PAPUA NEW GUINEA: STRENGTHENING THE FARM MANAGEMENT INFORMATION SYSTEM OF THE DEPARTMENT OF AGRICULTURE AND LIVESTOCK.

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ABSTRACT

The paper describes the establishment of a Farm Management Unit in the Department of Agriculture and Livestock (DAL), Papua New Guinea.

The Asian Development Bank funded project involved establishing methodology for collecting farm management data from both the smallholder and plantation sector, establishing a computer based information system, the production of a farm budgeting manual and making recommendations for the future organisational structure of the Rural Statistics Section and the Farm Management Unit within the Policy Planning and Budgeting Division of DAL.

The paper describes the focus and results of the project, the sociological and institutional issues encountered during the assignment and the authors experiences.

KEY WORDS:

FARM MANAGEMENT
INFORMATION SYSTEMS
DATA COLLECTION
SMALLHOLDERS
PLANTATIONS
BUDGETING MANUALS
PAPUA NEW GUINEA

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1 INTRODUCTION AND ADMINISTRATION

From November 1990 to January 1992 the author spent 14 months in Papua New Guinea based in the Policy, Planning and Budgeting Division (PPBD) of the Department of Agriculture and Livestock (DAL) engaged on an assignment, the objective of which was:-

Strengthening the Farm Management Information System (FMIS) of the Department of Agriculture and Livestock

The project was managed by ANZDEC Ltd Consultants, Auckland. The Asian Development Bank funded the project under Technical Assistance Number 1240-PNG.

The assignment allowed the consultant to spend in excess of 90 days in the field to collect data, undertake surveys and to liaise with other agricultural agencies. In addition, the Bank provided US$30,000 for the purchase of computer hardware and software and to fund transport, survey and incidental expenses for departmental staff associated with the project.

2 CURRENT SITUATION OF AGRICULTURE IN PAPUA NEW GUINEA

2.1 Overview of the Agriculture Sector

The agriculture sector is a vital part of the economy. Agriculture accounts for around 27 percent of GDP. Agricultural production is dominated by smallholders who constitute 95 percent of the rural population. For this reason the agriculture sector has to be relied upon for increasing employment opportunities since the mineral sector has a very low labour absorption capacity. Agriculture provides for the livelihood of 84% of the total PNG population.

Despite the importance of agriculture, recent trends in sector performance are alarming. Growth in agriculture sector output has been below population growth since 1980. Because of PNG's dependence on major tree crops, sharp declines in world tree crop commodity prices since the mid 1980s have had a major depressive impact on recent sector performance. Tenuous linkages between research, extension and farmer, combined with an ineffective extension service, have discouraged the development of significant diversified smallholder crop and livestock commercial production.

2.2 Agricultural Exports

Agricultural commodities comprised 12 percent of total exports in 1992 with a value of K203.1 million. This is 47 percent lower than the nominal value of exports in 1984 (K380.5 million) when agricultural commodities comprised 35 percent of total exports. The reduced relative share of agricultural commodities has been primarily due to a growth in mineral exports combined with lower export prices for tree crops.

Table 2.1 shows the comparison in the value of agricultural sector exports in 1992 compared to 1984.

Table 2.1

Agricultural Exports	1984 Kina	%	1992 Kina	%	Percentage Change 1984-1992
Coffee	110.7 m	29.1	68.0 m	33.5	-38.6
Oil Palm	75.7 m	19.9	53.2 m	26.2	-29.7
Cocoa	67.0 m	17.6	33.9 m	16.7	-49.4
Copra & Copra Oil	88.5 m	23.3	31.5 m	15.5	-64.4
Tea	17.1 m	4.5	2.4 m	1.2	-86.0
Rubber	2.4 m	0.6	1.0 m	0.5	-58.3
Other	19.2 m	5.0	13.0 m	6.4	-32.3
Total Agricultural Sector Exports	K 381 m	100%	K 203 m	100%	-46.7

Source: Quarterly Economic Bulletin, Bank of PNG, March 1993

2.3 Largeholder and Smallholder Production (Tree crops)

Table 2.2 shows the production from smallholders and largeholders for the major export crops. Smallholders are the major producers of coffee, cocoa and copra, and produce just under half of the oil palm crop.

Table 2.2

	PERCENTAGE OF TOTAL	
	Smallholder	Largeholder
Coffee	75%	25%
Cocoa	65%	35%
Copra	66%	34%
Oil Palm	45%	55%

With the exception of copra, smallholders have lower costs of production than largeholders. The costs of production per tonne for all of these crops exceeded their respective per tonne farm gate prices in 1991 when price support is excluded from revenue.

2.4 Employment and Income

The Agriculture Sector is of major importance for employment and income earning opportunities. Forty three percent of rural families grow coffee, 16 percent grow cocoa and 19 percent produce copra (1990 census).

Agriculture sector employment has fallen rapidly since 1989. During the period 1989-91 the index of agricultural sector employment fell by 15 percent. However, agriculture is the only sector capable of generating the employment the country desperately needs.

This can be achieved through improved productivity, increased crop areas or livestock numbers, and through service sector employment (marketing and processing).

Of the monetized labour force of 1.1 million in 1990, 67 percent were self-employed, 21 percent in wage employment and 12 percent unemployed. About 50,000 new job seekers enter the labour force each year. The Institute of National Affairs estimates that if agricultural sector employment growth could reach 6 percent per year (including self-employment in the sector) then unemployment could be virtually eliminated over a 10 year period.

2.5 Food Production

As a result of import restrictions, PNG now produces sufficient fresh produce to replace virtually all previously imported vegetables, other than brown onions, potatoes (for processing only) and temperate fruits such as apples and pears.

Whilst domestic production has increased there are still significant improvements to be made in both quality of produce and reduction of losses from garden to urban markets.

Production of traditional subsistence food crops is believed to have increased in line with population growth rates.

In 1990 food imports were valued at K190 million (FOB).

2.6 Livestock

The domestic poultry industry has developed to a level where it is now capable of supplying all the requirements of the commercial market. This has been encouraged by a total ban on imported poultry. A high tariff has now replaced the ban and this will decline over time so as to expose the industry to international competition.

Quantitative restrictions on imports have assisted the growth of the domestic pork industry. Domestic production now satisfies total local demand for pork. However, producer and consumer prices are higher than they would be if the industry was exposed to international competition.

Domestic beef production has remained stagnant despite growing consumer demand since 1981. Total bans on imports have not been applied. Domestic production supplies only about 2,000 tonnes (15 percent) of the domestic demand which is around 13,000 tonnes.

