Scheme: the scheme was introduced at a time of depressed oil palm prices and towards the end of a large World Bank project.

8.5 Alternative Payment Schemes

Drawing on the successful principles of the Mama Lus Frut Scheme this section explores the potential of an alternative payment system to further increase smallholder productivity and bring into production presently under-utilised labour. One area where smallholder productivity and total production could be increased is by tapping the labour potential of the large numbers of underemployed youth on the LSS schemes, especially those from highly populated blocks. Like the mama card this new payment initiative would introduce greater labour flexibility by facilitating inter-block labour flows so that there is a better match between the demand and supply of labour.

Before discussing this initiative in detail it is useful to identify the key principles of the Mama Lus Frut Scheme that would also be applicable to a new initiative seeking to increase labour flexibility. These include:

1. Direct payment for labour by the company. By paying women directly for loose fruit collection, NBPOL removed much of the uncertainty surrounding payment to women when they relied on their husbands to remunerate them from the papa cheque. As pointed out earlier, the other social demands on the papa cheque meant that men often found it difficult to retain a portion of the monthly cheque for their wives. Direct payments from the company to women removed the uncertainty of payment for women thus enabling a labour contract between the company and women to be fulfilled.
2. Cashless transactions are attractive forms of payment for blockholders. For the reasons outlined above, many blockowners are reluctant or unable to pay cash for labour. Yet, most men are willing to place FFB bunches on the mama card which they see as their financial contribution to the upkeep of the household. Prior to the introduction of the mama card many men were reluctant or unable to hand over a share of the oil palm income to their wives and this was the cause of many domestic disputes. It is much easier for men to give FFB to their wives rather than cash because competing claims on fruit are virtually absent. So, the cashless transaction of placing FFB on the mama card circumvents the excessive demands on cash, and

women are effectively guaranteed a contribution to the household from their husbands.

3. Allowed for flexible labour practices and new payment arrangements to emerge. Because of the absence of loan deductions on the mama card, it has enabled more flexible labour practices and payment systems to emerge both within and between blocks. Some examples of the labour flexibility afforded by the mama card are lending the card to children to pay school fees, to visitors for the purchase of travel tickets home, or to help relatives out of financial difficulties. It has also become an important avenue for women to organise their own cash and labour transactions. This not only raises women's social status, but increases oil palm production as inter-block co-operation in oil palm production rises. The enhanced labour flexibility provided by the scheme has increased smallholders' motivation to produce oil palm as they are now more able to meet their socio-economic needs and obligations.

Also, the existence of two payment cards on the one block has opened up multiple ways of allocating oil palm income within and between households. This has enabled smallholders to tailor their labour and income strategies to their own particular situations on the blocks. This is especially useful to smallholders given the complexity and diversity of family situations and needs now characterising Hoskins LSS. In essence, the mama card has broadened the range of options and choices open to families and has given them greater flexibility in how work and income are allocated, usually in ways that have tended to raise smallholder productivity.

8.5.1 A new smallholder initiative – the mobile card

In reviewing the reasons for the success of the Mama Card we can begin to see how the principles of a new payment system that guarantees payment for labour and allows for greater labour and payment flexibility might work. The idea here is to introduce an initiative to facilitate across-block labour flexibility to raise productivity while at the same time enhancing livelihood opportunities for

smallholders, thus ensuring their support for such a scheme. In terms of a target group for this intervention, it is important that potential participants in the scheme have the labour capacity to commit fully to the scheme. The MLFS was successful because a previously unremunerated group of people (women) were brought into oil palm production. Another group available to participate in such an initiative is the large number of under-employed young men, many of whom are the sons of settlers living on highly populated blocks. For the industry they represent an under-utilised resource who, if given the correct incentives, could significantly raise smallholder productivity and output.

Despite high levels of under-utilised labour (especially on the LSSs at Hoskins and probably Bialla), there is much under-production, particularly on the VOPs. The problem is that there is a mismatch between the labour availability on a block and the labour demand on a block. Labour shortages can be ongoing as in the case of young families, elderly settlers without sons living on the block, or blockowners with multiple blocks or off-block employment. Labour shortages can also be temporary, the result of illness, or, as in the case of coastal VOPs, a seasonal abundance of fish or better returns on other cash crops.

One way to correct this mismatch is to encourage greater labour mobility between blocks so that under-employed labour on highly populated blocks is utilised on labour-short blocks. Prior to the mama card, some labour mobility between blocks occurred in a limited way, mainly within the realm of kinship-based labour exchange or through the hiring of youth groups. However, the employment of youth groups has been very limited and many groups have failed, usually as a result of the labour contract not being fulfilled because of the blockholder's under-payment of hired labour. The reasons for under-payment are the same as those explaining men's reluctance or inability to pay cash income to their wives (Section 8.3.1).

What we envisage is a new harvesting payment card targeted largely at young men which differs from the existing mama and papa cards in that it is not tied to a particular block. The new card would be **mobile** in the sense that it would be used as a means of payment for harvesting and block maintenance labour on any

LSS or VOP block which requests labour. Ideally, the mobile card would be in the name of an individual person who has ultimate responsibility for the card's use. This team leader would head a work group of three to eight young men with, preferably, each member of the work group from a different block. The team leader would be responsible for negotiating labouring contracts with blockowners, and for the remuneration of the work team. Negotiated contracts would be specified in a simple written form signed by the blockowner and team leader and lodged with OPIC. These forms would only be referred to in cases where disputes arise between blockowners and the work team.

Payment for the labour of the work team would be in FFB with a specified amount or proportion of the harvest weighed on the mobile card. The remaining FFB would be weighed on the blockowner's papa card in the normal way. In this way the reluctance or inability of blockowners to pay cash for labour is circumvented, and the work team is guaranteed timely payment. Also, because the transaction is **cashless**, this labour arrangement may be much more attractive to blockholders because they are not required to outlay any cash in advance, nor is it necessary for them to retain a portion of their monthly oil palm cheque for the payment of hired labour. Thus the probability of the blockholder not complying with the labour contract is reduced.

