

**MOBILISING SMALLHOLDER LABOUR IN OIL PALM
PRODUCTION: RESULTS OF THE MOBILE CARD TRIAL,
HOSKINS, WEST NEW BRITAIN, PAPUA NEW GUINEA**

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CONTENTS

Acknowledgements	iv
List of Tables	vii
List of Figures	viii
List of Plates	ix
EXECUTIVE SUMMARY	x
SECTION ONE	
BACKGROUND TO UNDERHARVESTING	1
Introduction	1
Incomplete Harvesting	2
Constraints on the Supply of Labour	4
Overcoming Labour Constraints	7
SECTION TWO	
MOBILE CARD TRIAL	11
The Mobile Card Explained	11
Mobile Card Trial	14
Mobile Card Trial Results	16
Production and Farm Management Outcomes	19
Socio-economic Outcomes	25
Factors Affecting the Success of the Trial	31
Case studies:	
Box 1. Elizabeth. Widowed leaseholder – Hired Labourer. Kapore LSS block	33
Box 2. Tom. Father-Son. Kapore LSS block.	36
Box 3. Kapo. Leaseholder-Hired Labourer. LSS block.	40
Box 4. Leopold. Caretaker-Hired Labourer. Kapore LSS block.	43

SECTION THREE

RECOMMENDATIONS	45
Finding Solutions	45
Where to From Here?	46
NOTES	50
REFERENCES CITED	51

LIST OF TABLES

Table I. Ready Reckoner.	13
Table II. Improvement in FFB production on trial blocks using the Mobile Card.	19
Table III. Productivity expressed as a percentage of LSS/VOP average for months without Mobile Card and months when Mobile Card was used.	20
Table IV. Average improvement in production in percentage points by relationship between blockholder and Mobile Card labourer.	21
Table V. Mobile Card contracts cancelled between October, 2002 and November, 2003.	26
Table VI. Active and expired Mobile Card contracts at the end of November, 2003.	27

LIST OF FIGURES

Figure 1. Per cent of phases fully harvested for Hoskins and Bialla LSS & VOP.	3
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LIST OF PLATES

Plate 1a. Area of overgrown LSS block in Siki subdivision prior to the use of the Mobile Card.	23
Plate 1b. The same Siki block cleared by Mobile Card worker (pictured in the middle of the group).	23
Plate 2a. A semi-abandoned LSS block in Kapore subdivision.	24
Plate 2b. The same Kapore block cleared by a Mobile Card husband and wife team (pictured).	24

EXECUTIVE SUMMARY

Under-harvesting in the smallholder oil palm sector leads to substantial production losses amongst outgrowers. At Hoskins losses were estimated at around 25% of production. The main problems relate to labour supply.

A payment trial at Hoskins was designed to increase the supply of labour and so raise productivity. The trial was established jointly by OPRA and OPIC and ran for 15 months from July 2002 on LSS and VOP blocks at Hoskins.

There was a significant increase in FFB production. Monthly production for trial blocks increased from 75% of the LSS/VOP average without contract labour to 113% during months when contract labour was employed. Productivity increased on 90% of blocks with 30% improving by more than 50 percentage points.

In addition to productivity gains, those participating in the trial experienced considerable socio-economic benefits. These included:

- Utilisation of under-employed labour.
- Improved access to labour for elderly and disabled growers.
- Greater financial security for married sons and caretakers.
- More equal distribution of income within households.
- Less social conflict on blocks.

SECTION 1

BACKGROUND TO UNDER-HARVESTING

Introduction The oil palm industry has been expanding in recent years and palm oil is now the leading agricultural export commodity in Papua New Guinea (PNG). In 2002, exports of palm oil comprised 32% of the total value of PNG's agricultural exports, and 5% of the country's exports. In 2003, total palm oil production was 1,679,690 tonnes, 32.5% of which was produced by smallholders (545,333 tonnes), with the company estates producing the balance (OPRA data). Oil palm's importance as a smallholder crop has been increasing steadily in recent years and future growth of the industry depends to a considerable extent on improving smallholder productivity.

Smallholder oil palm productivity is below potential levels, particularly amongst village oil palm (VOP) producers. Over five years from 1998, the productivity of Hoskins land settlement scheme (LSS) smallholders and village oil palm smallholders (VOP) has averaged respectively 60% and 38% of plantation levels (NBPOL data). Research by OPRA at Popondetta, Hoskins and Bialla revealed that incomplete harvesting is the main cause of the low productivity of smallholdings (Koczberski *et al.* 2001; Koczberski & Curry 2003). This research also revealed that despite the existence of a large pool of potential labour, especially on the LSSs, the willingness to work was reduced by deep doubts about payment. This report presents the findings of a payment trial at Hoskins in which OPIC and NBPOL undertook to pay contract labour on smallholder blocks

and so remove much of the uncertainty of payment. By guaranteeing payment of contract labour, the trial was designed to increase the supply of labour and so raise smallholder productivity. The trial was established jointly by OPRA and OPIC and ran for 15 months from July 2002 on LSS and VOP blocks at Hoskins.

Incomplete Harvesting

To estimate the extent of under-harvesting, post-harvest surveys were conducted at the Hoskins and Bialla schemes in 2002. They were conducted within two days following a harvest pickup and recorded harvesting rates (fully harvested, partially harvested, not harvested) from Phase 1 at the roadside edge of the block through to Phase 3 at the rear of the block¹.

We conducted surveys, with the assistance of OPIC officers, in May-June, 2002 at Hoskins and in June, 2002 at Bialla. At Hoskins, post-harvest surveys were conducted on 249 LSS blocks at Buvussi, Galai, Tamba and Kapore subdivisions and on 109 blocks on the VOP subdivisions of Gaungo and Morokea. At Bialla, 73 LSS blocks were surveyed at Mamota, Silanga, Tiaru, Wilelo, Balima, Soi and Kabaiya subdivisions, and 28 VOP blocks at Ewasse, Gaekeke, Kai, Kiava, Lavegi, Mataururu, Matililiu, Noau, Sisimi and Ubai subdivisions.

The Hoskins and Bialla results demonstrate considerable under-harvesting and a very marked edge-effect in which harvesting rates decline from Phase 1 through to Phase 3 plantings at the rear of the block (Figure 1).

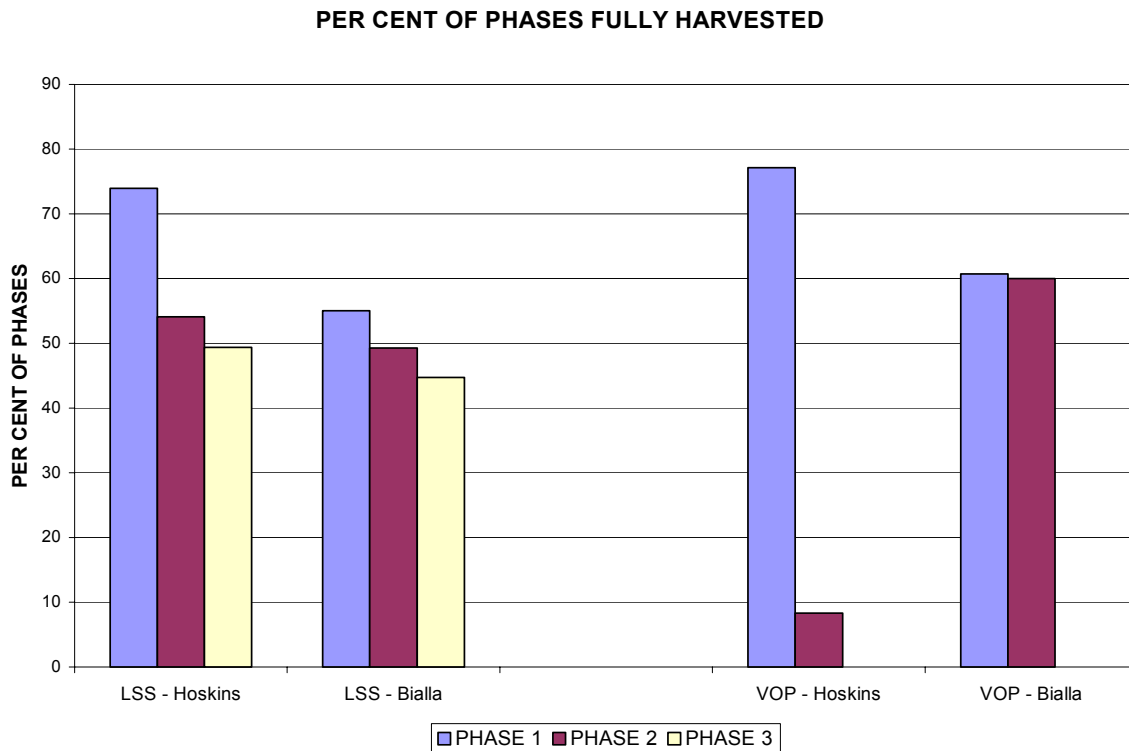


Figure 1. Per cent of phases fully harvested for Hoskins and Bialla LSS & VOP schemes.