The demand for sheep meat (mainly cheaper cuts) has increased eightfold over the last decade. Domestic lamb and mutton consumption has risen from 5,000 tonnes in 1981 to around 40,000 tonnes currently. This rise is attributed to a substitution effect as a result of lower price compared to poultry, pork and beef as well as to increased total meat consumption. The Government has sought and gained assistance from New Zealand to establish a sheep industry in the Highlands, but local production is insignificant when compared to imports.

Village subsistence production of pig, poultry and goat meat is believed to have increased in line with rural population growth. Some 60 percent of rural households raise pigs and 27 percent raise poultry.

2.7 Agricultural Policy

Key development strategies are macroeconomic stabilisation through fiscal and monetary policy, and maintaining a sustainable balance of payments. Macroeconomic management will remain a central issue in the formulation of economic policy in PNG in the face of unstable commodity markets and periodic mining booms. The impact of these macroeconomic initiatives has been to keep the value of the kina at artificially high levels. In fact, PNG has followed a "Hard Kina" exchange rate policy since the introduction of the domestic currency prior to independence in 1975.

The high exchange rate policy, which is heavily influenced by desires to balance the current account and keep domestic inflation at a low level, has adversely affected the agricultural sector. It has reduced the value of receipts (in local currency terms) to export tree crop producers, and reduced the cost of imports, thus hindering the establishment of import substitution industries.

A number of macroeconomic policy measures have been introduced to alleviate the adverse effects of the exchange rate policy on the agriculture sector. These have been:

- subsidised interest rates for agriculture;
- price support for the major export tree crops;
- import restrictions on poultry, pig meat, sugar and now on vegetable imports.

In an attempt to stimulate the agriculture sector, Government is continuing to support producer prices of coffee, cocoa and oil palm. The total cost of price support at the end of 1992 was K136 million and is projected by DAL to increase to K445 million by the end of 1996.

Since most agricultural commodity prices are forecast to remain depressed, or only modestly improve over the medium to longer term, the raising of agricultural productivity is of paramount importance. Realisation of a significant increase in agricultural productivity will depend substantially on increasing the effectiveness of agricultural research and extension.

According to DAL[1], the major constraints to the development of the agriculture sector are
- low productivity;
- poor extension management;
- shortage of high quality, trained manpower;
- poor programme management and lack of accountability;
- absence of relevant and reliable farm level data;
- poor market access and infrastructure.

2.8 Agricultural Research and Extension

PNG spends less than 0.3 percent of GDP on agricultural research. Normally the World Bank recommends two percent of GDP should be spent on agricultural research. The expenditure on extension is proportionately more being over four times that on research.

Government policy is that research into the major tree crops, coffee, cocoa/coconut and oil palm, are to be carried out by the respective industry based institutions in order to have efficient organisations assisting smallholder development.

It is also government policy that research for smallholder food crop, minor export crop and livestock producers will be carried out by DAL at strategically located research stations throughout PNG. New technology is to be channelled to farmers through the DPI.

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[1] *Agriculture Strategy, DAL, Volume 1 1993*

There is no overall Government policy on extension. However, both Extension Services Division of Coffee Industry Corporation and Oil Palm Industry Corporation have clear policies on extending technical information to smallholder coffee and oil palm producers.

All 19 provincial governments have their own DPI managed at the provincial level; however, agricultural extension suffers from budget constraints and lack of skilled and experienced staff.

3 BACKGROUND AND PROJECT OBJECTIVES

A number of organisations collect data and prepare reports on the smallholder and largeholder sector in Papua New Guinea. With the exception of the Coffee Industry there is no organisation collecting farm management data on a regular and continuous basis.

The Coffee Industry Board (CIB) produce annual cost of production estimates for the coffee plantation sector based on group assessment technique, not from survey data. In 1991 the CIB began a postal survey to collect historical data based on actual accounting data and plantation management records. Since 1991 some additional work has been expanded to cover smallholder coffee growers.

A number of consultancy firms have prepared cost of production reports for tree crops for both largeholders and smallholders; however, these have been on an ad hoc basis based on brief visits to the field rather than by regular monitoring and survey.

DAL established a small Farm Management Unit in November 1990 under the Technical Assistance in order to address this problem. The unit is part of Policy, Programming and Budgeting Division of DAL.

The objectives were to:-

a) Establish a small farm management unit within the Division;

b) Review the role and organizational structure of the Rural Statistics Section of the Division together with the Farm Management Unit;

c) To establish methodologies and priorities for collecting farm management data from the agricultural sector on a regular and continuous basis; and

d) To establish a computer information base.

4 SMALLHOLDER SURVEYS

4.1 Current Situation

The Coffee Industry Board carry out an annual sample survey of smallholder coffee growers in order to monitor their extension activities; however, little quantitative farm management data is collected during this survey. No other agency carries out regular and continuous monitoring of the smallholder sector.

4.1.1 Tree Crops

The Australian Centre for International Agricultural Research (ACIAR) began a series of research projects designed to evaluate and develop methodology for monitoring Papua New Guinea Smallholder Agriculture. This work has been reviewed by (Collet, 1991).

The major focus of these studies has been the cocoa/copra and coffee sectors. Table 4.1 summarises the objectives of the ACIAR project.

The objectives have included a number relating to farm management data; including cost of production, labour inputs, areas of gardens, incomes and yields.

For farm management data on incomes, yields, use of inputs and costs of production, regular enumeration is desirable using short recall periods of no more than one month.

With the exception of the extension surveys carried out by the Coffee Industry Corporation there has been a failure of the Papua New Guinea institutions with responsibility for these crops, including DAL, to continue the survey and monitoring process established by the ACIAR surveys.

The Rural Statistics Section of DAL undertook Provincial Smallholding Crop Surveys from 1979/80 with the objective of collecting information on family household members, number of gardens, areas of gardens, and number of trees for cash crops. Information was also collected on types of crops grown and management practices. Surveys were completed in 11 provinces but funding for this survey lapsed 1985. Whilst this survey collected agricultural statistics on numbers of trees and areas of crops and gardens, no information was collected on input use, incomes or yields.

A number of other ad hoc studies were carried out by the Department of Primary Industry before PNG independence in 1975.

Table 4.1: Data Collection Objectives of the Studies Conducted by ACIAR (Project 8734).