For blockholders experiencing labour shortages and VOP smallholders with a range of cash crops and subsistence options, the mobile card offers a way to significantly increase income without additional inputs of their own labour. Also, for smallholders experiencing temporary disruptions to oil palm production through illness or cultural proscriptions against working during mourning periods, for example, the mobile card offers a means to maintain productivity and income.

For the work team, the benefits are likely to be significant, especially if they are able to negotiate contracts with VOP blockholders where productivity is lower and many blocks are not in production. A work team of three to eight would be able to harvest a block fully in less than half a day.

Apart from significant productivity gains in the smallholder sector, a mobile card has the potential to deliver considerable social benefits at two levels. First, a substantial proportion of presently under-employed youth in the smallholder sector could be brought into oil palm production with significant financial rewards for participants and their families. Second, at a broader level, this initiative is likely to contribute to greater social stability at Hoskins (and probably Biialla too). Presently, the numbers of under-employed youth are growing and levels of disaffection and alienation are increasing as they become more marginalised from the economic benefits that oil palm has brought to the province. The future social sustainability of the scheme relies in part on the ability of stakeholders to find meaningful employment for these people. The mobile card would be a step in this direction.

In the longer term, if such a scheme were introduced, it is likely that, like the mama card, smallholders would develop new ways to meet their needs that are difficult to anticipate. Many of these would be positive, but as with any new introduction there are likely to be some risks. Such risks may include the avoidance of loan deductions, theft of FFB, difficulties of monitoring the production of individual blocks, and the possibility that some Mobile cardholders would use coercive methods to make unfair contracts with blockholders.

Most of these problems could be avoided from the outset by using two card imprints on the weigh document: the blockholder's card imprint alongside the imprint of the mobile card. Blockholders using a mobile card to avoid loan deductions would therefore be identified quickly. This would also reduce opportunities for theft of fruit and continue to allow the company and OPIC to track the production of individual blocks. Finally, the use of a simple standard contract specifying the terms of the contract signed by the blockholder and team leader and lodged with OPIC would discourage misuse of the card.

8.6 Conclusion

The Mama Lus Frut Scheme has received universal acclaim amongst smallholders – wives, husbands and children – and has substantially increased revenue for the oil palm companies. Importantly, it has helped bring into oil palm production a large section of the smallholder population that previously had only limited involvement in production, which has greatly added to the social stability of the schemes. Levels of domestic disputes and violence have fallen and women are much more able to fulfil their roles as wives and mothers. Women’s greater economic independence has directly improved smallholder output. Thus, as the MLFS exemplifies, successful interventions that give more people access to oil palm income, help to distribute oil palm income more widely throughout the community and increase household income security, offer households broader choices and enhance social stability.

Further, with greater involvement of women in the industry, the MLFS has opened opportunities for women to influence oil palm production and agronomic strategies, and it is likely that such change will continue as new agro-socioeconomic strategies develop amongst smallholders in response to the increased participation of women. Already, new flexible labour and payment practices are emerging as smallholders find ways to use the card to meet their needs.

Box 8.1. Mama cheque expenditure patterns on Kavui LSS, Hoskins

Kavui LSS: Multiple household *wok bung*

The mama cheque on this block is rotated and in September 2000, Patricia received K290.00. The money was spent in the following way:

PMV fares into Kimbe for herself and the family;
Store bought food – rice, tinned fish and fresh meat;
Market food;
Clothes for the children (a pair of long trousers and several shirts);
A pair of trousers for her husband;
A sleeping mat for the children;
Three dinner plates;
A skirt for herself;
K9 credit repaid to local tradestore;
Some money saved in the bank for next month when the mama cheque is rotated to her mother-in-law.

Kavui LSS: Single household *wok bung*

In September 2000, Florence received a mama cheque for K84.40. It was spent as follows:

K20 to her husband;
K10 to her mother living on a nearby block;
K20 credit repaid to local tradestore;
A sleeping mat for her mother-in-law living on the block opposite;
Store bought food – rice, tinned fish, tea and biscuits.
The remaining money will be used to buy store bought food until the next cheque arrives.

Kavui LSS: Single household *wok bung*

In October, Maria received a mama cheque for K150. Most was shared with kin in the following way:

K50 given to a female relative for helping with the collection of loose fruit;
K25 given to first born son.
The remaining K75 was shared with the third born son.

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**Box 8.2 The mama card and new income flows, Kavui LSS,
Hoskins**

Twenty six people (seven households) live on this block. The block practises a rotation (*markim mun*) production system for both the mama and the papa card. The women on the block pointed out that with so many households on the block, the mama card has helped with increasing the flow of money and store bought foods among the women on the block. Women now have access not only to their own mama cheque, but can call on other women on the block for a small share of their mama cheque if they are short of cash. This money is usually repaid. The women talked in terms of this increased flow of money and food as helping them better meet their domestic and social obligations. Before the introduction of the mama card the women relied solely on gardens as their source of income. Because of the large number of households on the block, women continue to rely heavily on gardening for both household consumption and for cash income. Indeed, considerable time is spent on gardening and marketing by the women.

Box 8.3. OPIC Mama Lus Frut Meeting, Galai LSS, Hoskins

Mama Lus Frut meeting at Galai, Section 2

Meeting conducted by OPIC: Divisional Manager, one male extension officer, two female OPIC extension officers and the LPC Mama Lus Frut representative.

