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Agricultural Planning in Papua New Guinea under the Current Crisis Situation

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Background

Papua New Guinea (PNG) occupies the eastern part of the main island of New Guinea and about 600 islands to the east and north. PNG is located between the equator and latitude 12 degrees south. It shares borders with Australia to the south, Indonesia to the west, Solomon Islands to the east and the Philippines and Guam to the north and northeast, respectively. It has a total land area of 463,000 square kilometers and has mountainous terrain with peaks of up to 4,600 metres. About 80% of the land is occupied by tropical rainforest. It has a typical tropical climate.

PNG gained independence from Australia in 1975. It is governed by a parliamentary democratic system through a central government and 20 provincial governments.

The population of the country in 1995 was estimated to be 4.08 million and it is growing at an annual rate of 2.3%. Over 85% of the population live in rural areas and depend on agriculture for their livelihood. Life expectancy is estimated at 53 years and the literacy rate is 63%. There are more than 800 distinct languages. English is the official

language but 'Tok Pisin' (a local pidgin version of English) is by far the most widely spoken language.

The PNG economy

The economy is modestly open with the market system playing a major role in balancing the demand and supply of goods and services. There are limited restrictions to the movement of capital into and out of the country. The national currency, the kina, is convertible; however, it has been declining in value against major currencies in the two years since it was devalued by 20% and then floated in 1996. The current value of the kina has declined to US\$0.54 to K1.00 (as of 01/04/98). The reasons behind the fall of the kina are stated in the following section. Exports of raw materials and imports of manufactured goods are high in relation to the gross domestic product (GDP).

The per capita GDP in 1997 was K752, a fall of 7.3% from 1996 when the GDP was K812, making PNG a low-income country. In real terms, the GDP has been falling since 1989, the year in which the Bougainville rebellion started causing the closure of

IN THIS ISSUE

<i>Agricultural Planning in Papua New Guinea under the Current Crisis Situation</i> <i>James Jaoi Gitai</i>	1
<i>Message from the Director</i>	3
<i>Agricultural Planning in Thailand</i> <i>Nareenat Roonnaphai</i>	9
<i>CGPRT Centre News and Activities</i>	13
<i>Announcements</i>	15

* Department of Agriculture and Livestock, Konedobu, Papua New Guinea. This paper is taken from Agricultural Planning in Asia, Monograph No. 37, Bogor: CGPRT Centre.

the giant Panguna copper and gold mine. Since then, the opening of the OK-Tedi copper and gold mine, the giant Porgera and Lihir gold mines, the smaller Misima and Tolukuma gold mines and the petroleum and natural gas projects in the central highlands have reduced the level of the decline in the real GDP to some extent. The agricultural sector is the mainstay of over 85% of the population.

Recent economic conditions in PNG

Overview

A preliminary estimate of economic activity, based upon information available to the Bank of Papua New Guinea, indicates that total real GDP declined by 6.2% in 1997, following a 4.5% revised growth in 1996, with a sharp decline in mining and petroleum sector exports. The relatively subdued economic activity was due to a number of domestic and external factors: cyclone Justin in March 1997, the drought and frost in the second half of the year, the decline in international prices for gold and copper, and the fall in demand for logs resulting from the Asian financial crisis.

In the private sector, excluding mining and petroleum, GDP increased marginally by 0.3% in 1997, following a growth of 8.7% in 1996. Declines in the agriculture, forestry and fisheries sector, and in the construction and manufacturing sectors more than offset increases in the commerce and transportation sectors. Consistent with the low growth in the private sector, excluding mining and petroleum, employment levels between September 1996 and September 1997 remained stable and the nominal value of imports increased while the real value remained constant.

Significant contractions in the mining and petroleum sectors resulted from the temporary closure of the Ok-Tedi and Porgera mines due to low water levels caused by the prolonged drought in the second half of 1997 and also declining oil reserve profiles at Kutubu. The decline in the agriculture sector reflected disruptions caused by cyclone Justin in the production of cocoa and copra, a lower level of coffee harvesting due to the national elections, and the adverse impact of drought and frost on the production of cash crops and food crops in many areas of Papua New Guinea. While the drought provided ideal conditions for log harvesting, this coincided with a major downturn in the Asian market for logs, with a fall in demand attributed to

the financial crisis in the region, which led to a decline in log exports.