1.	Collection of demographic information on smallholders and families;
2.	Collection of tree-crop garden information including ownership, number of gardens, garden area, tree counts, and conditions of gardens (including disease incidence);
3.	Analysis of production technology including ownership of equipment, use of inputs, varieties grown, processing and management practices;
4.	Determination of labour inputs and costs of production, including division of labour within the family and between cash crop and food production, and the use of wage labour;
5.	Evaluation of extension programs including their area of influence, effectiveness, and benefits;
6.	Determination of smallholder family or individual production including yields, and levels of utilization of cash crops;
7.	Determination of provincial or regional production;
8.	Assessment of smallholder incomes including collection of data on income other than from tree-crops, and the comparison of returns to land and labour between crops and regions;
9.	Determination of the range and distribution of prices received by producers;
10.	Assessment of the extent of differentiation between smallholder producers in terms of garden areas, production technologies/ownership of equipment,and incomes;
11.	Collection of information on marketing and exchange of coffee, cocoa and copra;
12.	Assessment of perceived problems and concerns;

The Farm Management Unit of DAL carried out two Surveys during July - September 1991; a pilot survey of 20 smallholder cocoa producers (Karkar Island, Madang Province) and a sample survey of 61 smallholder coffee growers located around Mt Hagen (WHP) and Kagua (SHP)[2]. These surveys have specifically concentrated on the collection of farm management data (incomes, areas of cash crops, yields, costs of production etc..). Staff and financial resources are required to enable this survey programme to be expanded to increase the number of locations and number of cash crops surveyed and to enable the frequency of enumeration to be increased.

4.1.2 Food Crops

There has only been one nationwide sample survey of subsistence agriculture carried out in Papua New Guinea. This was the 1961-62 survey of Indigenous Agriculture carried out by the Australian Commonwealth Bureau of Statistics under the 1960 World Census of Agriculture programme. The survey covered 100 villages (or 1% of villages) and 0.1% of the population at the time of the survey in those areas covered by the survey.

The Rural Statistics Section of Policy Programming and Budgeting Division of DAL carried out a food crop market survey in 1988 and 1989. Price and volume statistics were collected for most of the main urban markets in PNG on a regular basis. The full survey was not continued in 1990 due to lack of funding; however, the survey is still continued in the National Capital District and in a few other main urban centres.

The Australian National University (ANU), Department of Human Geography, has embarked on a research program to describe the subsistence gardening systems of Papua New Guinea. The survey collects data on crops grown, farming systems and methods, and cash earning activities. (Bourke et al, 1991).

The ANU plan to compile a set of maps and associated documentation for the whole of Papua New Guinea. Additionally, the data will enable research recommendations to be made. The farm systems mapping provides descriptive information of a predominantly qualitative nature and will be complementary to the quantitative information supplied by physical and financial farm management data.

4.1.3 Livestock and Other Crops

There is no census of smallholder livestock in PNG. The National Statistical Office-Rural Census Form - records only the type of agricultural activity engaged in by households and whether produce is for home consumption or for sale. No quantitative information on numbers of livestock or crop areas is recorded.

The National Statistical Office do not collect information from smallholders. In October 1984 the NSO carried out a pre-test Rural Household Survey with the objective of collecting household level data on:

a) Dwellings and water supply
b) Household expenditure
c) Land Utilisation.

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[2] WHP - Western Highlands Province
SHP - Southern Highlands Province

The section of the survey on land utilisation aimed to collect data on:

1) Food garden areas
2) Mode of travel to gardens
3) Area of cash tree crops and tree numbers
4) Areas and yields of other crops

This survey was abandoned and a formal survey was never completed. An examination of the questionnaire and the type of data enumerators were expected to collect, indicates that the objectives of the survey were over-ambitious. Insufficient regard was paid to the complexity involved in collecting the data required from largely non-numerate and non-literate smallholders with complex gardening systems, topographical constraints and problems of locating and walking to smallholder gardens remote from the villages.

4.2 Collecting Data from PNG Smallholder Cash Crop Growers

4.2.1 Resources and Objectives

The objectives for monitoring the smallholder sector are limited primarily by the reality that funding and staffing are unlikely to enable comprehensive farm management surveys of smallholders to be undertaken at a detailed level such that district, regional and provincial aggregates can be estimated from sample information.

The fact that smallholders are largely non-literate and non-numerate, are geographically dispersed and in isolated locations, requires that trained enumerators visit smallholdings to collect data. Frequent visits are required if information on incomes, yields, volumes sold and the use of resources are to be accurately monitored.

The more limited objectives of smallholder farm management surveys is to provide government and industry with reliable microeconomic data on:-

- Incomes and sources of income
- Costs of production
- The use of resources, including labour, and the cost of these resources
- Productivity of holdings (output per unit of limiting resources)

Where data is available for several locations (regions, districts) comparisons may be made between locations as well as between individual holdings or groups of holdings.

Over a number of periods, time series data is generated.

Because most policy measures (eg stabilisation prices) are directed to the cash tree crop sector, the priority is to monitor smallholdings producing the following export cash crops: coffee, cocoa, coconut, oil palm and rubber.

The two surveys carried out in 1991 by the Farm Management unit have included an assessment of income from food crops, income from other sources and number of household members supported by food crop gardens (and areas of food crop gardens). The approach is a whole holding approach for monitoring, however, the priority is given to collecting cash crop data.

Because cash crop gardens tend to be generally close to the dwelling and of approximately regular shape, it is relatively easy to measure the area of these gardens within a reasonable period of time and thereby obtain yield and income data per unit area.

4.2.3 Papua New Guinea Mixed Cropping Systems

Gardening systems for food crops in Papua New Guinea predominantly involve mixed cropping where several crops are planted together in the same area of garden. This mixed crop, multi-canopy stand maximises the use of available light; taller crops act as shade crops for those plants with a lower canopy.

The main staple, sweet potato, may be planted at any time of year and is harvested on a continuous basis from the same mounds or beds in the garden. New planting material may be placed in these mounds or beds as the current crop is harvested.

This aseasonal planting and serial pattern for harvest makes the monitoring of yields from subsistence gardens more difficult than for crops planted as single stands with the total crop harvested at one time. Taro, for example, is generally harvested when mature and stored, although it may be planted as the dominant crop in a stand or as a minor crop within a garden.

For mixed cropping systems, plant density measurements can be made and theoretical crop areas calculated using plant densities for single crop stands of each crop. Crop areas can be adjusted if a requirement is to ensure that the sum of the areas for each crop component equal the total garden area in which the crops are found.

In some locations, particularly nearer urban environments where food crops are grown as a cash crop, mono-cropping is more common with complete harvest at maturity. Such practices make yield and area measurements much easier. Under these circumstances it becomes feasible for enumerators engaged in the collection of farm management data to record individual food crop areas and yields.

If area measurements are restricted to areas cultivated during the current year, the confusion which may result from gardens not cultivated but still harvested (from previous year's plantings) or which form part of the fallow area in a shifting cultivation system, will be minimised.

4.2.3 Topographical Constraints

Areas remote from roads present particular problems for the collection of farm management data.

In some locations, particularly in the remoter areas, food crop gardens can be considerable distances from roads and from the dwelling. A walk of 30 minutes in each direction is commonly required if areas of food gardens are to be measured or other measurements made at the site. This has implications for the number of households which may be visited by one enumerator, the number of staff involved and the cost of the survey.