The senior female extension officer, Elizabeth, began the meeting. She told the women she had two main points to cover:

1. FFB being placed on the mama card.
2. Bank accounts for women.

Elizabeth mentioned that the company and OPIC were concerned that the mama card had been used on some blocks to weigh most of the FFB bunches. The men were using the mama card to avoid deductions on their papa card. She told the women that the mama card would be suspended on those blocks abusing the system. Elizabeth added that this would only occur on those blocks with outstanding loans. She emphasised that the weight on the mama card cannot exceed that on the papa card if there is debt on the block, but also reassured women that if there were no debt on their block, then it was acceptable to place some FFB on the card.

Elizabeth (LPC woman Representative) also made her position clear to the women. She told the women that *'olgeta wari na hevi bilong yu, i mas kam pastaim long mi. Mi mausmeri bilong yupela'*. She told the women that if the men insisted on placing bunches on their net they should report this to the OPIC officers. The women at the meeting appeared pleased with what they were hearing. They agreed to the idea of suspending the mama card and believed it would teach men a lesson. One woman said it would also teach some women a lesson not to let their husbands take control of the mama card. As the discussion broadened, many women raised a common *'wori'* that their sons were often the ones that abused the mama card. One woman told how at the last harvest, her son gave the mama card to the next block. She was unaware what had happened. She told the officers that she is now interested in opening her own bank account so the money can be deposited directly in her account.

The OPIC officers then talked about the plans to have more women open bank accounts for direct credit into their accounts and discussed in detail what the women must do to open an account. After the meeting, women who were interested in opening a bank account gave their names to the OPIC officers. They also thanked the OPIC officers for conducting the meeting and mentioned that would they like OPIC to organise more meetings so that they can share their problems and worries with them.

Endnotes

1. We are not referring here to those who are attempting to abuse the system, by putting most of the FFB on the mama card.

CHAPTER NINE

CONCLUSION AND RECOMMENDATIONS

9.0 Conclusion

Over the last decade there have been large increases in smallholder production associated with the expansion of smallholder oil palm. However, improving smallholder productivity remains a major challenge for the industry. Smallholder productivity per hectare is much lower than that of the estate plantations, and VOP productivity is consistently lower than the LSSs. The lower productivity of smallholders is attributable to:

- under-harvesting;
- lack of fertiliser use;
- poor block maintenance;
- low replanting rates.

This research has shown that underlying these production issues are a complex set of socio-economic factors that interact to influence production and help explain the lower productivity of smallholders. The key factors identified as affecting smallholder productivity include:

Alternative economic and social activities of smallholders

A key finding of this study is that smallholders pursue a diverse range of livelihood strategies in addition to oil palm. The range of non-oil palm economic and social activities allows smallholders some flexibility and greater household economic and social security in the face of fluctuating commodity prices (Chapter 3). As the study revealed, smallholders, especially VOP smallholders, shift in and out of oil palm production depending on household needs and circumstances, relative returns on oil palm and alternative income

sources, and general level of commitment to oil palm. Non-oil palm activities, however, are only a problem for the industry when they constrain labour availability for oil palm harvesting or act as a disincentive to long-term investment in the block. On the more populated blocks, especially the multiple household rotation (*markim mun*) blocks, non-oil palm activities provide an essential supplementary income. Because of the larger numbers of people residing on these blocks, supplementary income sources are unlikely to lead to labour shortages for oil palm. Indeed, on the more populated blocks there is often under-employed labour despite diversification into non-oil palm income generating activities.

Under-harvesting resulting from alternative demands on labour is more likely to occur on single household blocks and VOP blocks. VOP landowners with an adequate subsistence base (more land) are under less economic pressure than LSS settlers to harvest oil palm. Moreover, their incentive to invest in oil palm (e.g., replanting and hiring labour) is also likely to be lower than that of LSS settlers, and non-oil palm labour demands probably have higher priority than on the LSS schemes.

Population and economic pressures on the LSSs

Chapter 4 revealed that population density is increasing steadily on the older LSS schemes as second generation settlers marry, have children and remain living on the block as their other residence options such as returning “home” or buying land become more constrained through time. Consequently, the single household block is being replaced by the multiple household block. Potential harvesting labour has increased with population growth, and on some multiple household blocks this has translated into consistently high levels of production. However, for other multiple household blocks, especially rotation (*markim mun*) blocks, population and economic stresses are adversely affecting oil palm productivity. On rotation (*markim mun*) blocks, there is a higher probability of inter-household disputes occurring which can disrupt harvesting and lead to the withdrawal of some harvesting labour. Also, there is an expectation on these blocks that labour remuneration should be commensurate with labour input, and, compared with VOP and single household blocks, there is limited in-kind

payment for labour. As discussed below, because of the excessive demands on cash on paydays, payments for labour on the more populated blocks are sometimes not made, leading to disputes and disruptions to oil palm production.

The populated rotation (*markim mun*) blocks, may be less productive than populated *wok bung* blocks because there are fewer block residents involved in each harvest round and there is a higher probability that block maintenance will be neglected and replanting delayed. The economic pressures on highly populated blocks work in several ways to affect production. For instance, the economic pressure to harvest may be driving regular harvesting on some populated blocks, but at the same time, the short-term need for cash may also be discouraging long-term investment such as replanting which would lower income in the short-term. As noted below, the short-term cash needs of smallholders have implications for how initiatives to improve grower productivity are designed and implemented.

Under-utilisation of available labour

As the discussion of the Mama Lus Frut Scheme illustrates (Chapter 8), low rates of loose fruit collection by women prior to the scheme were the result of limited and/or uncertain remuneration of their labour by their husbands. The reluctance or inability of men to pass on some of the income to their wives was mainly due to the numerous demands on the monthly oil palm cheque such as debt repayments, credit repayments at tradestores, money owing to hired labourers, the financial demands of immediate and extended family, and the social pressures on men to gamble and participate in beer drinking parties. Often these short-term cash demands greatly exceeded the value of the cheque with the result that women were often inadequately remunerated for their labour. This was a frequent cause of domestic disputes and led many women to withdraw their labour from oil palm production.