Harvesting rates tend to be higher at Hoskins for all three planting phases on the LSS and on Phase 1 of VOP blocks. The lower harvesting rates at Bialla LSS reflect the difficulties of harvesting old and tall palms on the older subdivisions of Wilelo, Balima and Tiaru where replanting has been delayed². Because of the small number of VOP blocks in the survey with Phase 2 plantings, it is not possible to draw any conclusions about differences in the harvesting potential of VOP smallholders on the two schemes. It should be noted that the harvesting surveys were undertaken when oil palm prices were relatively high (K120-K130), and this may explain the higher than expected harvesting rates on Phase 1 of VOP blocks. Also, the higher harvesting rates at Hoskins VOPs compared with Bialla VOPs

may reflect the larger number of ‘purchase’ blocks³ in the Hoskins VOPs of Gaungo and Murokea.

Under-harvesting leads to substantial production losses amongst smallholders⁴. At Hoskins, total annual losses of smallholder fruit were conservatively estimated at 60,000 tonnes per year, or around 25% of production for 2001. If we assume that smallholder under-harvesting rates at Bialla are similar to those at Hoskins (a likely assumption), then in 2002, over 33,000 tonnes of smallholder fruit were not processed by the HOPL mill. Thus, there is great potential to raise smallholder productivity and income by raising harvesting rates.

Constraints on the Supply of Labour

The harvesting edge-effect reflects the impact of distance from the road on harvesting practices. On the Hoskins and Bialla LSSs, less than half of Phase 3 plantings were fully harvested, compared with 74% and 55% of Phase 1 plantings at Hoskins and Bialla respectively. The farther the fruit must be carted by wheelbarrow from the rear of the block, the greater the reluctance to harvest it. Other factors probably compound the effect of distance. These include insufficient labour or time to evacuate fruit from Phase 3 plantings, advanced age of grower, poor access (e.g., slopes, gullies, swampy ground), and lower maintenance at the rear of the block.

Labour supply constraints are the main cause of under-harvesting. Fieldwork amongst smallholders in Popondetta, Hoskins and Bialla revealed that the main types of constraints on the supply of labour were:

- Household labour shortages (e.g., small family size, old age, short and long-term illness and physical disability).
- Under-utilisation of available household labour or caretaker labour due to contested tenure rights.
- Disputes over remuneration of labour.
- Reduced availability of household labour due to social commitments or competing economic activities (e.g. off-block employment).
- Minimal supply of hired labour.

Such constraints on oil palm labour can be temporary or long-term and result in incomplete harvesting, ‘skip’ harvesting (harvest rounds missed), abandonment of blocks, or abandonment of a portion of an oil palm block (usually at the rear of the block, or an old stand of oil palm awaiting replanting). The effects on productivity of particular types of labour constraints can be exacerbated by a block’s physical characteristics. For example an elderly grower with no co-resident sons to help him is much less likely to harvest old and tall palms than a younger, fitter grower.

Labour supply constraints can be grouped into two categories: absolute labour shortages; and, constraints that lead to the under-utilisation of labour.

Absolute labour shortages can be long or short-term. Long-term household labour shortages usually affect blocks where young married couples, the elderly, sick, physically disabled, or widowed reside, with little or no co-resident adult family labour. Short-term labour shortages can occur as a result of illness,

customary or religious obligations or short-term absences from the block.

Families experiencing absolute labour shortages often have difficulty overcoming labour constraints for a range of reasons, such as truncated kinship or social networks that limit the pool of labour upon which they can draw (a problem on LSSs where settlers have been recruited from outside the province). Because of the very limited development of a market in hired labour it is often difficult for families experiencing labour shortages to recruit hired labour.

The under-utilisation of labour is common on caretaker blocks and on LSS blocks where married sons live with their parents and where the father controls the organisation and remuneration of oil palm labour. On densely populated blocks⁵ disputes often emerge between father and sons and amongst brothers over the remuneration of oil palm labour. Disputed remuneration between father and sons reflects different expectations associated with levels of payment for labour and young married men's desire for more financial autonomy and greater control over oil palm income to meet their individual and household needs.

The limited market in hired labour and the under-utilisation of household and caretaker labour result mainly from the reluctance of people to provide labour when there is no guarantee they will be paid. Blockholders' non-compliance with the 'labour contract' serves to curtail the supply of labour for oil palm harvesting and block maintenance. Payment uncertainty for labour results in a great deal of under-utilised labour, particularly on blocks where there is a poor relationship between the

caretaker and owner, and on populated blocks where oil palm income is distributed unfairly amongst family members and co-resident households.

Overcoming Labour Constraints

Two important points emerge from our examination of the constraints on the supply of labour for oil palm production:

First, the limited market in hired labour is a major barrier to increasing smallholder production, exacerbated by payment uncertainty. Without guaranteed payment for work done, a large potential labour force in the smallholder oil palm sector is untapped.

Second, the payment of household or caretaker labour is usually controlled by a single individual, the blockholder. If the blockholder distributes oil palm income unfairly, the motivation of household members or caretakers to engage in oil palm production is reduced, and people redirect their labour to areas where they are assured a return on their labour.

These constraints on the supply of labour largely result from ineffective payment mechanisms. Finding a solution required designing a system that guaranteed payment of labour.

The search for a solution began with identifying the key principles that contributed to the success of the OPIC Lus Frut Mama Scheme (LFMS). First introduced at Hoskins in 1997, the LFMS has been highly effective in overcoming barriers to women's participation in oil palm production (Lewis 2000). The payment card, known locally as the 'Mama Card', pays women

separately for the collection of loose fruit. The key principles underpinning the success of the LFMS initiative include:

1. Direct payment for women's labour by the company.

Low rates of loose fruit collection by women prior to the introduction of the Mama Card resulted from underpayment and lack of payment certainty for their labour spent in loose fruit collection. Women relied on their husbands to remunerate them for loose fruit collection on the monthly paydays, but the social pressures on men to redistribute this oil palm income outside the family meant that their wives, missed out or received an amount less than the value of their contribution.

The reluctance or inability of men to pass on some of the monthly oil palm income to their wives was due mainly to the numerous demands on oil palm income such as loan repayments, credit repayments at tradestores, the financial demands of immediate and extended family, customary obligations and the social pressures on men to gamble and participate in beer drinking parties.

By paying women directly for their labour, a 'labour contract' between the company and women was able to be fulfilled, creating an incentive for women to collect loose fruit.

2. Cashless transactions are attractive forms of payment for blockholders.

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 caused many domestic disputes. Since the

introduction of the Mama Card, most men are willing to place a few FFB bunches on the Mama Card which they view as their financial contribution to the upkeep of the household. Other forms of work that women perform on the block, such as maintaining paths and palm circles, is often 'paid' for at harvest time by placing some FFB bunches in the Mama net. It is much easier for men to give FFB than cash to their wives because competing claims are virtually absent. The cashless transaction of the Mama Card circumvents the excessive demands on cash, and women are effectively guaranteed a contribution to the household from their husbands.

3. Emergence of flexible labour practices and new payment arrangements.

Following the introduction of the Mama Card, more flexible labour practices and payment arrangements emerged both within and between blocks, such as lending the card to children to pay school fees, and to visitors to buy travel tickets home. It is also used to help relatives out of financial difficulties and to meet customary obligations. The scheme has become an important way for women to organise their own cash and labour transactions with women from other blocks. This has not only raised women's social status, but has increased oil palm productivity as across-block co-operation in oil palm production rose. The enhanced labour flexibility provided by the scheme increased women's motivation to produce oil palm.

By identifying the principles underlying the success of LFMS, we can begin to see how problems relating to ineffective payment mechanisms for labour may be overcome through a mechanism that guarantees payment.

SECTION 2

MOBILE CARD TRIAL

The Mobile Card Explained

In 2002 OPRA and OPIC began a trial of a new payment initiative (the Mobile Card) designed to facilitate the utilisation of family and caretaker labour and to promote labour mobility between blocks (hired labour) by guaranteeing payment of labour. The design principles and concepts underlying the Mobile Card were drawn from OPIC's LFMS and based on numerous meetings and discussions with senior OPIC managers at Hoskins (Frank Lewis, Otto Putkin and the Divisional Managers).