Gardens are frequently located remote from the dwelling to take advantage of more fertile soils, particularly in shifting slash and burn farming systems, and to avoid damage by pigs in areas where gardens are not fenced from livestock.

4.2.4 Sampling Frame

Taking into account practical as well as cost considerations, a two stage cluster sample is the most appropriate sampling procedure for smallholder surveys.

A random sample of villages (or census units) would be made using the census list as a sampling frame (alternatively a map showing villages could be used as the sampling frame). Since the number of smallholders growing cash crops is unlikely to be known, a sample would be selected of smallholders from each village for enumeration purposes.

The estimates made for the variables may be less accurate under the two-stage cluster sample method than for a simple random sample of known cash crop growers. However, the lack of individual grower lists, the lower costs and the practical considerations of enumerator transportation and supervision make this the more pragmatic solution.

Compared to the coffee, cocoa and coconut sub-sectors, lower costs are likely to be associated with surveys of the smallholder rubber, oil palm and minor crops due to the smaller number of growers and the more location specific distribution of the population mainly centred around nuclear estates or settlement projects.

This is discussed more fully in the report: "Recommendations for the Regular and Continuous Collection of Farm Management data from the Papua New Guinea Smallholder and Largeholder Sector", published during the assignment.

4.3 Farm Management Unit Surveys

4.3.1 Data Priorities

Table 4.2 lists categories of information for largeholders and smallholders showing the agency responsible for collection and dissemination of information and the existing and potential sources of data.
The responsibility of the Farm Management Unit is to collect data on:

1. Production (including livestock numbers, areas and yields)
2. The use of inputs including capital inputs consumed over more than one season.
3. Incomes
4. Liabilities and assets of holdings

This data forms the basis of a whole-farm or whole-holding budgeting model as shown below:

TRADING ACCOUNT

INCOME: from		Cash Crops
		Livestock
		Other
		[Value of exchange]
	=	TOTAL INCOME
Less: CASH EXPENDITURE:		Variable input cost
		Fixed/overhead costs
		Interest
		Depreciation (non cash)
	=	PROFIT BEFORE TAXATION
Less:		Principal payments
		Taxation
		Capital/Development
		Personal drawings
	=	NET [CASH] SURPLUS
BALANCE SHEET: Assets	-	Land
	-	Buildings
	-	Plant and equipment
	-	Current assets
Less: Liabilities	-	Mortgages
	-	Term loans
	-	Current liabilities
	=	NET ASSETS (EQUITY)

Table 4.2

CATEGORIES OF INFORMATION FOR LARGEHOLDERS AND SMALLHOLDERS SHOWING AGENCY RESPONSIBLE FOR COLLECTING AND DISSEMINATING THE INFORMATION AND THE EXISTING OR POTENTIAL SOURCE OF THE DATA.

NSO = National Statistics Office RSS = Rural Statistics Section of DAI FMU = Farm Management Unit of DAI FSR = Farming Systems Researc

TYPE OF INFORMATION OR STATISTICS	AGENCY RESPONSIBLE: LARGEHOLDER	SMALLHOLDERS	SOURCE OF DATA
LIVESTOCK			Largeholders: Annual Census
Number and types of livestock	NSO	RSS	Smallholders: Surveys in selected areas or periodic national
Livestock sold or slaughtered	NSO	FMU	surveys by RSS
LAND UTILISATION			
Area of tree crops	NSO/BOARDS	BOARDS/RSS	Largeholders: Annual Census
Area of food crops	NSO	FSR/RSS	Smallholders: Random sample survey – Tree crops
Area other crops	NSO	RSS	Surveys in selected areas – Food & other crops
PRODUCTION			
Volume and yields of tree crops	NSO/BOARDS	BOARDS/FMU	Largeholders: Annual Census
Volumes and yields of food crops	NSO	RSS/FSR	Smallholders: Random sample survey – Tree crops
Volumes and yields of other crops	NSO	FSR/FMU	Surveys in selected areas – Food & other crops
EXPORTS OF AGRICULTURAL COMMODITIES			
Volumes	BOARDS/NSO	BOARDS/NSO	Board records and Customs documentation
Prices	BOARDS/NSO	BOARDS/NSO	
Destination	CUSTOMS/NSO	CUSTOMS/NSO	
IMPORTS OF AGRICULTURAL COMMODITIES			
Volumes	CUSTOMS/NSO	CUSTOMS/NSO	Customs documentation
Prices	CUSTOMS/NSO	CUSTOMS/NSO	
Country of origin	CUSTOMS/NSO	CUSTOMS/NSO	
LOCAL MARKETS			
Quantity/value produce traded – formal markets	RSS	RSS	RSS Food Crop Market Survey of formal markets
– informal markets	FSR	FSR	FSR Surveys in selected areas for informal markets
Seasonal trends in production (food crops)	RSS	RSS	
USE OF INPUTS/COSTS OF PRODUCTION			
Fertiliser	NSO/FMU	FMU	Largeholders: Annual Census
Labour and employment	NSO/FMU	FMU	FMU Cost of Production surveys
Purchases of capital equipment	NSO/FMU	FMU	
New buildings and construction costs	NSO/FMU	FMU	Smallholders: FMU Cost of Production surveys
Electricity generated on farms	NSO	n/a	In selected locations
Diesel and other fuels	NSO	n/a	
FARM INCOMES			
Tree crops	NSO/FMU/BOARDS	FMU/BOARDS	Largeholders: Annual Census
Food crops	NSO/FMU	FMU	FMU Cost of Production surveys
Other crops	NSO/FMU	FMU	
Livestock	NSO/FMU	FMU	Smallholders: FMU Cost of Production surveys
Other sources of income	NSO/FMU	FMU	In selected locations
ASSET INVENTORY			Largeholders: Annual Census FMU Cost of Production surveys
Plant and equipment	NSO/FMU	FMU	
Crop processing equipment (on farms)	NSO/FMU	FMU	Smallholders: FMU Cost of Production surveys
Buildings	NSO/FMU	FMU	In selected locations
OTHER ITEMS			
Type of business operating holding	NSO	n/a	Agricultural Census
Area of holdings and land tenure	NSO	FSR	Lholders Ag Census. Sholdings FSR surveys selected locations
Post harvest losses	RESEARCH	RESEARCH	Targeted research studies
Diversification opportunities – Technical	RESEARCH	RESEARCH	Research Strategic Plans/Five Year Plans
– Management systems	FMU	FMU	Project specific studies & Economic evaluation of research trials/models
Labour allocation/work study	FMU/FSR	FMU/FSR	Enterprise specific studies surveys
Subsistence household consumption	n/a	FSR	Surveys selected locations
Husbandry practices pest disease fertility	RESEARCH/BOARD	RESEARCH/BOARD	Research Stations/Board extension surveys of tree crops

NOTES

For agricultural statistics on largeholdings National Statistics Office has responsibility
Data is collected by means of the Annual Census of Agricultural Activities

For agricultural statistics on smallholdings Rural Statistics Section of DAI has responsibility
Data collection is by survey of smallholder gardens or formal markets
Funding has severely restricted the number of surveys the RSS has been able to carry out
Additionally the RSS of DAI is severely understaffed

This model is applicable to both the largeholder and smallholder sector. In the case of largeholders this model is reflected in plantation accounts and plantation management records. In the case of smallholders records are limited (at best) to produce sales dockets and receipts for cash sales and purchases, as well as smallholder recall of sales, exchange and resources consumed in cash or kind.