Non-compliance with a “labour contract” because of delayed, partial or non-payment of labour is often the cause of disputes which can lead to the withdrawal of labour, disruptions to harvesting, or a shift in production strategies from shared (*wok bung*) harvesting to rotation (*markim mun*)

harvesting. In the latter's case, if income disputes remain unresolved, then a household may harvest alone as members of co-resident households withdraw labour. This can lead to the paradoxical situation on highly populated blocks where there is under-employed labour while there are labour shortages for harvesting.

Land Disputes

Disputes over land tenure occur at a variety of scales: landowner claims for compensation for land alienated for LSSs and private plantations (and potential future conflicts between customary landowners and company development of mini-estates); the rising incidence of disputed ownership of oil palm blocks "purchased" by settlers from customary landowners; and, intra-family disputes over individual block titles, especially over inheritance. Land disputes lower smallholder productivity by removing oil palm stands from production, impeding long-term investment in oil palm (e.g., replanting), undermining smallholder confidence in and commitment to the industry, and creating social instability.

The maintenance of social stability in the smallholder sector is a crucial issue. Social instability whether in the form of landowner-settler conflicts or inter- and intra-household block disputes sometimes lead to major disruptions to oil palm production. Social instability is also a disincentive to smallholder investment thereby reducing long-term productivity. The social environment is therefore a critical production factor in that stable and cohesive families and communities help build an environment in which oil palm production can be maintained and increased. Hence, identifying ways to facilitate social stability in the smallholder sector is at least as equally important as more direct agronomic strategies to raise grower productivity.

9.1 Finding Solutions

The above discussion suggests that if extensions efforts to raise smallholder productivity are to be successful, they must acknowledge that the smallholder sector is now comprised of complex social and economic units employing a

range of strategies to maintain livelihoods, of which oil palm is one. The oil palm block managed by the single nuclear household is no longer common and is rapidly giving way to complex multiple household blocks on the older schemes. As a consequence of these socio-economic and demographic changes, economic diversification is occurring and new oil palm labour arrangements, harvesting practices and methods of distributing income are emerging.

What is also clear from this study is that smallholders are not passive acceptors of change, and nor are they conservative and resistant to change. Smallholders may be considered to be risk averse, for example, with regard to their reluctance to replant, but there is considerable evidence that smallholders are active agents of change. They are certainly innovators, keen to identify and develop opportunities and industry initiatives that they see as enhancing livelihood security (e.g., the Mama Lus Frut Scheme).

Before summarising the recommendations of this study and outlining possible future smallholder interventions for the industry it is worthwhile to explore briefly why and how smallholders adopt new extension services or farming practices. One way of analysing the success or otherwise of industry and OPIC initiatives is in terms of their compatibility with smallholder livelihood strategies. As described in Chapters 3 and 4, smallholders pursue a range of livelihood opportunities alongside oil palm production to enhance household economic and social security and ensure household well-being. Some extension interventions can be viewed as strengthening or adding to smallholder livelihood strategies, others may be judged by smallholders as incompatible or a threat to livelihood strategies, while some interventions may be perceived to have a neutral effect.

This study suggests that in a process of weighing up an intervention, smallholders are often focusing on how a potential intervention fits into and strengthens their existing livelihood strategies and objectives. This assessment can be in terms of how a potential intervention reduces risks (e.g., income, food and land insecurity) and how it expands opportunities (e.g., new mechanisms of

income distribution, broader choices and promotes social harmony). For example, VOP expansion in Popondetta is eagerly embraced by villagers as most see the additional income and further diversification of their cash crop holdings as strengthening their economic well-being. Replanting at Hoskins and Popondetta, on the other hand, is viewed by many smallholders as undermining their income and food security in the short-term, and thus poses a difficult barrier for the industry to overcome.

Table 9.1 uses the concept of compatibility with livelihood strategies to assess the acceptance and success of three smallholder interventions: the Mama Lus Frut Scheme, replanting and the LSS six hectare infill policy. As outlined in the previous chapter, the mama card was eagerly adopted because it widened the range of options and choices available to households and therefore was perceived to be adding to or enhancing household livelihood strategies. Replanting is more difficult to promote because in the short-term it is considered by smallholders to undermine livelihood strategies by increasing short-term risks and vulnerability. The six hectare infill policy, although being taken up by some leaseholders of the larger LSS blocks (> 6 hectares), is not an attractive option for many LSS smallholders.

Table 9.1. Acceptance and resistance of smallholder interventions

MAMA LUS FRUIT	REPLANTING	6 HECTARE INFILL POLICY
<ul style="list-style-type: none"> • increases income and economic security • increases range of production and income strategies for households • promotes a harmonious social environment • increases options and choices available to families • strengthens people's capacity to meet their needs • compatible with overall livelihood strategies 	<p><u>short-term</u></p> <ul style="list-style-type: none"> • reduces income • increases economic insecurity through higher debt levels • can increase insecurity of tenure • increases risks, therefore incompatible with livelihood strategies • reduces options and choices to households 	<ul style="list-style-type: none"> • reduces options and choices available to some households • reduces food security • reduces access to gardening land and increases reliance on off-block garden land • undermines people's capacity to meet their daily needs • incompatible with livelihood strategies • more vulnerable to impacts of falling oil palm prices

Industry initiatives perceived to conflict with or undermine livelihood security are therefore much less likely to be adopted by smallholders. For the oil palm industry seeking to increase smallholder productivity, it would be worthwhile to evaluate the potential of new smallholder initiatives in terms of their short and long-term impacts on existing livelihood strategies. This means adopting a broader perspective on smallholders rather than focusing solely on oil palm. Understanding how the range of smallholder livelihood strategies interact to enhance household economic and social security will provide insights into how particular interventions are likely to be received by growers. Where a potential conflict is identified between livelihood security and a new initiative, steps could be taken to address this conflict so that smallholders' adoption rate of new initiatives is increased. Finally, by recognising the diverse circumstances of block residents (e.g., single and multiple household blocks and caretakers), and therefore that smallholders pursue different combinations of livelihood strategies, extension efforts in the smallholder sector could be better tailored to meet the individual circumstances of smallholder households.