The Mobile Card worker is paid a percentage of the value of the fruit harvested and weighed on the Mobile Card. The percentage split of the harvested crop is recorded on a contract signed by the blockholder and the Mobile Card labourer assigned to the work. Rather than being paid in cash by the blockholder, the worker is paid a proportion of the FFB recorded on the Mobile Card. The company pays the labourer directly according to the percentage split agreed to by the blockholder and Mobile Card worker (for the trial period OPIC arranged and made payments related to Mobile Card production). The payment of labour in fruit (a share of the fruit harvested by the worker), overcomes the reluctance or inability of blockholders to fulfil their part in the payment of labour. Unlike existing payment arrangements, the Mobile Card is not tied to work on the block where the worker resides; it can be used as a payment mechanism on any block

requiring labour where a ‘labour contract’ has been signed by the blockholder and Mobile Card worker (hired labourer). This initiative enhances labour mobility across blocks.

The Mobile Card requires a signed contract agreement between the blockholder and the Mobile Card holder before the labourer can be employed. Designed by OPIC, the contract specifies the type of work to be done, the phases to be harvested or maintained, the contract period and the agreed percentage split between blockholder and labourer. A ready reckoner was developed to assist blockholders and Mobile Card workers to anticipate their earnings given a certain weight of fruit weighed on the Mobile Card (Table I).

The anticipated benefits of the Mobile Card included:

- Recovery of a significant proportion of the ‘lost’ fruit on those smallholder blocks employing Mobile Card labour.
- Increase in smallholder production and incomes.
- Increase in the amount of smallholder income that is subject to debt recovery.
- More efficient use of existing infrastructure (roads, transport, milling capacity, smallholder oil palm plantings).
- Less conflict over labour remuneration.
- Extra income would make it easier for smallholders to undertake replanting.
- Mobilisation of unemployed and under-employed youth, leading to greater social stability.

PERCENTAGE SPLITS										
	Split 1		Split 2		Split 3		Split 4		Split 5	
	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile
	10%	90%	20%	80%	30%	70%	40%	60%	50%	50%
Kg harvested										
50	5	45	10	40	15	35	20	30	25	25
100	10	90	20	80	30	70	40	60	50	50
200	20	180	40	160	60	140	80	120	100	100
300	30	270	60	240	90	210	120	180	150	150
400	40	360	80	320	120	280	160	240	200	200
500	50	450	100	400	150	350	200	300	250	250
600	60	540	120	480	180	420	240	360	300	300
700	70	630	140	560	210	490	280	420	350	350
800	80	720	160	640	240	560	320	480	400	400
900	90	810	180	720	270	630	360	540	450	450
Tonnes harvested										
1	100	900	200	800	300	700	400	600	500	500
2	200	1800	400	1600	600	1400	800	1200	1000	1000
3	300	2700	600	2400	900	2100	1200	1800	1500	1500
4	400	3600	800	3200	1200	2800	1600	2400	2000	2000
5	500	4500	1000	4000	1500	3500	2000	3000	2500	2500
6	600	5400	1200	4800	1800	4200	2400	3600	3000	3000
7	700	6300	1400	5600	2100	4900	2800	4200	3500	3500
8	800	7200	1600	6400	2400	5600	3200	4800	4000	4000
9	900	8100	1800	7200	2700	6300	3600	5400	4500	4500
10	1000	9000	2000	8000	3000	7000	4000	6000	5000	5000

Table I. Ready Reckoner

Mobile Card Trial

A modified weigh docket was designed by OPIC for the trial. Four copies of the weigh docket were made for each pickup: one each for the driver, the extension officer supervising the trial, the Mobile Card labourer and the blockholder. OPIC arranged payments to blockholders and Mobile Card workers according to the percentage splits agreed in the contracts.

An OPIC Mobile Card extension officer was employed full-time (funded by ACIAR) from July 2002 to December 2003 to supervise and monitor the trial. The Mobile Card officer organised contracts between blockholders and Mobile Card workers, monitored contracts and dealt with problems as they arose. He was also responsible for monitoring fruit pickups, arranging payments for blockholders and Mobile Card workers, carrying out post-harvest labour surveys and maintaining block production records. OPRA assisted with the implementation, monitoring and assessment of the trial.

Recruitment of low producing VOP and LSS blocks was undertaken in consultation with OPIC officers who identified blocks with the following characteristics:

- Labour-short blocks with low production, including some with high debt levels.
- Blocks where conflict or disagreements over labour payments amongst family members constrained production and the utilisation of household labour.
- Blocks managed by caretakers who were experiencing payment difficulties and conflicts with blockholders.

- VOP blocks where alternative income sources such as fishing or other cash crop activities were taking people away from oil palm production.
- Owners of multiple blocks or large oil palm holdings who regularly had difficulty recruiting hired labour.

All blocks in the trial could be considered ‘problem’ blocks. Most were characterised by very low productivity, many experienced family conflict and some had a poor history of loan repayment.

The following criteria were used when assessing applicants for Mobile Cards:

- The applicant (male/female/group) had a sound production track record and/or was known to OPIC to be a hard and reliable worker.
- The applicant had limited access to oil palm income (e.g., from a recently poisoned block, high population block, or a block where conflicts had limited the income from oil palm).
- The applicant came with a recommendation from the OPIC Divisional Manager.
- The applicant had access to tools and harvesting nets.

Mobile Card Trial Results

Before proceeding to a full trial of around 30 blocks, an initial sample of 11 blocks was selected as a pilot group to identify and address any problems that might arise in the main trial. The information from the pilot group was then incorporated into the design of the main trial.

The pilot group was drawn from Gaungo VOP and Sarakalok and Kapore LSS with ten growers joining the group between July and September, 2002. Lakimata Correctional Institutional Services (CIS) was also included. CIS has 17 ha of oil palm and productivity was low as a result of long-term difficulties managing harvesting labour.

The pilot group of 11 blocks was made up of two blockholders who had contracted a co-resident son as Mobile Card workers, with the other nine blocks hiring off-block labour. Of the 11 blocks at the end of September 2002:

- five contract periods were not completed (two blocks later signed new contracts as part of the main trial);
- two contracts expired and were not renewed;
- four contracts expired and were renewed (these blocks later signed new contracts as part of the main trial).

The 11 blocks in the pilot group highlighted some problems with sample selection and implementation of the trial, and indicated why the Mobile Card worked better on some blocks than on others. The most important of these problems were:

1. The Card was least successful on VOP blocks employing migrant labourers where there was a weak social relationship between the worker and the blockholder. Generally, contracts were more successful where there was an existing kinship relationship or close and trusting friendship between the blockholder and Mobile Card labourer.
2. Some of the less successful VOP blocks in the trial were identified and recruited to the trial by the research team, and blockholders may have been less committed to the trial than those who were self-selecting.
3. On abandoned and semi-abandoned blocks, a higher percentage split in favour of the Mobile Card worker was necessary to motivate them through the labour intensive phase of bringing blocks back into production (some workers broke their contracts after receiving their first payment because they believed they had been under-paid for their work)⁶.

These considerations were taken into account in the sample selection for the main trial. Announcements and discussions of the trial on the local OPIC radio program explained how the Mobile Card operated, the potential benefits of the Mobile Card and the types of blocks where such an initiative might prove useful. The response to the radio programs was very positive, with many blockholders and potential Mobile Card labourers contacting OPIC to participate in the trial. All new blocks joining the trial were self-selecting, often with the blockholder and potential Mobile Card worker contacting OPIC together to participate in the trial.

The second round of recruitment to the trial began in October 2002 and included four blockholders from the pilot group whose contracts continued into the main trial period. An additional 21 new blocks joined the trial between October 2002 and September 2003, as well as another two blocks from the pilot group that signed new contracts in this period. The sample size reached 27 blocks in October 2003, with 32 contracts signed (three blocks signed two or more contracts during the trial period).

At the end of November, 2003, 18 contracts were still operating, two had expired, one Mobile Card worker had died and 11 contracts had not lasted the full contract period.

The results indicate that the Mobile Card trial was successful on several indicators. Production increased on the majority of blocks; smallholders involved in the trial experienced social and economic gains (see below); and, no blockholders complained about the amount or quality of work performed by Mobile Card workers.

One unanticipated outcome of the trial was the interest it generated amongst church groups. Many church groups recognised the potential of the Mobile Card for fund raising, and seven church groups signed Mobile Card contracts. Rather than relying on cash donations to fund church activities, members contributed FFB which was weighed on the church Mobile Card. Because this use of the Card simply involved a redistribution of FFB from growers to churches, it is unlikely that smallholder productivity rose amongst church members. While undoubtedly yielding social benefits for the church members involved, these growers were not included in the 32 contracts assessed for this

report because the Mobile Card was not being used to overcome a production or labour constraint.