The government uses such data for:

- Strategic policy advice.
- Setting support prices for stabilisation schemes for export tree crops.
- To assist in budgeting and project preparation.
- To determine levels for relief measures during adverse climatic events.

For the sample, data should also be collected on:

a) Number and type of livestock
b) Crops grown, areas of crops and yields
c) Prices and volumes for traded outputs including seasonal trends.
d) Household members supported from food or cash crop production
e) Other source of income
f) Capital formation

A feature of the smallholder sector is the lack of written records either as management records of formal invoices and receipts for traded goods and services. The implication of this is that this data must be collected by surveys of smallholders using enumerators visiting holdings on a regular basis.

4.3.1 Pilot Survey

During the first quarter of the TA effort was directed at reviewing the methodology used in Papua New Guinea in previous rural surveys, particularly the work coordinated by ACIAR and IASER[3]; as well as the only major sample survey of the Papua New Guinea subsistence food crop sector: Survey of Indigenous Agriculture carried out in 1961-62.

A number of DPI studies carried out before 1975 were also reviewed.

Meetings were held on several occasions with DAL, PPBD staff from Rural Statistics Section, Strategy Planning and Marketing to confirm the objectives of the surveys and to discuss proposed survey methodology.

Liaison was also regularly carried out with the producer boards and other divisions within DAL. The Coffee Development Agency and Coffee Industry Board, Goroka, (now part of Coffee Industry Corporation) were visited on two occasions, prior to the pilot study, since they regularly carry out sample surveys to evaluate the effectiveness of their extension programme.

Two field visits were undertaken with staff from both CDA and CIB to enable the consultant and national counterpart to gain an appreciation of the problems of smallholder data collection in Papua New Guinea at the physical and methodological level.

In July 1991 the consultant and national counterpart undertook a survey of 20 smallholder cocoa and copra producers on Karkar Island, Madang province. Staff from the DPI assisted the consultant and national counterpart to collect data from four representative villages on the island.

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[3] PNG Institute of Applied Social and Economic Research

The results of the pilot survey of cocoa and copra producers were written up and presented in the Farm Management Unit's "Report on survey of Smallholder Cocoa Growers, Karkar Island, Madang province", August 1991.

4.3.2 Survey of Smallholder Coffee Growers

In August 1991 the Farm Management Unit carried out the survey of Smallholder Coffee Producers in the Western Highlands (Hagen Central) and Southern Highlands (Kagua); sixty-one smallholders were surveyed.

Consultation was undertaken within PPBD, with the Coffee Industry Corporation and with the Census Division of the National Statistical Office prior to the survey.

Staff from the Department of Primary Industry (Western Highlands) and Coffee Development Agency (Western and Southern Highlands Coffee Management Districts) assisted the DAL in carrying out the survey.

Because of time constraints, both surveys involved the collection of data from smallholders on a single visit using probe questions and recall to obtain data for a complete year.

Survey Location

The data was collected using a survey form developed by the consultants, this was completed by enumerators on a single visit to smallholdings. Field measurements were made during the visit of coffee and food gardens.

Smallholders in Central Hagen have ready access to the urban market in Mt. Hagen, where there are coffee factories and a large urban food market. The rural infrastructure is well developed.

Smallholders in Kagua district are relatively isolated being some 4 hours drive from Mt. Hagen and about 2 1/2 hours drive from Mendi. The roads are generally poor and the other infrastructure is poorly developed (there is currently no telephone service to Kagua). Coffee is sold either in Mt. Hagen or Mendi, although traders visit the rural areas to purchase coffee from growers.

These two areas were selected as representative of growers at either end of the curve of normal distribution. The Mt. Hagen sample being representative of those smallholders participating in the monetary economy and being relatively well serviced by the service sector; the Kagua sample being representative of those smallholders having relatively poor access to markets and services.

Resource limitations and tactical constraints precluded a much larger sample of producers over a wider geographic area. It was considered that collecting data from growers in two contrasting areas would be more informative than data from one area which might be more typical of the population mean; such data would yield little information on the problems of disadvantaged producers or on producers more advantaged with respect to location and services.

Survey Sample

Sixty one smallholders were surveyed; 30 smallholders were surveyed in Hagen Central and 31 in Kagua.

Six villages were selected in each district and five households heads were enumerated in each village (giving a sample size of approximately 30 in each location).

Completion of the questionnaire took between 1 1/2 and 2 hours for each household interviewed. Garden measurements were generally performed after the interview but measurements were also taken before and during the interview depending on the weather conditions and the number of people available to assist with garden measurements.

Garden areas were calculated using the triangulation method and a 100 metre survey tape. This proved to be quicker and more practical than using a compass and tape.

Enumeration

Two enumerators interviewed each household head; since five households were visited in each village this required 10 enumerators.

In both locations one of the enumerators was either a DAL professional officer from the Rural Statistics Section or Farm Management Unit of DAL or a CDA (now Coffee Industry Board) extension officer. In Hagen Central each DAL/CDA officer was teamed with an extension officer from the Department of Primary Industry, Western Highlands Province. In Kagua, where it was advantageous to have an enumerator familiar with the local language, enumerators were recruited locally prior to the survey.

For the type of data collected, a simple question and answer questionnaire is unsuitable. The enumerator is required to have a knowledge of the nature of the data being collected and needs to be able to formulate probing questions in order to obtain the required information. Consequently enumerators with some form of tertiary agricultural education are preferred.

The data collected related to a whole farming season (one year). To improve the accuracy of the data (particularly data on incomes, volumes sold and expenditure) a regular visiting system is recommended with smallholders being visited at least monthly. Time constraints and reporting deadlines did not allow for this.

A consideration in the selection of the two areas surveyed was that respondents in these location may be expected to have good recall ability. (Michael Bourke, pers. comm.)

Results

Table 4.3 shows a summary table of results from the survey of coffee smallholders. This table summarises data on crop areas, family labour, livestock numbers,income, expenses and capital formation.