Using the concept of compatibility with livelihood strategies as a means to assess the appropriateness of industry and OPIC interventions is not to suggest that some initiatives such as replanting should be abandoned. For a household's long-term economic and social security replanting is necessary. Rather, the concept of livelihood compatibility, enables the identification of likely difficulties and obstacles to the introduction of potential interventions, and therefore allows extension efforts to incorporate these considerations into the design of extension strategies. At another level, companies can build on households' livelihood strategies to facilitate the introduction of smallholder interventions. For example, encouraging VOP smallholders to replant during high prices of other commodity cash crops they control, or encouraging the cultivation of profitable garden crops such as tobacco, peanuts or pineapples as income substitutes may improve the uptake rate of replanting packages.

Finally, the concept of livelihood compatibility for designing smallholder interventions draws attention to some key issues that should be considered in

the planning of any company or OPIC initiative in the smallholder sector. Apart from maintaining a high level of participation of smallholders in the design and development of new initiatives, as far as possible, initiatives should seek to:

- increase incomes and well-being;
- promote sustainable livelihoods through increasing household choices and food and income security;
- strengthen people's capacities to meet their basic needs;
- contribute to a stable social environment;
- facilitate the distribution of income within and between households;
- not undermine security of land tenure and access to gardening land;
- avoid creating inequitable access to income or resources (e.g., land);
and
- be compatible with household livelihood strategies aimed at maintaining economic and social well-being.

9.2 Recommendations

The main recommendations of the study have been discussed in detail in the relevant chapters of this report (Chapters 4.3, 6.4, 7.7 and 8.5). The recommendations aim to increase smallholder productivity, engender smallholder support for the companies, OPIC and the industry more generally, and thus contribute to the long-term social and economic sustainability of the smallholder sector. The key recommendations are to:

1. introduce a more flexible payment system to increase the participation rate in the industry of under-employed youth – mobile card (Chapter 8.5.1);
2. develop supplementary income sources that do not lessen the viability of oil palm production (Chapters 4.3, 7.7);
3. maintain and enhance food security (Chapters 4.3, 7.7);
4. address land tenure issues (Chapter 6.4);
5. provide incentives for replanting (Chapter 7.7);
6. broaden the focus of field days to include family planning and advice on banking and budgeting (Chapter 4.3);

7. evaluate new industry initiatives in the smallholder sector in terms of their impacts on livelihood strategies.

9.2.1 Introduce a more flexible payment system – the mobile card

Smallholder productivity and total production would be increased significantly with the introduction of a new harvesting card (the “mobile” card) designed to facilitate labour mobility between blocks (Chapter 8.5.1). Rather than being tied to a particular block like the papa and mama cards, the mobile card would be used as a payment mechanism for hired labour on any LSS or VOP block requiring labour. Because the blockowner hiring labour would pay in fruit (a share of the harvest), the reluctance or inability of blockowners to fulfil the labour contract by paying cash for labour is overcome.

The target of such an initiative would be the large group of presently under-employed young men, many of whom are settlers’ sons residing on highly populated blocks. Youth groups of three to eight young men would be encouraged to form. Each group would be headed by a team leader in whose name the mobile card would be issued and who would be responsible for the card’s use. Payment for labour would be in FFB by weight or proportion of the crop harvested agreed with the blockowner. Thus, youth groups would be guaranteed payment for their labour, unlike the present situation where uncertainty of payment is a major disincentive to labour mobility.

Discussion with VOP and LSS smallholders at Hoskins reveal considerable interest and support for such an initiative. Indications of support were from both young men and blockowners who would be likely to employ such groups. A mobile card has the potential to lead to significant productivity increases in the smallholder sector. The financial rewards for the company and smallholders are therefore likely to be substantial. There are also likely to be considerable social benefits for the scheme more generally as an increasingly under-employed and alienated group of young men are brought into production.

9.2.2 Develop supplementary income sources

With population growth smallholders are diversifying their income sources in the pursuit of livelihood opportunities to ameliorate the impacts of declining per capita incomes from oil palm. Income diversification is therefore likely to continue with population growth.

Income diversification is positively associated with population density which suggests that the development of supplementary income sources is not drawing labour away from oil palm production. Therefore, the industry should not view these developments as a threat to labour supply in the smallholder sector, but as a new stage in the evolution of these schemes. As generational changes lead to more complex social and economic units, there are opportunities for the industry to capitalise on these changes if social stability can be maintained and new ways are sought to tap under-utilised labour to raise smallholder productivity. The proposed introduction of a mobile card is an example of the latter (Section 9.2.1).

Further, we recommend that the industry as a whole encourage and promote successful initiatives that emerge from smallholders themselves. Diversification through cash cropping (e.g., vanilla, betel nut), small businesses, profitable market garden crops and animal husbandry are potential supplementary sources of income that would be most helpful for highly populated blocks and those undertaking replanting (Chapter 3.1). As outlined in Chapter 7.7, the development of supplementary incomes would increase the propensity of smallholders to replant and allow them to develop a long-term perspective on oil palm production. Further income diversification through the promotion of small business development would also add to household income security.

Income diversification has a positive influence on the social sustainability of the schemes by lessening the social and economic pressures that lead to conflict and social instability. This was clearly an outcome of the Mama Lus Frut scheme where many women (and men) reported significant improvements in social relationships within the household, particularly between husbands and wives.