Production and Farm Management Outcomes

There was a significant increase in FFB production measured against average monthly LSS or VOP production. Monthly production for trial blocks increased from 75% of the LSS/VOP average without the Mobile Card to 113% during months when Mobile Card labour was employed – a net percentage point gain of 38.

Productivity improvements were documented for 90% of blocks with 30% improving by more than 50 percentage points (Table II). The fact that a strong positive ‘Mobile Card effect’ was replicated across most blocks, suggests that the initiative is an effective way to raise smallholder productivity.

Table II. Improvement in FFB production on trial blocks using the Mobile Card.

	Improvement in Percentage Points				
	No Gain	>0-10	>10-50	>50	TOTAL
No. of Blocks	3	3	15	9	30*
Per cent of Trial Blocks	10	10	50	30	100

* The 30 blocks comprise the 27 blocks in the main trial and 3 blocks with cancelled contracts in the pilot group (two blocks with expired contracts in the pilot group were not included in these calculations because it was likely they were shifting fruit between blocks). The number of blocks is less than the number of contracts (32) because some blocks signed more than one contract during the trial period.

The productivity gains/losses relative to the monthly average LSS/VOP production for individual blocks are shown in Table III. Excluding the blocks that were likely to be shifting fruit

between blocks, the average net increment in percentage points was 38.66

Table III. Productivity expressed as a percentage of LSS/VOP average for months without Mobile Card and months when Mobile Card was used.

BLOCK CODE	LSS/VOP	No. of Months MC used	Months without MC	Months with MC	Increment (% Points)	Notes
4	LSS	1	103.3%	51.5%	-51.8%	
37	VOP	5	322.2%	308.2%	-14.0%	Likely to be shifting fruit between blocks
9	LSS	1	106.5%	105.6%	-0.9%	
14	LSS	3	76.8%	80.3%	3.5%	
21	LSS	11	127.4%	131.1%	3.7%	
18	LSS	3	129.9%	133.9%	4.0%	
1	LSS	6	119.2%	131.6%	12.5%	
27	LSS	5	108.3%	123.8%	15.5%	
16	LSS	2	66.8%	82.6%	15.8%	
35	VOP	6	71.9%	89.8%	17.9%	
20	LSS	10	97.0%	119.6%	22.6%	
17	LSS	6	79.1%	102.5%	23.3%	
30	LSS	1	0.0%	25.5%	25.5%	
28	LSS	2	0.0%	30.3%	30.3%	
15	LSS	6	95.1%	125.8%	30.7%	
34	VOP	1	164.8%	200.0%	35.1%	Likely to be shifting fruit between blocks
31	LSS	2	41.2%	83.5%	42.4%	
19	LSS	1	106.4%	148.9%	42.6%	
8	LSS	4	108.0%	154.0%	46.0%	
13	LSS	3	57.2%	103.3%	46.1%	
32	LSS	3	15.7%	64.5%	48.8%	
7	LSS	5	3.5%	57.4%	54.0%	
12	LSS	1	95.8%	152.6%	56.8%	
3	LSS	7	95.3%	164.1%	68.7%	
2	LSS	10	12.4%	97.4%	85.0%	
11	LSS	2	131.8%	217.6%	85.9%	
38	CIS	7	18.6%	104.6%	86.0%	
36	VOP	7	30.8%	137.0%	106.2%	
33	VOP	3	128.0%	236.6%	108.5%	
22	LSS	2	73.3%	182.4%	109.1%	Likely to be shifting fruit between blocks
		Average	86%	124.9%		
		Average	75%	113.2%	(Excluding fruit shifters)	

Productivity improvements varied by the type of relationship between blockholder and Mobile Card worker (Table IV). The category ‘hired labour’ showed the greatest improvement, followed by ‘caretaker’, then ‘father-son’ relationships. Despite the small number of blocks in each relationship category, the differences in productivity increases across the three categories

are sufficiently large to suggest that the type of relationship is an important factor influencing productivity gains. A larger sample is required to test these differences conclusively. The differences in productivity improvements amongst different types of relationships are understandable. Levels of intra-family and caretaker-blockholder conflicts vary through time: a troublesome son moves away; caretakers are occasionally paid well; whereas, for labour short blocks, where labour must be recruited from off-block, levels of labour shortages are likely to be more persistent.

Table IV. Average productivity improvement in percentage points by relationship between blockholder and Mobile Card labourer.

Relationship	n*	Productivity Improvement in Percentage Points
Caretaker-owner	6	36.7
Son-father	11	18.5
Hired Labour-owner	9	57.8

* Excluded from analysis are cases where fruit shifting between blocks is likely.

Alongside productivity increases when Mobile Card labour was deployed, there were other improvements to farming practices. These yielded longer-term productivity gains that persisted beyond the contract period of Mobile Card workers. Long-term productivity increases were mainly the result of improved access to blocks (e.g., clearing of undergrowth) which raised the harvesting efficiency of blockholders after expiry of Mobile Card contracts. Other long-term productivity gains included:

- Abandoned and semi-abandoned blocks brought back into production (Box 1).
- Improved block maintenance (an overgrown block is more difficult to maintain than one that is already in good condition).
- More regular harvesting.
- Quicker loan repayments.

Blocks that were carrying debt when they joined the trial made substantial reductions in their debt levels. For example, CIS which had debts with NBPOL of K2,500 repaid its loan arrears in six months. A debt of K327 on a semi-abandoned LSS block, managed by a widow, was cleared within a year. This LSS block was in very poor condition, and prior to the Mobile Card there was very little prospect of the debt being serviced (Box 1). The widow was subsequently granted a company loan for replanting.

The most dramatic improvements in productivity were on abandoned or semi-abandoned blocks that were brought back into production by Mobile Card workers. Plates 1a and 1b, and 2a and 2b are ‘before’ and ‘after’ photographs of two blocks where Mobile Card labour was used. The two sets of photographs show dramatic improvements in block condition after use of Mobile Card labour.



Plate 1a. Area of overgrown LSS block in Siki subdivision prior to deployment of Mobile Card labour.



Plate 1b. The same Siki block cleared by Mobile Card worker.



Plate 2a. A semi-abandoned LSS block in Kapore subdivision.



Plate 2b. The same Kapore block cleared by a Mobile Card husband and wife team.

**Socio-Economic
Outcomes**

The Mobile Card proved effective in conflict resolution over the allocation of labour and the distribution of income amongst co-residents of blocks and in overcoming labour shortages on other blocks. It generated considerable socio-economic benefits for the families of Mobile Card workers and blockholders hiring Mobile Card labour. When the Mobile Card was successful on strife-ridden and dysfunctional blocks, the gain in social benefits for residents was much greater than for residents of blocks where initial problems were to do with absolute labour shortages. However, on some strife-ridden blocks the social problems proved intractable, and the Mobile Card alone was unable to overcome them. Additional interventions would be required on such blocks to address the deep-seated problems.

Table V summarises the reasons why 12 contracts were cancelled prematurely. A range of family problems from the death of a family member to tenure disputes, led to Mobile Card contracts being broken, but none was due to the Mobile Card itself.

For the 20 contracts that went their full term, Table VI lists the labour constraints on production affecting each block prior to the Mobile Card and the main socio-economic benefits arising from the deployment of Mobile Card labour.

Table V. Mobile Card contracts cancelled between October, 2002 and November, 2003.

TYPE	LABOUR CONSTRAINT	PRODUCTION INCREMENT (% points ¹)	BLOCK MAINTENANCE	DEBT RECOVERY	EXPLANATION FOR CARD NOT COMPLETING CONTRACT PERIOD
Father-son	Income disputes over oil palm income	-0.9	No change in block maintenance	DF ³	Father cancelled card after son used Mobile Card income to buy alcohol.
Father-adopted son	Blockholder and wife moved to Port Moresby	109.1 ²	No data	DF	Stepmother unhappy with 70% split going to adopted stepson. Cancelled card.
Father-son	Blockholder ill	46.1	No data		Son found off-block employment. Card no longer in use.
Caretaker	Blockholder living on another block	54	Significant improvement		History of tenure dispute & legal proceedings eventually stopped work of MC worker.
Hired labourer (in-law)	Long term illness	68.7	Steady improvement	DF	Two contracts. First contract, Mobile Card holder died. Second contract, MC holder evicted from block because MC wife found stealing from block. Third contract signed with new MC worker.
Father-son	Elderly blockholder & disputes over income	85.9	No data	DF	Daughter died disrupting work on block. Son now living with relatives at Hoskins.
Hired labourer	Blockholder living in Mt Hagan	-14 ²	No data	DF	Divorce dispute has disrupted production on block.
Hired labour	Blockholder living on another block	106.2	Significant improvement		Two contracts. First contract cancelled because MC worker unhappy with split due to semi-abandoned block. Second contract, MC worker quits after learning that the agreed split had been changed in favour of the blockholder without his consent.
Father-son	Disputes over income	15.8	No change in block maintenance		Father cancelled card after son collected both cheques (MC and Papa cheques) from OPIC office.
Hired labourer**	Widower with no sons on block	85	Steady improvement	Steady reduction in debt	MC worker discouraged by amount of work required to bring block back into production, and quits.