A full presentation of results is not possible in this paper; however, the survey is fully reported in: "Report on the Farm Management Survey of Smallholder Coffee Growers, Western and Southern Highlands Provinces".

In the full report survey statistics are presented on minimum, maximum, mean, standard deviation, coefficient of variation for the variables analysed. Where appropriate analysis was done on the whole sample or sub-samples of the data. For example, all smallholders had coffee gardens but not all smallholders owned chickens. Statistics may be presented for the whole sample, or in the case of income from chicken production, an analysis of only those smallholders with chickens may be more appropriate depending on the objectives of the analyst or policy maker.

Analysis showed a skewed distribution for coffee yields, particularly for Kagua. Skewed distributions appear common for agricultural data collected from smallholders indicating that statistical analysis using the assumptions of normality would require a transformation of the data.

More evidence about the nature of the skew of the distributions would be helpful in making assessments on the sample size requirements of smallholder surveys.

TABLE 4.3

SMALLHOLDER COFFEE BUDGETS: Based on Farm Management Survey Smallholder Coffee Growers, Western and Southern Highlands Provinces.

Means of samples	n = 30 Hagen	n = 31
PHYSICAL DATA:	Central	Kagua
Area in coffee (ha)	0.77	0.37
Food crop area (ha)	0.78	0.62
Yield per ha (Kg)	961	560
Price per Kg (Kina)	0.91	0.69
Gross sales (Kg coffee)	667	204
Net sales (Kg coffee)	515	172
No. of pigs	4.4	5.1
No. of chickens	16.6	4.3
INCOME:-	KINA	KINA
Coffee sales (net)	577.00	140.00
Livestock sales (net)	564.00	338.00
Food crop sales	394.00	144.00
Other income	887.00	106.00
TOTAL CASH INCOME	2,422.00	728.00
CASH EXPENSES:- (Kina)		
Coffee - Wages	157.63	14.00
Chemicals	86.03	10.48
Fertiliser	0.00	0.00
Trees/seeds	1.00	4.03
Fuel/Oil	0.07	0.00
Bags	3.93	0.97
Freight in	2.20	0.26
Freight out	8.63	13.32
R & Maint	10.00	0.00
Other	12.13	0.45
Sub-total expenses coffee	281.62	43.51
Food crop expenses	116.12	2.68
L/stock, other expenses	185.55	19.05
TOTAL CASH EXPENSES	583.29	65.24
NET CASH SURPLUS (Kina) (before capital purchases)	1,838.71	662.76
COST OF PRODUCTION FOR COFFEE:		
Kina per tonne (excludes unpaid family labour)	k336.00	k177.00
Gross margin for coffee:	k295.38 Total k383.61 per ha	k96.49 Total k260.78 per ha
CAPITAL FORMATION:-	KINA	KINA
Asset purchases: (for cash)	120.00	10.00
Capital formation (value of)		
- Additional Land cleared	92.00	108.00
- Construction	149.00	250.00
Level of savings:	465.00	23.00
LIABILITIES:		
Formal loans	50.00	0.00
Informal loans	72.00	22.00
ASSETS:-		
Buildings	135.00	31.00
Vehicles & plant	1,460.00	4.00
Creditors	431.00	261.00

SOURCE: FARM MANAGEMENT UNIT, POLICY PLANNING AND BUDGETING DIVISION, DAL.

5 LARGEHOLDER SURVEY

In February 1991 the consultant was requested by the Director, Policy Programming and Budgeting Division, to carry out a study of the costs of production for cocoa produced by the largeholder/plantation sector.

The Government required this information since the costs of production were below the world price for cocoa and the viability of the sector was in doubt. An independent study was required in order that the government could determine what the stabilisation or support price should be for cocoa such that the costs of production for an "efficient" producer were covered. In addition, information on the financial state of the sector was required to assist the Government in targeting other short-term relief measures (interest rate subsidy, fertiliser subsidy, etc.)

Whilst historical cost of production reports had been prepared by other consultants these studies were not based on the analysis of plantation records and accounts, plantations had not been selected in an unbiased manner for study (such as using random sampling) and there was no information available on the distribution and range of production costs across plantations.

This lack of data and the lack of a continuous and systematic monitoring programme applied to all the other major largeholder export tree crops (coffee, oil palm, rubber) in addition to the cocoa plantation sector.

Discussions were held with Government, the Planters Association (representing the producers), the Papua New Guinea Banking Corporation and the Islands Regional Secretariat to discuss the crisis facing the industry and to determine how the survey should proceed.

Data was collected from a random sample of 26 plantations. Cost of production information was collected based on plantation physical records and audited accounts. This survey was the first systematic survey carried out on plantation costs or production in Papua New Guinea based on accounting data and physical records from a random sample of plantations; by this means production (per tonne of cocoa), yields, expenditure per unit area, profit and trading cash surplus and balance sheet details (debt levels, equity, capital development and taxation).

Particular problems are associated with calculating costs of production for cocoa due to the fact that most plantations are interplanted with coconut (used as a shade crop) and due also to the fact that at the time of the survey (1991) there were no standardised accounting principals adopted across plantations throughout the country.

These issues are discussed in further detail below. This paper does not attempt to present all the results and recommendations which were obtained from the survey since this is available in a separate report: "DAL/Cocoa Board: Cost of Production and Plantation Viability Survey (1991)". ANZDEC Limited Consultants, May 1991.

5.1 Apportioning Costs to Interplanted Crops

The fact that both cocoa and coconut are grown on the same land unit means that direct (or variable) costs and overhead costs are required to be allocated to each individual crop.

Direct crop costs may vary with yield (harvesting, processing, dispatch) with cost generally increasing directly per unit of output. Per hectare direct cost (such as chemicals, fertiliser and crop husbandry) may change to a greater or lesser degree with levels of output but from a farm budgeting point of view (rather than from a field trials perspective) it is often difficult to determine the relationship between per hectare variable inputs and output (yield).

Direct costs which are crop specific (either in relation to output or per unit area of production) are readily allocatable to each crop to determine direct (or variable) costs of production per tonne of output. For example; harvesting, processing and dispatch costs are separately recorded for cocoa and copra. Fertiliser is applied to increase cocoa yields (grams per tree) and similarly chemicals are used to control pests and diseases in cocoa not for the copra crop (tall coconuts). Husbandry costs, such as pruning and weeding, are generally also allocatable to crops since the activities are crop related and labour records on plantations are generally of a high standard since they form the basis of payment for labour and labour supervision.

However, overhead costs of production are generally not enterprise specific and cannot readily be allocated to enterprises; such costs might be accounting fees, managing agents costs, administration, security.

Some overhead costs may be consumed by one enterprise more than others. Fuel and oil, building repairs and maintenance are examples. However, because the detailed recording of the consumption of these inputs by each enterprise is impractical, these costs are usually considered to be overheads.