9.2.3 Maintain and enhance food security

A key finding of this study is that garden food production is very important to LSS and VOP smallholders in terms of labour demands and food consumption (Chapter 4.3). Garden produce is also an important supplementary income for women and residents of highly populated blocks. Access to food gardens reduces smallholders' vulnerability to fluctuating oil palm prices and increases food security. The importance of gardens for food security is reflected by the dominance of garden foods in diets, especially for LSS settlers. More than three-quarters of all meals at Kavui LSS consist entirely of food garden ingredients, and store food consumption among LSS settlers is concentrated within the first week of the monthly oil palm cheque. Thus, a reassessment of OPIC's 6 hectare infill policy is strongly recommended. Moreover, after 20 years of intensive cultivation of the rear 2 hectares of garden land on LSS blocks, the industry should consider new initiatives to improve the soil fertility of garden land. Several suggestions for raising soil fertility are described in Chapter 4.3.2.

9.2.4 Land tenure issues

Land disputes and insecure land tenure are critical production issues as they reduce smallholder productivity by removing disputed stands of oil palm from production, disrupting oil palm work, undermining growers' confidence and commitment to the industry and discouraging long-term investment such as replanting.

As discussed in Chapter 6.4, devising effective strategies to address these issues will be a major challenge for the industry, particularly disputes between landowners and settlers. However, disputed block "ownership" arising from contested inheritance claims, or disputes between caretakers and leaseholders, could be resolved more quickly than they are currently by maintaining an up-to-date register of block "ownership". Hoskins OPIC has commenced this process and we recommend that other schemes follow suit.

Much more problematic for the industry are the macro-level disputes between customary landowners and settlers when whole subdivisions are locked out of production during conflicts. An added risk here is that intimidation of settlers by landowners will become institutionalised as is almost the case in Popondetta where settlers are unable to diversify their incomes or invest in their blocks for fear of violent harassment by customary landowners. Landowner-settler disputes are ultimately dependent for their resolution on a political solution, which appears unlikely in the foreseeable future. In the short-term, however, OPIC and the companies may have a role in bringing together leaders from both communities for mediation/resolution of localised incidences of conflict before they erupt in widespread communal violence.

9.2.5 Provide incentives for replanting

Smallholders' propensity to replant is influenced by tenure security, existing and projected debt levels, income foregone, quality of road infrastructure and the reliability of harvest pickups (Chapter 7.7). The relative importance of these factors varies between Popondetta and Hoskins and between the larger LSS holdings of oil palm and two hectare VOP holdings. Amongst the more important recommendations discussed in Chapter 7.7 are:

- extending credit for replanting to Popondetta smallholders beyond 2001;
- lowering rates of loan repayments during periods of depressed oil palm prices;
- promoting income diversification;
- encouraging smallholders to cultivate profitable market crops on newly replanted blocks to provide income until new palms come into production; and
- investigate replanting strategies that do not take a full 2 ha of oil palm out of production at the same time.

9.2.6 Banking/budgeting

The companies at both Hoskins and Popondetta are switching from cheque payments to smallholders to direct credit of smallholders' bank accounts. OPIC is assisting smallholders to open bank accounts in preparation for this change,

but many smallholders, particularly women, have little or no experience of banking or budgeting using bank accounts (Chapter 4.3). Bank staff should be encouraged to participate in OPIC organised field days to advise on bank services and budgeting, given that a large and growing number of their customers are smallholders.

9.2.7 Family planning

Finally, much of the change in the smallholder sector documented in this study is either directly or indirectly a consequence of population growth (Chapter 4.2.2). The available evidence suggests that population growth rates are increasing on the LSSs as the option of returning “home” is becoming more constrained by time and distance, and as population pressure at “home” makes village relatives less willing to accept the return of long-term absentees.

It must be stressed that in the light of continued population growth the recommendations contained in this report do not provide permanent solutions; at most, they offer some breathing space. Without broader regional and national development to absorb the expanding numbers of people on the LSS schemes (and from many other densely populated regions of PNG), this breathing space will be very short. Therefore, in the absence of any significant level of national development to generate sufficient employment for the rural under-employed, effective family planning strategies are urgently required for the longer term social and economic sustainability of the smallholder oil palm sector. Family planning in the smallholder sector should be a priority of all stakeholders in the industry. Family planning officers from the Health department should participate routinely in industry field days.

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Appendix 1.1.

OPIC's STRATEGIC OBJECTIVES (1999-2003)

HOSKINS

The primary objective of the Hoskins projects is to create employment and income generating opportunities for the farm families and their communities to improve their general livelihood. It would be attained by implementing project programs especially through:

- a) Increasing oil palm plantings by smallholders in the planned period to boost production and employment in the area. It will be achieved through developing a potential 5,000 hectares to be planted consisting of:
 - LSS top up, plantings of existing LSS blocks. It entails planting up a full 6 hectares on the 6.5 hectare blocks instead of 4 hectares. A lot of blocks are 6 hectares but the extra two hectares are old palms which growers were told to poison.

By targeting the remaining senile palms for poisoning and replanting with new planting material the growers income will increase dramatically. Other blocks which are not using the spare two hectares will be encouraged to plant, either by the lessee or his children (this could see the introduction of the "C" harvest card system).

Of the 1,645 LSS blocks an average of 4.66 ha/block is planted (7,74 ha). If this can be raised to an average of 5.5 ha block a further 1,300 ha could be planted.

- VOP, potential large areas for new plantings available as the interest is good for over 3,000 ha development. However, all require good access roads which will need funding.
- b) Use of present resources for efficiency to maximise returns from oil palm growing and better management of related enterprises. This could be attained through:
- c) Better management of existing blocks and plantings to increase yields per hectare from 15 tonnes in 1997 with good acceptance of fertiliser and reasonable seasons it is planned to increase this to 18.5 tonnes per ha by 2003.