1. Production for months when Mobile Card labour deployed (as a percentage of the LSS or VOP average) less the production for months without the Mobile Card (as a percentage of the LSS or VOP average).

2. Likely shifting of fruit between blocks.

3. DF: Debt free

** Expired and renewed

Table VI. Active and expired Mobile Card contracts at end of November, 2003.
(20 contracts in total, including two expired contracts).

TYPE	LABOUR CONSTRAINT	PRODUCTION INCREMENT (% points ¹)	BLOCK MAINTENANCE	SOCIO-ECONOMIC OUTCOME
Hired Labourer*	CIS. Unreliable labour	86	Steady improvement	Substantial reduction in debt and greater income for prison to maintain its operations.
Mother-son	Income disputes with son	3.7	Good block maintenance continued	Greater financial independence for son and less social conflict on block.
Father-son	Severe disputes over oil palm income	22.6	Steady improvement	Less social conflict on block & less financial demands on father.
Father-son	Elderly blockholder	23.3	No data	Greater incentive for son to work on block.
Hired labourer	Long-term health problems. Young blockholder	68.7	Steady improvement	Greater income security for blockholder and wife.
Father-son**	Blockholder with off-block employment	12.46	Good block maintenance continued	Son has access to oil palm income while father is absent. Later, contract renewed to help son.
Father-son	Elderly blockholder & disputed oil palm income	30.7	No recent data	Greater incentive for son to harvest and less conflict with father.
Father-son	Block in son's name	15.5	Good block maintenance continued	Easier to share oil palm income between father and son.
Caretaker	Widower living in Rabaul	25.5	New card	Increased income for blockholder and Mobile Card worker (MC worker's block under replant).
Caretaker	Blockholder hospitalised. No sons	46	Significant improvement	Maintained production and income stream during illness.
Caretaker	Blockholder living in Rabaul	3.5	No recent data	Greater incentive for caretaker to harvest.
Caretaker	Blockholder – businessmen living at Hoskins	42.4	Steady improvement	Improved labour supply.
Caretaker	Blockholder living in Rabaul	48.8	Abandoned block back in production	Increased capacity to reduce personal outstanding loan.
Hired labourer	Blockholder elderly & ill	30.3	No recent data	Regular income for elderly grower.
Hired labourer**	Widower with no sons on block	85	Abandoned block back in production.	Large increase in income and greater income security. Repayment of long-outstanding debt and capacity to reinvest in block.
Hired labourer	Young family with occasional labour shortages	56.8	Good block maintenance continued	Reduced income fluctuations as a result of occasional labour shortages.
Hired labourer*	Blockholder has off-block commitments	17.9	Significant improvement	Increased oil palm income for blockholder and Mobile Card worker.
Hired labourer*	Temporary absence of blockholder	4	Good block maintenance continued	Relieved problems of meeting village commitments.
Father-son**	Temporary absence of blockholder	-51.8	No change in maintenance	Enabled son to access oil palm income during father's absence. Later, contract renewed to help son.
Hired labourer	Blockholder living on another block	106.2	Steady improvement	Reduced income fluctuations as a result of labour shortages.

1. Production for months when Mobile Card labour deployed (as a percentage of the LSS or VOP average) less the production for months without the Mobile Card (as a percentage of the LSS or VOP average - see text).

*Expired ** Expired and renewed

Overall, the study identified four main sets of beneficiaries.

First, on blocks where there was prolonged conflict between blockholders and their sons over the allocation of oil palm labour and income, the Mobile Card lessened conflict by giving married sons greater financial autonomy, while still providing an income for their fathers, the blockholders.

On many LSS blocks a married son will contest his father's control over block management and income distribution. Married sons are increasingly demanding that their oil palm labour be remunerated at market rates rather than be mediated by traditional cultural norms such as the in-kind payment of labour associated with the use of family labour. Prior to the Mobile Card, these blocks suffered frequent disputes over work and income because blockholders resisted paying market rates for their sons' labour and were reluctant to relinquish control over oil palm production. Not only did a blockholder risk losing income if his son took over production, but his status as head of the block was also undermined. In such cases, the Mobile Card enabled sons to generate a regular and secure income without undermining the social position of their fathers; the blockholders, in turn, were guaranteed a proportion of the income earned on the Mobile Card. Whilst the productivity gains from the introduction of the Mobile Card on these blocks have not been as great as those experienced on caretaker blocks or blocks using Mobile Card hired labour (Table IV), the reduction in social conflict has created a more stable social environment for the production of oil palm (Box 2).

Second, on blocks where prolonged illness or old age has curtailed productivity, the Mobile Card created a regular and secure income for blockholders (Box 3). This group benefited

greatly from a more regular and secure income that opened up new opportunities for them (Box 4).

Third, the situation of caretakers who previously received uncertain, irregular and under-payment for their work improved significantly with the introduction of the Mobile Card. Because blockholders often have other financial commitments, or because they visit their caretakers infrequently, some caretakers are faced with a great deal of payment uncertainty. Not surprisingly, in these circumstances, caretakers will pursue strategies to secure their incomes such as weighing fruit on a neighbour's payment card. Alternatively, they may minimise the amount of labour they expend in oil palm production by neglecting block maintenance. In such situations, the Mobile Card provides caretakers with a secure and regular income from oil palm and thus increases their motivation to produce oil palm and maintain their blocks.

Fourth, the families of Mobile Card workers also derived social benefits from the Mobile Card. An off-block income source relieves social pressures arising from having insufficient income. This is particularly the case on highly populated blocks where Mobile Card workers reside. Also, when a Mobile Card worker recruits family or friends to assist him, Mobile Card income is distributed more widely amongst the worker's family and kin group.

Finally, although church groups were not included in the trial, we cannot ignore the considerable interest of church and community groups in the Mobile Card trial. The seven church groups that signed Mobile Card contracts reported remarkable benefits for their groups. The Mobile Card helped overcome difficulties with fund raising, because the absence of competing demands on fruit

compared with cash meant it was easier for people to donate FFB than cash. As one church member at Kavui explained, “*moni igat tupela tingting* [family and kin obligations/responsibilities vs. individual wants]: *tasol bunch ino gat sampela samting tied long em*”. Most church groups recommended donating five FFBs per block on a monthly or fortnightly basis. The monies raised were allocated to special church projects including funding a new church building, a new house for the pastor, hosting church conferences, and, in one case, funding maintenance of a school building. The Lutheran Church at Buvussi raised K1,200 within a few months of signing a Mobile Card contract. This enabled the church to proudly host, for the first time, the Lutheran Church New Guinea Islands Regional Conference which attracted over 100 people from neighbouring provinces.

It is likely there was no increase in oil palm production among church members. However, there is potential for the Mobile Card to build stronger communities and foster civil society through its use by church, community and sporting organisations.

In summary, the range of socio-economic benefits of the Mobile Card for smallholders include:

- Utilisation of under-employed labour on LSS and VOP blocks.
- Greater capacity of blockholders to overcome temporary labour shortages due to illness or off-block commitments.
- Improved access to labour for elderly and disabled growers.
- Greater financial security and independence for married sons and caretakers.
- More equitable distribution of oil palm income among household members.

- Less social conflict on block (fewer disruptions to oil palm production).
- Strengthening of community groups and civil society.

Factors Affecting the Success of the Trial

While the results of the Mobile Card trial indicate positive production and socio-economic gains, the success of the trial was limited by two main factors.

First, unlike most on-farm research or extension trials that target innovative and progressive farmers, the Mobile Card trial targeted ‘problem’ blocks, often characterised by very low production or a history of highly disruptive family conflict. The likelihood of success of the trial on such problem blocks was potentially very low. Whilst the Mobile Card was able to overcome conflict and payment problems on most blocks, sometimes the problems were just too great for the Mobile Card alone to resolve.

Second, because of limited resources, difficulties arose in co-ordinating and managing the trial. OPIC had responsibility for managing the trial which became more cumbersome and time-consuming as the sample size grew. A project-funded Mobile Card officer was responsible for negotiating and arranging contracts, supervising harvest pickups (which sometimes meant lengthy waits for the truck to arrive), arranging payments and maintaining production and debt records (payments and production and debt records on the other harvesting cards are handled by the milling company’s computer). At times the work for the extension officer was overwhelming and resulted in delayed or incorrect payments to Mobile Card workers and blockholders. The occasional late delivery of Mobile Cards for fruit pickups meant that fruit had to be weighed on the blockholder’s card, thereby creating uncertainty of payment for

Mobile Card workers. At times, such problems reduced growers and workers' motivation and confidence in the scheme.