In the building and construction sector, the decline was attributed to the completion of several major projects including the Poreporena/Waigani Drive roads, Jackson's and Gurney airport terminals, Lihir gold mine construction, the Australia Chancery and the Creative Arts Faculty building at the University of Papua New Guinea. The decline in the manufacturing sector was due to negative spin-off effects from the agricultural, forestry and construction sectors.

The latest data from the Bank's employment survey indicate that formal employment in the private sector, excluding mining and petroleum and North Solomons province, declined by 4.3% in the September quarter of 1997, relative to the previous quarter, following a revised increase of 4.2% in the June quarter. The contraction in the agriculture/forestry/fisheries sector more than offset increases in all other sectors with the exception of the wholesale sector which showed no change. The decline was due to seasonality factors, the early end to the coffee season, the adverse impact of the drought on other cash crops and food production, and the low demand for logs. By region, employment declined in the Lae, Highlands, and Islands regions, while it increased in the other regions. However the aggregate index to the September quarter in 1997 was 0.4% lower compared to the corresponding quarter in 1996.

With exchange rate stability over the first three quarters of 1997, the year on year (average of 1997 on average of 1996) inflation was 3.9% in 1997, compared to 11.6% in 1996, with increases in all expenditure groups, except the transport and communication expenditure group, and in all regions. The annual (December quarter of 1997 on December quarter of 1996) inflation was 5.3%, the same as in 1996.

The depreciation of the kina, combined with improvements in international prices for some of Papua New Guinea's exports, resulted in the weighted average kina price of exports increasing by 9.8% in 1997 relative to 1996. The weighted average kina price of mineral exports increased by 5.8%, while in the agricultural/forestry/fisheries sector, the weighted average kina price increased by 17.1%. The average kina price of log exports declined by 3.4%.

Message from the Director

What potential does a given village have for doing agriculture? Do we have sufficient land and labour to produce enough rice to feed the population? Are farmer's skills, equipment and supplies sufficient to maintain the required level of crop production here? How about the irrigation system and available water? How about financial arrangements in the village? Where is the nearest market and how are the roads? Climate and environment? Living conditions? School? Medical facilities? And so on.

These would be some of my questions and concerns if I were a village chief. These would also be factors every farmer likes to know to judge his future prospects.

Do we have enough data and information to answer these questions? Is there any reliable and applicable method to totally evaluate the potential of a village?

If we have a common as well as locality-specific method to comprehensively analyze the real and dynamic conditions of a village, we can use it not only to advertise the village to visitors, but also to find weak points or constraints to be overcome in the course of further development.

It is essential to know the real and dynamic potential of a village to design further development of the village. Selecting valuable and dynamic parameters of core and basic factors which govern the potential of a village preferably in simple indices will help policy planners and administrative staff like a village chief forecast products and competitiveness of the village and formulate a future development plan.

I call this method the "Local Agriculture Potential Index System (LAPI-System)" or more commonly "Local Agriculture Diagnosis (LAD)". I think there must have already been similar and perhaps more sophisticated indexing methods in agricultural economics or rural development programming like a face view index model. Still I am waiting to see a "LAPI-System" or "LAD" which is simpler and more practical like a climograph and at the same time more applicable to diverse agriculture at different community levels in different countries in the Asia and Pacific region.

Who can help realize this idea?

HARUO INAGAKI

Domestic and external shocks had a negative impact on the balance of payments of Papua New Guinea in 1997. There was an overall deficit in the balance of payments of K154 million in 1997 compared to a surplus of K432 million in 1996. In 1997, the kina depreciated against the currencies of Papua New Guinea's major trading partners, resulting in an increase in the kina value of all balance of payments transactions.

The surplus in the trade account was K965 million in 1997 compared to a surplus of K1,338 million in 1996. The lower surplus was due to a decline in the value of merchandise exports, combined with an increase in import payments. The deficit in the invisibles account was K1,201 million in 1997, compared to K1,022 million in 1996. The higher deficit was due to increased business expenses, freight and insurance payments associated with higher imports, management fees

and lease, travel, interest and other service payments. The surplus in the transfers account was K88 million in 1997 compared to K95 million in 1996. As a result of the developments in the trade, invisible and transfers account, the current account recorded a deficit of K148 million in 1997 compared to a surplus of K411 million in 1996.

