

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

G. Koczberski,  
School of Social Sciences  
Curtin University of Technology  
GPO Box U1987  
Perth, W.A. 6845  
[g.koczberski@exchange.curtin.edu.au](mailto:g.koczberski@exchange.curtin.edu.au)

G. Curry,  
School of Social Sciences  
Curtin University of Technology  
Perth, W.A. 6845  
[g.curry@curtin.edu.au](mailto:g.curry@curtin.edu.au)

K. Gibson,  
Department of Human Geography  
Research School of Pacific and Asian Studies  
Australian National University  
Canberra, ACT 0200  
[katherine.gibson@anu.edu.au](mailto:katherine.gibson@anu.edu.au)

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Research School of Pacific and Asian Studies  
Canberra ACT 0200  
Email: g.koczberski@exchange.curtin.edu.au

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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.