Case Studies The following four case studies illustrate the various benefits derived from the Mobile card⁷.

Box 1

Elizabeth Widow leaseholder - Hired Labourer Kapore LSS block

Block details: 6 hectares of oil palm.

1st Phase: poisoned in 1995; replanted in 2000.

2nd Phase: poisoned in 1995. Seedlings delivered in 2000 but not planted.

3rd Phase: planted in 1985.

First Mobile Card contract signed in August, 2002, and work began in October 2002.

The leaseholder, Elizabeth, is a widow whose adult sons are living and working elsewhere in PNG. After the death of her husband, around 1990, Elizabeth and her young children were harassed on the block by local youth, and experienced many incidences of petty theft. With constant harassment the family left the block and accepted an offer to reside on an adjoining block where they would be better protected. When Elizabeth's sons moved away for work, the harvesting and management of the block declined, and over time Elizabeth lost interest in the block as it became too difficult for her to maintain on her own. Occasionally, when Elizabeth needed extra money she would hire a youth group to harvest the block, but without regular weeding, pruning and harvesting the condition of the block deteriorated until it was completely overgrown. When the Mama Lus Fruit Scheme was introduced in 1997, Elizabeth and her daughters occasionally collected loose fruit to earn supplementary income. However, as the condition of the block deteriorated, the marketing of garden foods and betel nut became the family's primary income source.

In October, 2002 when a Mobile Card worker was first employed, Elizabeth's block had the following characteristics:

- Infestation of weeds, creepers and small shrubby trees in all three phases.
- The oil palm seedlings planted in 2000 were overgrown with weeds and most had not survived the neglect.
- Most of the palms planted in 1985 had not been pruned or managed for almost a decade.
- Extremely low production. Block production from January to September, 2002 was 1.19 tonnes, an average of 0.13 tonnes per month.
- Loan repayments to the company were very slow. In September, 2002, the debt on the block stood at K377. Most of this debt was related to a seedling delivery in 2000.

Box 1 cont...

The first Mobile Card labourer signed a contract for a 60:40 split, in his favour. However, after two months the labourer did not return as he was discouraged by the amount of hard work required to bring the block back into production, and he considered that his share of the income was insufficient to compensate him adequately for this arduous task.

The second Mobile Card contract was signed in January 2003, with a 50:50 split. The labourer, Steven, was the son of a close family friend of Elizabeth; both families were among the original migrant settlers at Kapore. Steven had no oil palm block of his own and had recently become unemployed. During his unemployment he was dependent on his father-in-law's oil palm block for income where he occasionally worked.

Because of the large amount of work required to bring Elizabeth's block into production, Steven's wife regularly worked alongside him. She would cart the harvested bunches to the roadside collection point, and occasionally collect loose fruit. Steven's nephew and his wife assisted occasionally with the work. Steven organised the labour and distributed the income among his co-workers.

On this block, like several others in the trial, the blockholder and/or the Mobile Card worker sometimes had difficulties estimating what they would earn using a percentage split of the fruit. If either party were disappointed with their share of a monthly payment, often they would adopt another payment arrangement involving the Papa Card to eliminate what they saw as an element of unpredictability in their payments. Often, in these arrangements, the fruit harvested by the Mobile Card worker would be divided between the Papa and Mobile Card nets, with 100% of fruit weighed on the Mobile Card being paid to the worker and all the fruit weighed on the Papa card going to the blockholder. In this way the worker and the blockholder knew exactly how much income they would be paid.

Of the ten payments made to Mobile Card workers on this block, six involved the use of the Papa Card to distribute income between blockholder and labourer. The OPIC officer supervising the trial recognised that in situations where the Mobile Card worker or blockholder had difficulty predicting their income from a percentage split, the use of the Papa Card resolved this difficulty. Both Elizabeth and her Mobile Card workers found this arrangement satisfactory because their expectations were met regarding levels of payment.

By September 2003, the following farm management and production changes had occurred:

Box 1 cont...

- The 1985 Phase 3 planting had been brought back into production, and block maintenance had improved dramatically.
- Increased production from Phase 3. From October 2002 to September 2003, 32.3 tonnes of fruit came off the block of which 57% was weighed on the Mobile Card. Monthly production during this period averaged 2.7 tonnes.
- Phases 1 and 2 were almost cleared and ready for replanting.
- By August 2003 all outstanding debt had been repaid.
- In August 2003 a new wheelbarrow, harvesting pole and sickle were purchased on credit.
- In September 2003 an order had been placed for seedlings for Phases 1 and 2 and a management plan had been developed to poison Phase 3 once Phases 1 and 2 were back in production.

For Elizabeth, the socio-economic benefits of the Mobile Card have been substantial. Her monthly income improved greatly since employing Mobile Card labour. The Mobile Card enabled her to gain greater long-term income security. This has helped her to plan a future where she is less dependent on her neighbours. For example, Elizabeth's new goal is to save money to build a permanent house on her block, a goal that is now attainable with the increased production from the deployment of Mobile Card labour.

Box 2

Tom Father - Son Kapore LSS block

Block details: 6 hectares of oil palm.

1st Phase: planted 1968; replanted in 1984.

2nd Phase: planted 1969; replanted in 1996.

3rd Phase: planted 1980.

Mobile Card contract signed in September, 2002, and work began in October 2002.

The leaseholder, Tom, left the block in April 2002 to work for a Malaysian logging company in Kikori, Gulf Province. His wife, three sons and young daughter remained on the block. The second-born son works in Kimbe, the third-born son recently completed Year 12 at Hoskins Secondary School, and the daughter attends primary school. The first-born son, David, is the only son married, and he resides on the block with his wife and three children. His wife is employed by NBPOL. An unrelated family is living temporarily on the block while they save money for their fares to their home province of Madang. This family (husband, wife and eight children) were invited to take up residence on the block after the husband became unemployed and lost his employer-provided housing. These 'guests' regularly help out with work on the block for which they receive a small income.

Prior to Tom's departure to Gulf Province, it was arranged that David take over the management of oil palm work on the block. David was given his father's ATM bank card so that he could access oil palm income deposited directly into his father's bank account each month. However, a few months after his father left, the ATM card was damaged and David could not withdraw money from the account. With his father away David was unable to obtain a new ATM card from the bank. Without access to the income from oil palm the motivation to produce oil palm declined sharply.

In September, with his mother's consent, a Mobile Card was issued to David as a temporary measure to address the income problems on the block. The family agreed that there should be some financial gain for the father, so the percentage split was set at 80:20 in favour of David. The family on the block would live on the 80% that David earned with the 20% paid into Tom's account to remain there until his return in January 2003. It was hoped that the funds accumulating in Tom's bank account through this forced saving would be used to pay school fees on Tom's return. With the assistance of OPIC, a bank account was opened in

Box 2 cont...

David's name for him to receive the 80% share of the oil palm income.

During the father's absence the Mobile Card was effective in maintaining and increasing production. In the three months prior to the introduction of the card, production was 9.3% above the average for an LSS block, but rose to 36% above the average for the three months from October to December 2002, when the Mobile Card was in operation. While this block's productivity increased further after the Mobile Card's introduction, the more substantial gain was the prevention of a collapse in production when block residents were unable to access oil palm income from their father's bank account.

When the Mobile Card was in use David organised the labour for harvesting FFB, and his mother and young sister continued to collect loose fruit which they weighed on the Mama Card. The mother, Ellen, received some help from the female visitors living on the block. David cut most of the bunches during harvesting with occasional help from his young brother who was mainly responsible for carting and stacking the fruit at the roadside collection point. Occasionally, when additional labour was required during harvesting, David would call on male members of the guest family on the block. He would pay them small amounts of cash for their work.

When Tom returned to the block in January 2003 he was surprised to learn how much money had accumulated in his bank account; he had expected that that most of it would have been spent on living expenses during his absence. Some of the money in his bank account was used to pay school fees as the rest of the family had hoped.

On his return Tom cancelled the Mobile Card for three reasons. First, he said he did not understand the full implications of the new payment system for himself and the rest of the family, i.e., more control of the block's income placed in the hands of his son, David. While Tom agreed that the Mobile Card had been a successful innovation during his absence and solved a particular problem on the block, he was unsure how the Card would operate now that he had returned and was back in charge of the block. He recognised that in the past there had been disputes over his allocation of harvesting rounds and his distribution of oil palm income amongst his sons, which sometimes had disrupted the supply of family labour. He could not see how the Mobile Card could reduce the incidence of these disputes, so the easiest option at the time of his return was to cancel the Mobile Card.