This is achievable by:

- Planting with better yielding planting materials to revitalise lower producing blocks.
 - Introducing the "B" card or "Loose Fruit Mama" initiative, it is estimated that almost half the present loose fruit is not reaching the mills.
 - Introducing the "C" card system. Children can plant their own oil palm on their parents blocks and receive income.
- d) Existing roads, people living along existing roads but have not planted oil palm will be identified and introduce oil palm planting.
 - e) Mini Estates, is seen as one of the potential new initiatives by companies and growers in WNBPs to boost smallholder oil palm expansion. It gives the opportunity to open up more areas to smallholders which would expand the involvement of OPIC services in Hoskins in the medium to long term.
 - f) Staff, OPIC personnel vary from excellent to very poor in their productivity or performance. The move away from the public service attitude of "job for life" mentality must be continued. With better training and job attitude change, OPIC would be

screening staff to retain those performing and weed out non-performers. This would eventuate a situation where OPIC will increase extension officer to farmer ratio from current 1:121 to 1:200 by 2003.

BIALLA

The key objective of the project is the enhancement of smallholder oil palm growing in the Bialla project area which would lead to improving the general livelihood of the farm families and its surrounding communities. This objective will be achieved by:

- a) Providing efficient extension services to make farmers productive and become managers of oil palm growing and diversified enterprises.
- b) Better staff development and training programs will improve the performance of each staff and will have the capacity to develop productive farming communities.
- c) Increase area under smallholder oil palm from 9,279 at present to about 11,000 with possible VOP expansion by 2003.
- d) Co-ordinate oil palm growing activities to achieve yield per hectare of about 20 tonnes by 2003.
- e) Bialla project will be self-supporting in funding its operations with expected OPIC levy of K1.4 million (K3.50 per tonne from smallholder and equal amount from companies).
- f) Trim Bialla project staff strength by increasing extension officer to farmer ratio from current 1:121 by 2003 and beyond.

POPONDETTA

The general objectives of the Popondetta and the Oro Expansion projects are to enhance smallholder oil palm fruit production as the means to generate employment, incomes and improve overall livelihood of farm families and their surrounding communities. These will be attained by the following:

- a) Facilitate and assist smallholders to become efficient producers so as to enhance their livelihood through being better business managers as oil palm growers and associated enterprises.
- b) Facilitate for OPIC staff to become a competent and productive service provider to the smallholder through better co-ordinated staff development and training programs.
- c) Area under smallholder oil palm would be over 13,285 hectares by 2003, which comprises of Popondetta, 6,285 ha and Oro Expansion 7,000 ha.
- d) Manage extension programs to improve smallholder productivity levels through efficient fertiliser application programs, provision of tools and produce 166,788 tonnes of fruit by 2003 from the current 96,000 tonnes a year.
- e) Improve monitoring of fruit harvesting, collection and facilitate with HTPL and private fruit transport contractors to ensure quality FFB is delivered to HOPL for milling.

MILNE BAY

The main objective of the project is that of creating employment, incomes and better the livelihood of farm families engaged in oil palm growing and for the surrounding communities. This would be attained by successfully implementing project plans and programs to:

- a) Improve farm management practices and make smallholders productive and efficient business managers.

- b) Project staff development and empowerment for them to improve performance especially, extension service delivery systems.
- c) Improve and maintain infrastructural development, especially the maintenance of harvest roads so that smallholder fruit is collected and transported for milling.

NEW IRELAND

Clearly, like the other projects its objective is to provide employment and income earning opportunities for those in the scheme and for those surrounding communities. This would be attained by:

- a) Providing more efficient smallholder training on the aspects of managing an oil palm growing enterprise and associated business management.
- b) Improving yield levels from the present 8 tonnes per hectare to 15 tonnes.
- c) Expanding smallholder oil palm plantings to reach about 1,025 ha by 2003.
- d) Developing and train extension officers especially to empower them by developing their competencies.
- e) Developing and educating farmers through the development of their competencies to become efficient business managers.

(OPIC 1998)

Appendix 1.2.

OPIC's MISSION STATEMENT AND FIVE YEAR STRATEGIC PLAN (1999-2003)

The Oil Palm Industry Corporation (OPIC) will by 2003 facilitate and sustain significant benefits to oil palm smallholders and their families and work towards increasing production of Fresh Fruit Bunches.

These benefits will be employment as trained, skilled and competent block managers and business persons with:

- A reliable regular income.
- Enhanced self esteem, living standards, and relationships with others in the community.
- A voice in the industry's direction.
- An opportunity to share new knowledge about the oil palm industry, and
- Who will be living in an area that has enhanced physical and social infrastructure.

Others who will benefit as a result include villages in the smallholder areas, milling companies, government agencies, smallholder representative groups and a range of commercial service organisations.

To enable these benefits OPIC will:

Respect, encourage and educate growers by:

- Facilitating technical, logistical, financial, marketing and social capacity and expertise.
- Orientating new growers.
- Strengthening smallholder representative groups, and
- Developing highly competent growers

Provide industry stability through

- The Papua New Guinea Oil Palm Research Association (OPRA)
- Milling companies
- Community organisation
- Government agencies, and
- International institutions

Sustain OPIC services by improving

- Social and physical infrastructure

- The capacity of OPIC staff
- The financial security of OPIC, and
- OPIC's standing in the industry

Protect the future by being

- An environmental guardian, and
- A lobbyist to government and industry groups

OPIC'S STRATEGIC PRIORITIES

OPIC has identified five strategic areas where its operations must be addressed with new emphasis over the next 5 years. These are:

Government support for OPIC and smallholders

With the initial period of guaranteed financial support for OPIC coming to an end it is essential that governments review their understanding of the oil palm industry in Papua New Guinea and of actions that can be taken to ensure the industry's stability and sustainability.

OPIC services to smallholders

An inevitable decrease in the ratio of extension worker to smallholders and the need for each worker to deal with increasingly complex situations requires a greater level of interdependence between extension officers and smallholders. This necessitates the emergence of new attitudes, knowledge, skills and leadership across the industry.

