

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 Biälla) 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 '*fotnait 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, WNB

13th October, 2000

Attention: Mr. Peter Rbin.

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, WNB

cc: Chairman,
HOPGA,
Kimba WNB

cc: District Officer – Lands,
Kimbe, WNB

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

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.

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.