His second reason for cancelling the Mobile Card was that the 80% split in favour of the Mobile Card meant that sometimes there was not enough fruit being weighed on the Papa Card to cover monthly loan repayments, which

Box 2 cont...

meant that the balance had to be deducted from Mama Card payments. Both Tom and Ellen were unhappy with this arrangement. Third, David's younger brother complained to Tom that David was not paying them fairly for their labour.

However, six months later in June 2003 after reflecting on the issue and weighing up the pros and cons of the Mobile Card, Tom signed a new contract with his son, David. There was some negotiation over the percentage split: originally Tom argued for an 80:20 split in his own favour, but David protested and they agreed to a 70:30 split in favour of Tom. With this split, Tom maintained his dominant position in income distribution and hence his control over block management.

The Mobile Card provided many socio-economic benefits for both father and son. It gave David a measure of financial independence because he no longer relied on his father, Tom, to make cash payments to him based on what Tom viewed as fair and reasonable for his son's labour. Further, by having his share of oil palm income paid into his bank account, David believed it was much easier for him to save money than when he was paid in cash by his father. The bank account has given him more control over his finances and enabled him to plan for the future, which he sees as especially important because he has family responsibilities as a husband and father. David believes that the Mobile Card has increased his motivation to work on the block as he recognises that the more he works, the higher his income. This is an issue for many second generation settlers; their father's control over the level and frequency of payment for oil palm work is the basis of many disputes, and is often a disincentive to providing labour.

Finally, Tom saw how the Mobile Card could lead to a reduction in conflicts over work allocation and remuneration on the block. An attempt to resolve conflict several years ago, involved the family moving from the *wok bung* production strategy to the *markim mun* rotation strategy where each month the oil palm work and income were rotated amongst co-resident households. While partly successful at reducing the level and frequency of conflict, a few problems persisted, mainly because the sons were dissatisfied at the relatively long periods between their allocated months.

The Mobile Card allowed a more flexible payment system to emerge which enabled block residents more frequent access to oil palm income, and therefore lessened levels of conflict even further. For instance, in July 2003, David and his brother Andrew harvested Phase 3 and most of Phase 2, while the rest of the family harvested Phase 1 and part of Phase 2. The following month, the family used the *wok bung* strategy for Phases 1, 2 and 3, with all the FFB being weighed

Box 2 cont...

on the Mobile Card. While David performed the largest share of the work and received 30% of the income, other family members who contributed labour were paid from Tom's 70% share of the income. Tom's wife and daughter continued to use the Mama Card. By enabling more flexible labour and payment strategies to emerge on this block, the Mobile Card led to fewer incidences of social conflict, and higher productivity on what was already an above average performing block.

Box 3

Kapo Leaseholder - Hired Labourer Kapore LSS block

Total Area: 6.0ha.

1st Phase: replanted 1982.

2nd phase: replanted 1997.

3rd phase: replanted 2000.

Kapo is the first-born son of the original leaseholder who migrated from the Highlands in the early 1970s to settle on the block. Kapo's father and mother are deceased and he resides on the block with his wife, Lucy, and their two young children. His younger brother, Peter, and his family, and two nephews also live on the block. There are 12 people in total residing on the block.

Kapo has a long-term medical condition that limits the amount of work he can do on the block. In 1991, and again in 2001, he was operated on for a hernia, and the doctor advised him to avoid heavy work that would aggravate his condition. This meant that he was unable to do the heavier work on the block such as the cutting, lifting and wheel barrowing of FFB. With the help of his wife, Lucy, Kapo confines his oil palm work to harvesting the young palms in Phase 3 at the rear of the block.

When Kapo was discharged from hospital in 2001 and returned to the block, he managed Phase 3 while his two brothers, Peter and Luke (who also lived on the block), harvested the taller palms in Phases 1 and 2. Occasionally, Kapo would also call on his in-laws for additional harvesting labour. Following a period of prolonged conflict amongst the three brothers, which often disrupted harvesting, Kapo evicted Luke from the block. Kapo then applied to OPIC to join the Mobile Card trial as a means to assist his brother Peter with the harvesting of the taller palms in Phases 1 and 2. He arranged with OPIC for his old friend Mauru to be issued with a Mobile Card. Mauru, who lived nearby on his parent's block with 11 brothers and sisters was pleased with this arrangement, because he could look forward to a regular and secure income which would also relieve some of the economic pressure on his own family's highly populated block.

Mauru's parents took up a lease on a Kapore block at the same time as Kapo's parents. Mauru who was born and raised on the block was considered to be a hard worker, and Kapo thought he would be the ideal person to work for him under a Mobile Card arrangement. Kapo was keen to sign a long-term contract with Mauru so that he would be guaranteed a labour supply for each harvest

Box 3 cont...

round. Kapo also liked the convenience of the payment arrangement whereby the company would pay Mauru directly. This meant that Kapo would not have to retain a portion of his monthly oil palm income to pay labour and he would not need to travel into town every payday to withdraw cash from the bank to pay labour.

At the end of September 2002 a six-month Mobile Card contract was signed with Mauru, with a 70:30 split in favour of Kapo. Tragically, Mauru died in December of an un-diagnosed illness. For the two months he worked as a Mobile Card worker, production was 63% higher than the LSS average for that period compared with 6% below the LSS average for the previous nine months. During his time as a Mobile Card worker on Kapo's block, Mauru worked alongside Kapo's brother, Peter.

In January 2003, Kapo signed a new six-month contract with Bela, his brother-in-law. Bela did not have his own block and until 2001 he and his wife, Jella, had been living on Jella's overcrowded parents' block at Kavui. In 2001, when the social and economic pressures on Jella's parents' block became too much, they moved to Kimbe to live with relatives in one of the informal settlements. However, they found it very difficult to earn an income in Kimbe, and recognised that they would be unable to afford the school fees for their children. Bela also wanted to return to the Highlands with his family, and could not see a way to save the fares while they lived in Kimbe. Bela approached his sister and Kapo for permission for his family to move on to their block. Kapo agreed and arranged for Bela to be issued with a Mobile Card.

The Mobile Card contract worked well for three months until Bela's wife, Jella, was accused of misusing property belonging to Kapo and Lucy. Bela and Jella were asked to leave the block. During the three months that Bela worked on the block, Kapo and Lucy continued working together on Phase 3, and the Mama Card was used to weigh loose fruit from all three phases. Bela harvested Phases 1 and 2, and he often sought the help of his brother to harvest oil palm bunches. Working together, Bela and his brother could complete the harvesting in two days. Bela's young son often wheel barrowed FFB to the roadside and stacked it in nets ready for collection. Owing to Kapo's ongoing disputes with his brother, Peter found harvesting work on another block.

In the four months following the cancellation of the Mobile Card, production on Kapo's block dropped markedly from 57% above the LSS average when Bela was using the Mobile Card to 16% below the average. The fall in productivity cannot be attributed solely to the loss of hired labour when Bela was sacked; some of Kapo's harvesting tools were stolen; there was a death in Lucy's family

Box 3 cont...

on a neighbouring block; and, Kapo's brother, Peter, continued to cause trouble on the block which disrupted harvesting.

In August, Kapo contacted OPIC to sign a third contract with a long-term friend, Ben. A six-month contract was negotiated with a 70:30 split in Kapo's favour. Ben had recently completed a six-month Mobile Card contract on another block and was looking for work. In the remaining two months of the trial when Ben was employed as a Mobile Card worker, production increased to 75% above the average production for an LSS block during that period.

Overall, production on Kapo's block increased from 5% below the average productivity of an LSS block to 76% above the average in months when Mobile Card workers were employed.

One of the key features of this case was the commitment of the blockholder to the concept of the Mobile Card. When the concept was explained to him, Kapo immediately saw the advantages for himself and his family of employing Mobile Card labour. On several other blocks in the trial, blockholders had difficulty conceptualising the gains to be made. It was only after a month or two of employing a Mobile Card worker, that the income benefits to blockholders became evident to them, and their commitment to the concept increased. In Kapo's case, given his health condition which limited his work capacity, and his ongoing conflicts with his brothers, the Mobile Card provided a solution to a long-term labour supply problem.

Box 4

Leopold Caretaker-Hired labourer Kapore LSS block

Block details: 6 hectares of oil palm.

1st Phase: planted 1968; replanted in 1985.

2nd Phase: planted 1969; replanted in 1996.

3rd Phase: planted in 1982.