Smallholder viability

The capacity of each grower to meet the cost of production, enhance their quality of life (education, health and mobility for example) and contribute to community development requires increasing vigilance by OPIC of the economic and social dynamics affecting smallholder operations.

Environmental planning

The rapid expansion of the industry and enthusiasm for village plantings has heightened OPIC's awareness of the need for careful environmental monitoring of the industry. New competencies and practices will need to be integrated into existing oil palm development and maintenance activities.

(OPIC 1998).

Appendix 2.1.

SMALLHOLDER HOUSEHOLD WEEKLY SURVEY

Date: _____ block no: _____ block owner: _____

Q1. Record of activity being carried out by each adult on arrival at block

NAME	ACTIVITY	LOCATION

Q2. Absentees at time of interview

NAME	ACTIVITY	LOCATION

Q3. Work allocation for each adult family member for yesterday morning and afternoon:

- a) Asde long moning yu bin mekim wanem kain wok?
 b) Asde long apinun yu bin mekim wanem kain wok?

NAME		ACTIVITY	(1/4 DAY UNITS)
*	AM		
	PM		
*	AM		
	PM		
*	AM		
	PM		
*	AM		
	PM		
*	AM		
	PM		

Q4. Long las wik (Tunde) inap long nau, yu bin wok long dispela blok, olsem katim/sprayim gras, prunim pangal? (Don't ask in week after pick-up)

NAME	ACTIVITY	HAMAS DEI

Q5. Taim yu bin mekim dispela wok long dispela blok, husat man or meri i sindaun long narapela blok ibin kam halpim yu (from another block)?

NAME	ACTIVITY	RELATIONSHIP	HAMAS DEI	PAID?

Q6. Long las wik (Tunde) inap long nau, yu bin halpim narapela man or meri long wok bilong ol or nogat? (olsem wel pam wok, wokim haus, or wok gaden)

GIVER	RECEIVER & BLOCK No.	ACTIVITY	RELATIONSHIP	HAMAS DEI	PAID?

Q7. Long las wik (Tunde) inap long nau, yupela bin mekin sampela wok olsem komuniti wok, lotu wok, or skul wok or nogat?

NAME	ACTIVITY	LONG HUSAT?	HAMAS DEI	PAID?

Income and expenditure

Q8. Long las wik (Tunde) inap long nau, yu bin salim sampela samting long maket or nogat?

NAME	DAY	MARKET	ITEM	kina

Q9. Long las wik (Tunde) inap long nau, yu bin salim sampela samting long narapela man or meri or long stoa or nogat? Olsem kakaruk, brum ...

NAME	RELATIONSHIP? /STORE	ITEM AND QUANTITY	PRICE

Q10. Long las wik (Tunde) inap long nau, yu bin baim sampela samting long stoa or or maket or nogat?

BUYER	ITEM	BAIM WER	KINA

Q11. Long las wik (Tunde) inap long nau, wanpela man or meri ibin givim sampela mani or heap kaukau, taro, tinpis or rais long yupela or nogat? Olsem, man or meri ibekim dina long yu. (first, ask about money, then food)

HUSAT IGIVIM	RELATIONSHIP TO GIVER?	AMOUNT OR ITEM	REASONS

Q12. Long las wik (Tunde) inap long nau, yupela ibin givim sampela mani or heap kaikai long narapela family or nogat?

NAME OF RECEIPIENT	RELATIONSHIP TO GIVER	AMOUNT GIVEN	REASONS WHY?

Q13. Long las wik (Tunde) inap long nau, yu bin givim sampela frut bunch long narapela man or meri or nogat? (Don't ask in week following pick-up)

NAME OF RECEIPIENT	RELATIONSHIP TO GIVER	AMOUNT GIVEN	REASONS WHY?

Q14. Nau long moning yu bin kaikaim wanem kain kaikai? Asde long apinun yu bin kaikaim wanem kain kaikai? (ask if food from own garden) (ask each person over 12 years)

NAME		ITEM
	AM PM	
	AM PM	
	AM PM	
	AM PM	
	AM PM	
	AM PM	

Q16. Sampela lain or wantok ibin kam stap wantaim yupela long dispela wik or nogat?

VISITOR'S NAME	RELATIONSHIP	REASON FOR VISIT	DURATION

Q6. Taim yu bin wok long block, yu wok wantain husat? AND/OR
 Labour Input of Non family members who helped with fruit bunch harvest

NAME	RELATIONSHIP TO OWNER (block number)	ACTIVITY	HOW MANY DAYS WORK	PAID Y/N	KIN A

Q7. Husat bia kisim next papa cheque this pay?

Q8. Household members who helped with loose fruit harvest

NAME	ACTIVITY/ ACTIVITIES (collect loose fruit, carry to road)	HOW MANY DAYS WORK	PAID Y/N	KIN A

Q9. How was loose fruit transported to the road?

Q10. Were any bunches put on the mama card?

Yes/No. If yes:

how many bunches	who cut the bunches	who transported bunches to the road

Q11. Ask if no loose fruit collected - Why was loose fruit not collected:

Q12. Who will collect the mama cheque this pay?

Q13. Did anyone give you bunches/loose fruit this harvest?

NAME OF GIVER	RELATIONSHIP OF RECEIPT TO GIVER	AMOUNT GIVEN	REASONS WHY?

Q14. Did you give fruit bunches/loose fruit to another person this week?

NAME OF RECEIPT	RELATIONSHIP TO GIVER	AMOUNT GIVEN	REASONS WHY?

Q15.

Did you help another blockowners/relatives with last harvest?

NAME OF FAMILY MEMBER	HELPED WHO?	RELATIONSHIP TO WORKER	ACTIVITY	HOW MANY DAYS WORK	PAID Y/N	K