Where overhead costs are required to be assigned to enterprises some rule is required for apportioning these costs.

In a mixed cropping environment, where two crops grow in one stand, allocating costs on a per hectare basis is inappropriate since the two crops are found on the same land area. Most of the plantations surveyed consisted predominantly of interplanted cocoa/copra.

A number of methods have been suggested for apportioning overhead costs to interplanted crops, including:-

a) assigning costs on the basis of the estimated area occupied by each crop;

b) assigning costs depending on their relative output ratios;

c) assigning costs depending on the relative ratios of the crop's variable cost to total variable costs for all crops.

The last method was used by the Queensland DPI team (in their 1987 report). The advantage of this method is that it assigns costs to the enterprises depending on their resource use for allocatable inputs. the crop using the greater proportion of variable inputs will be assigned the greater proportion of overheads (therefore increasing production costs relative to the other enterprise).

This method was used in the survey to allocate overheads to cocoa and copra since it is consistent with the previous cost of production study. In the case of interplanted cocoa/copra, the copra is regarded very much as a by-product since the cocoa crop has the higher value; additionally, the lower canopy from the smaller cocoa trees requires greater inputs in terms of land maintenance. For these reasons it appears reasonable to allocate the greater proportion of overheads to the cocoa crop.

Capital resources consumed in the production process were included in costs of production as depreciation. Interest on working capital was calculated in a standardised manner across plantation and imputed to costs of production. For owner managed plantations a management fee was imputed as a cost so that plantations which were owner managed or managed by management agencies could be compared on the same basis.

5.2 Accounting Principles

One of the problems in using accounts in Papua New Guinea for determining cost of production is that development expenditure may be brought to account in the year of expenditure (and therefore treated as trading expenses) or capitalised into a Redevelopment Account and brought to account for taxation purposes in future accounting years. As a concession to the Papua New Guinea Primary Industry Sector losses may be carried forward indefinitely and any accumulated redevelopment costs brought to account to reduce taxable profits in any year.

In 1991 some accounts showed cocoa redevelopment as a separate item in both the capital account and in the trading account, in some cases such expenditure was imply recorded as working expenditure. In general, plantation management agencies and plantations which were owner managed either recorded or were able to identify such costs, which were then excluded from working expenditure (for the purpose of the study) even though they were not always recorded separately in the audited accounts.

The costs of production for cocoa obtained from the survey are summarised in Table 5.1.

Table 5.1: DAL/Cocoa Board Largeholder Viability and Cost of Production Survey (1991)

DAL/COCOA BOARD LARGEHOLDER VIABILITY AND COST OF PRODUCTION SURVEY (1991)

COCOA PER TONNE COSTS OF PRODUCTION: 1989 and 1990 (Actuals)

	1989 MEAN N=25	1989 SAMPLE S.D.	1990 MEAN N=26	1990 SAMPLE S.D.
Yield per mature ha (tonnes):	0.919	0.493	0.627	0.247
Price per tonne (DIS): (Kina)	1,366	138	1,191	111
VARIABLE COSTS/TONNE:				
Crop husbandry	255.22	171.26	243.85	109.06
Fertiliser	44.71	92.94	24.90	38.59
Chemicals	90.78	95.13	118.39	93.45
Harvesting	172.08	127.22	156.30	42.23
Processing	134.84	178.47	122.87	60.97
Despatch	45.40	44.12	47.87	34.59
Other	75.90	158.19	48.57	102.02
Sub-total:	818.93	505.57	762.74	222.98
OVERHEAD COSTS/TONNE:				
Contract/cas.lab.	8.93	20.31	17.63	31.76
Permanent labour	57.93	119.90	32.88	74.95
Management sal's	132.06	114.28	152.53	96.15
Consultant/Agents	143.40	203.70	156.94	143.54
Security	11.93	20.98	15.98	17.79
General freight	7.35	20.07	3.23	8 97
Fuel/Oil	31.73	43.79	50.61	51.76
Repairs & maintenance	84.88	89.81	69.34	61.37
Electricity/power	6.15	11.34	12.16	16.03
Administration	53.34	38.42	53.89	32.71
Insurances	17.07	15.54	21.65	14.78
Rent/sundr's/other	29.02	42.82	19.31	33.32
Interest on w.capital	76.33	52.76	82.07	26.24
Depreciation	58.61	54.39	64.86	50.81
Sub-total:	718.73	526.75	753.07	296.09
TOTAL COST PER TONNE:	1,537.66	963.89	1,515.81	390.00

5.3 Cocoa Redevelopment

In addition to the annual working expenditure incurred by plantations as costs of production (including depreciation on fixed assets) for mature crops (mature cocoa), at any one time a greater or lesser part of the plantation will be under redevelopment. In general, the older cocoa varieties have an economic life of around 20 years whilst some of the newer hybrids may require to be replaced after only 15 years.

Cocoa redevelopment is a legitimate cost of production since it is simply the reflection of the limited life of the capital investment of the mature cocoa block.

However, many plantations have recently undertaken significant rehabilitation and replanting programmes with the encouragement of Government and are carrying forward larger debts in the form of redevelopment costs that would usually be the case for a plantation simply planting for renewal. Consequently, on some plantations large areas may be in immature cocoa relative to mature cocoa.

After discussions with the Bank of Papua New Guinea it was agreed that the cost of cocoa redevelopment would be calculated on the basis of an annual sinking fund payment necessary to replace the asset (cocoa trees) after their economic life.

The calculation of the annual sinking fund payment that was agreed with the Bank included the following assumptions (in 1991).

a) A cocoa redevelopment cost of K3,000 at the end of an economic life for trees of 20 years.

b) A nominal rate of interest equal to the then current return on Government securities with an 11 year term (11.47%).

c) Inflation of 5% per annum (to convert nominal interest rates to a real rate).

d) Tax on interest earned from the sinking fund of 30% (the company tax rate in 1991) before dividend payment.

Based on these assumptions the nominal interest rate after tax is 8.03% and the real return, after allowing for inflation, is 2.9%.

The sinking fund requirement was therefore calculated as K133 per mature cocoa hectare.

Since depreciation on fixed assets were treated in the same manner as overhead costs, some of the fixed asset deprecation was allocated to redevelopment for the adjusted accounts on each plantation. This component of depreciation must be considered as a legitimate part of redevelopment costs since it is a cost associated with the immature cocoa area.

The total cost of cocoa redevelopment is therefore the sinking fund component plus the depreciation on fixed assets which was allocated to the immature cocoa area.