The leaseholder, Vincent, died in 1992. Following his death, his wife and children returned to Popondetta, and Vincent's brother, Leopold, remained on the block as caretaker. Leopold is not married and has no dependents living with him. He lived alone on the block until 2001/2002 but moved to a neighbouring block owned by an elderly unmarried man, Anton, after being threatened by some Kapore youth. Anton's brother and his family, including Anton's brother's married daughter, Margaret, and her family also reside on the block.

Over the years Margaret's husband, Henry, had occasionally helped Leopold harvest his block, and in 2002 when Leopold was hospitalised for three months with tuberculosis, Henry carried out all the harvesting and maintenance work on Leopold's block. When Leopold returned to the block he was too weak to do heavy work and continued to rely on Henry for labour. After hearing an OPIC radio extension program on the Mobile Card, Leopold contacted OPIC to sign a Mobile Card contract with Henry.

The contract was signed in June 2003, with a percentage split of 60:40 in favour of Leopold. Leopold's interest in the Mobile Card was threefold. First, he wanted to formalise the work arrangement with Henry because he was very satisfied with his work. Second, the Mobile Card provided a convenient and easy mechanism to pay hired labour, and also guaranteed himself an income. Third, since his illness, Leopold no longer had the strength or will to remain working on his brother's block, and desired to return permanently to Popondetta to be with his family (he plans to settle on a family oil palm block at Sorovi LSS). Leopold planned to visit Popondetta in early 2004 to discuss with his family the sale of the Kapore block and his return home. He planned to be in Popondetta for several months. In his absence the Mobile Card was to be used to maintain production and guarantee an income stream for himself and Henry.

From June to October 2003, when the Mobile Card trial finished, the card was used four times. The extension officer supervising the trial reported that block

Box 4 cont...

maintenance was excellent and that a very trusting relationship had developed between Leopold and Henry. There is every indication that the Mobile Card will work successfully in Leopold's absence.

For Leopold, the Mobile Card was facilitating his move out of the industry at Hoskins. Production is being maintained during this transition as he organises the sale of the block and plans his move home to Popondetta.

SECTION 3

RECOMMENDATIONS

Finding Solutions

Labour supply constraints are the primary cause of under-harvesting and low smallholder productivity. Constraints on the supply of labour lead to the under-utilisation of family or caretaker labour and the minimal supply of hired labour. They are due to the reluctance of people to provide labour because of inadequate, uncertain or disputed remuneration of their labour.

The primary objective of the Mobile Card initiative was to overcome labour supply constraints by guaranteeing payment of labour thereby removing payment uncertainty and reducing the incidence of disputes over labour remuneration. The Card also aimed to ease income pressures arising from population growth and to address some of the consequences of an ageing settler population and broader socio-economic changes. Of pressing concern is the rapid rate of population growth since 1990 which is leading to multiple, co-resident household blocks where oil palm income must be shared amongst larger numbers of people and households. By providing additional off-block income through Mobile Card work, or by resolving disputes over labour remuneration within blocks the Mobile Card has eased social and income pressures.

The Mobile Card initiative also helps in the growing problem of the reduced work capacity of an ageing population of blockholders. For some elderly blockholders their success on the scheme has contributed to their predicament today. Capitalising on the educational opportunities available on the LSS (which were often absent in their home areas), has meant these elderly

blockholders' children have been successful in finding employment elsewhere. Their success in raising and educating their children has, ironically, left them without labour they can draw on for harvesting and general block maintenance. The absence of a market in hired labour limits their productivity and incomes. The Mobile Card fixes this problem directly by improving their access to labour.

Socio-economic and demographic change has also led to increasing numbers of caretaker blocks. Some ageing growers and their families have retired to their home villages (the current interest in vanilla is facilitating this move), and have either appointed caretakers to manage their blocks or sold their blocks. The buyers of these leasehold blocks are often in full-time employment and their purchases are investments for their own retirement and/or to secure land for their children's future. While they continue in full-time employment some have appointed caretakers for their blocks. However, for a range of reasons outlined in Section 1, caretakers are often underpaid. The Mobile Card overcomes this problem for caretakers by providing them with a regular, predictable and secure income.

**Where to From
Here?**

To build on the success of the Mobile Card trial the following recommendations are proposed for the Hoskins scheme:

1. Adjust the company smallholder payroll system to accommodate Mobile Card payments to workers and blockholders.
2. Ensure that the initiative remains highly flexible and responsive to smallholders' production needs. It is the flexibility and responsiveness of the Mobile Card payment system that will determine the level of success

of the initiative. Ideally it should be possible for Mobile Card contracts to be drawn up at short notice for a single harvest round, specifying the phase or phases to be harvested.

3. Promote and extend the Mobile Card initiative to all subdivisions, with initial emphasis on caretaker blocks and labour-short blocks.
4. Investigate options for bringing in harvesting teams employed on Mobile Card contracts to VOP areas where productivity is consistently low. As a starting point, it would be useful to investigate the potential of employing village youth, sporting or church groups as Mobile Card teams. If village groups are unable to harvest the crop fully, it might be worth investigating the potential of employing youth from overpopulated LSS blocks, though great care would need to be taken to ensure such initiatives were supported and partly managed by senior and respected people in the village. This would need to be handled sensitively, and it would be highly desirable that Mobile Card labour be brought in only on harvesting days, and compelled to leave at the end of each working day. This initiative should begin with two or three VOP growers employing a small number of Mobile card workers. Once these VOP blockholders and their neighbours begin to see the financial rewards for themselves from employing Mobile Card labour, many more may be anticipated to join the scheme. It would probably be cost-effective for the company to transport workers in and out each day.
5. Church and school-owned blocks with low oil palm productivity should be encouraged to recruit Mobile Card labour. The feasibility of older schoolchildren (or their relatives) paying school fees in this way should be

examined, particularly for children from highly populated blocks where income is limited.

6. Sporting clubs, church groups and schools should have access to Mobile Cards for fund raising. This would strengthen the community, while creating an awareness amongst the smallholder population that the oil palm industry is an integral part of their community life.
7. Growers and Mobile Card workers should be permitted to use the Papa and Mobile cards to arrange the split of harvested fruit, if they so wish (see Box 1). This would mean creating a 100% option split on the Mobile Card paid to the worker.
8. Ensure fruit pickup schedules facilitate employment of Mobile Card labour. It is little use recruiting Mobile Card workers for harvesting when their own blocks must be harvested the same week.
9. Where feasible, fertiliser application should be promoted on blocks where Mobile Card labour is being deployed to raise harvesting rates. Given that a significant number of growers regularly under-harvest (Section 1), income gains from fertiliser may be marginal or negative for many growers (Koczberski & Curry 2003: 79-84; 112-113). The income benefits from fertiliser are much more likely to be realised where full-harvesting is occurring following the introduction of Mobile Card labour.
10. Consideration should be given to including the Mobile Card as part of a replanting package for heavily populated blocks. For some multiple household blocks undertaking replanting, it may be useful to provide a Mobile Card so that they can earn income by harvesting other blocks while they wait for their new palms to come into production. The Card would help overcome the severe

financial pressures on populated blocks following palm poisoning.

NOTES

1. Because of large variations in observers' estimates of the quantities of fruit not harvested, the categories "fully harvested", "partially harvested" and "not harvested" were adopted. In the oil palm industry, a six-hectare oil palm block is divided into three, two-hectare phases. Phase 1 is closest to the fruit collection point. Each phase is usually planted at different times.
2. In November 2002, OPIC-Bialla recorded the numbers of extra nets put out for collection by smallholders when the fruit collection truck was one or more days later than the scheduled pickup day (Koczberski and Curry 2003: 55-56). Across the three subdivisions surveyed, late pickups resulted in an increase in production of 36%. The most significant increase of 57% was in the older LSS subdivision of Wilelo where there were many elderly growers and where delayed replanting had resulted in large areas of very tall palms. Delayed pickups allowed more time for harvesting.
3. 'Purchase' blocks are oil palm blocks on customary land which are 'owned' by non-clan members, usually migrants from other provinces of PNG. Anecdotal evidence from OPIC suggests that 'purchase' blocks have higher productivity than VOP blocks owned by customary landowners.
4. Estimates of the quantities of lost fruit came from a subsample of the broader harvesting survey at Hoskins, in which the authors were accompanied by experienced senior extension officers.
5. In 2000, the mean population per LSS block at Hoskins was 13.3, while Bialla LSS blocks in 2002 had a mean population per block of 11.1.
6. Some labourers and blockholders had difficulty understanding the percentage split. This revealed the importance of providing realistic assessments of the income that workers and blockholders could expect to earn from Mobile Card labour.
7. Pseudonyms have been used in Boxes 1-4 for reasons of informant confidentiality.

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