The total annual redevelopment charge made against the mature cocoa was therefore:-

Sinking fund payments	K133.00
Depreciation on fixed assets	K12.40
Total (per/ha)	K145.00

Table 5.2

Kina/Tonne	Yield 1.0 t/ha	Yield 1.0 t/ha	Yield 1.0 t/ha
Direct costs (including overhead costs)	1227	1080	985
Redevelopment	158	122	99
TOTAL COP (1991)	K1,385	K1,202	K1,084

Table 5.2 summarises cost of production at three productivity levels 1.0, 1.3 and 1.6 tonnes per hectare as reported from the survey.

It should be noted that no allowance for interest on debt or future borrowings to finance redevelopment or capital renewal are included in the above figures.

6 FARM BUDGETING MANUAL AND COMPUTER INFORMATION BASE

The consultants developed the software which enables the Farm Budgeting Manual to be available as a computer information base. A manual was written which provides instruction on the incorporation of text files and spreadsheets into the Farm Management Information System (FMIS) software and on setting up the contents index for the data base.

The FMIS computerised information base allows users interactively to:

(a) Display fact sheets (text based) to screen, including graphs.

(b) Print text files (fact sheets) to printer or to diskette (for incorporation into users' own reports).

(c) Use compiled spreadsheet programs which will become part of the information base. (Examples of such spreadsheets are gross margin and whole farm budget templates.)

7 ORGANISATIONAL STRUCTURE OF RURAL STATISTICS SECTION AND FARM MANAGEMENT INFORMATION SYSTEM (FARM MANAGEMENT UNIT) WITHIN PPBD

Part of the consultant's terms of reference required that the consultant identify the strengths and weaknesses of the Rural Statistics Section of the Policy, Programming and Budgeting Division, and make recommendations on staffing and organisational structures.

In September 1991 a small working group was formed of staff from Strategy Planning Branch, Rural Statistics Unit and Farm Management Unit to determine:

(a) Role of Rural Statistics and Farm Management Units in relation to PPBD and DAL information requirements.

(b) Goals, Objectives and Outputs for the two units.

(c) Staffing requirements.

(d) Organisation structure.

As a result of the series of meetings, the consultant prepared a report on the group's findings and recommendations. The report: "Farm Management Information Unit and Rural Statistics Section: A Review of their Role, Staffing Requirements and Organisational Structure" was presented to the Director, PPBD, and forwarded to ADB (through ANZDEC Ltd Consultants.

8 SEMINARS

The consultant and National Counterpart presented a series of seminars on the work of the Farm Management Unit. These seminars formed part of the regular seminar series organised by PPBD for DAL professional staff and ensured other professionals within the department were conversant with the progress and work of the unit.

9 COUNTERPART TRAINING

Counterpart training was part of the consultants terms of reference and should ensure that the systems set in place during the technical assistance can continue to be operated once the consultant departs. In addition, the consultant should endeavour to get the project institutionalised during the assignment such that the Department or Division regards the service provided by a new unit (Farm Management Unit) to be a valued and necessary component of the Policy and Planning process.

In reality, counterpart staff may not be available, their background may be incompatible with the project requirements and staff ceilings may hinder the recruitment or secondment of National staff from other Divisions who have the skills to continue the work the consultant has begun.

Often there are problems in getting staff transferred from one Division to another since Directors of Divisions are reluctant to relinquish positions to another Division without a reciprocal transfer of staff or established positions.

Budgets may be inadequate within country to allow existing, let alone new units, to function adequately. In Papua New Guinea the Department of Agriculture and Livestock may suffer budget cuts in the third quarter of the financial year (October to December) resulting in virtually all operation costs (other than salaries) being curtailed with a consequential effect on planned field programmes.

Collection of Farm Management data requires field surveys, often money for field work is inadequate even if staff are available.

As a matter of policy, the consultants involved counterpart staff in all aspects of the project and National staff from PPBD, Research Division, and the Provincial DPI's assisted in all aspects of the smallholder field surveys.

The consultants were fortunate in having adequate outside funding to enable fieldwork to be completed for the assignment and were able to maintain control of the manner in which these funds were spent.

The institutionalisation required to ensure project continuity is often dependent on whether it is politically expedient to ensure the project's future success and the relative power exercised by individuals within a government bureaucracy to ensure project continuity.

As with most developing countries, there is always conflicting demands for money. Funds may not always be directed to those areas of greatest need or which show greatest benefit; projects which are "visible" or are prestigious may attract funding to the detriment of other projects.

10 RECOMMENDATIONS FOR FURTHER ACTION

The TA developed methodology and reporting systems for the continuous and regular monitoring (through the collection of farm management data) of the smallholder sector and the plantation tree crop sector. Initially the emphasis of physical and financial monitoring of the smallholder sector should be on those smallholders growing tree crops but with a whole-holding approach to monitoring so that data on cash tree crops is not collected to the exclusion of other smallholder activities.

The staffing and objectives of the unit were covered in other reports under the TA. It was recommended that the Farm Management Unit should be fully established with the following professional staff:

1. Chief Farm Management Unit (DAL, HQ)
2. Principal Farm Management Specialist (DAL, HQ)
3. Senior Farm Management Specialist (DAL, HQ)
4. Regional Farm Management Specialist (Momase Region)
5. Regional Farm Management Specialist (Highlands Region)
6. Regional Farm Management Specialist (Islands Region)
7. Regional Farm Management Specialist (Papua Region)

DAL currently appear unable to fund the unit. A proposal needs to be developed for a programme of funding for 3-5 years from an external source (AIDAB, ADB, FAO or World Bank).

Taking into account proposed staffing for the Farm Management Unit and the likely limitations in funding for field survey work (requiring only selected locations to be surveyed) a limited field survey programme is proposed.

The programme should focus initially on whole holding surveys of each tree crop sector using regular enumeration and collecting data on cash incomes from the sale of food crops.

Area and yield measurements for food crops would not be made for the samples selected for the tree crop commodities sector, however, these would be included for the food crop surveys whether in locations of primarily subsistence production or where food crops are increasingly sold as a cash crop to urban markets.

Funding may be shared with the recently formed Commodity Corporations for coffee, cocoa and coconut, and oil palm - there is some merit in a centralised unit coordinating surveys across regional boundaries and across sectors.

In 1994 the Asian Development Bank funded a review of all Research and Extension activities in Papua New Guinea, an enhanced Farm Management/Economics capability for DAL may result from funding yet to be made available from this project (ADB TA 1587 PNG).

To enable the Farm Management Unit to consolidate and to achieve its objectives, the Government of Papua New Guinea, in particular DAL, must recognise the importance of the unit and provide adequate staffing and funding to the unit.

The Farm Management Unit has a key role in providing information to National and Provincial Government for policy and planning purposes and for project preparation and budgeting.

Without adequate farm level data, strategy and resource planners do not have the information they require to provide timely, accurate and correct advice to Government.

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