There was a surplus in the capital account of K2 million in 1997, compared to a surplus of K58 million in 1996. The lower surplus was due to a significantly higher net official capital outflow, reflecting a higher loan repayment by the government, combined with an increase in net foreign assets of commercial banks and a lower drawdown of funds from offshore account balances of mineral companies. These more than offset a significant net private capital inflow, due to loan drawdowns by the Lihir and Ok-Tedi mines.

The level of foreign exchange reserves at the end of December 1997 was K635 million, sufficient for 3.6 months of total import and 4.6 months of non-mineral imports.

In the first nine months to September 1997, the Bank of Papua New Guinea maintained an accommodative monetary policy stance, which saw a rapid increase in credit to the private sector. The minimum liquid asset ratio was reduced from 27.0% at the end of December 1996 to 20.0% at the end of March 1997, while the kina auction rate was reduced from 10.3% at the end of December 1996 to 9.0% at the end of September 1997. In October 1997, the Central Bank commenced a significant tightening of monetary policy in response to inflationary pressure. Inflationary pressure was attributed to depreciation of the exchange rate resulting from the adverse impact of domestic and external shocks on the volume and value of exports, and compounded by an expansionary fiscal stance of the government in the last quarter of 1997. The Central Bank tightened monetary policy by raising both the kina auction and treasury bill rates through the maintenance of a low commercial bank exchange settlement accounts balance. The average level of the broad money supply (M3') increased by 21.2% in 1997, relative to the previous year, compared to an increase of 20.0% in 1996.

Preliminary estimates of the fiscal operations of the national government for 1997 show an overall surplus of K15.4 million, compared to a surplus of K37.0 million in 1996.

Total revenue during 1997 was K2,024.0 million, which is 6.7% more than the receipts collected during 1996 and represents 107.6% of the budgeted revenue for the year. Total tax revenue amounted to K1,679.5 million, which is K153.2 million more than the receipts collected during 1996, and represents 105.0% of the budgeted amount. Personal, company and other direct taxes totaled K1,009.0 million, 10.7% more than the receipts collected in 1996, and represents 115.6% of the amount in the 1997 budget. The increase in collection of personal income tax was mainly attributed to an on-going audit program by the Internal Revenue Commission (IRC), which resulted in both a higher collection of personal tax and higher tax receipts from taxable benefits resulting from the termination of several large personal employment contracts. The increase in company tax was due to the higher kina value of Mineral Resources Stabilization Fund (MRSF) tax payments, mainly

due to the payment of back taxes by the Mineral Resources Development Corporation (MRDC) on behalf of Petroleum Resources Kutubu, combined with higher notional tax payments by Oragen and Ok-Tedi.

Depreciation of the kina

Over the year, the kina exchange rate depreciated against all the major currencies: the US dollar, Australian dollar, yen, pound sterling and the deutschmark by 23.1%, 6.2%, 14.0%, 21.6% and 11.5%, respectively. The adverse impact of the "El Nino" drought on export earnings, particularly mineral and log exports, contributed further to the downward pressure on the exchange rate. The appreciation of the US dollar, the Australian dollar and the yen against the kina has increased the domestic costs of imports in Papua New Guinea, the majority of which originate in Australia and Japan.

Export commodities review

The total value of merchandise exports was K3,072 million in 1997, a decline of 7.0%, compared to K3,334 million in 1996. There were declines in the value of crude oil, gold, copper, forestry and marine product exports, which more than offset increases in the value of agricultural exports. Mineral export receipts, excluding crude oil exports, were K986.7 million and accounted for 32.1% of merchandise exports in 1997, compared to K1,170.77 million or 35.1% in 1996. Crude oil export receipts totaled K852.2 million and accounted for 27.7% of total merchandise exports compared to K1,073.9 million or 32.2% in 1996. The value of agricultural fisheries and other non-mineral exports, excluding forestry products was K600.2 million and accounted for 26.0% of total merchandise exports in 1997, compared to K609.0 million or 18.3% in 1996. Forestry product exports were K432.9 million and accounted for 14.1% of total merchandise exports, compared to K480.3 million or 14.4% in 1996.

The weighted average kina price of Papua New Guinea's exports increased by 9.8% in 1997 relative to 1996. There was an increase of 5.8% in the weighted average kina price of mineral exports, with higher crude oil and copper prices more than offsetting a decline in the price of gold. In the agricultural, forestry and fisheries sectors, the

weighted average kina price increased by 17.1%. This was attributed to higher prices of all agricultural export commodities, which more than offset a decline in the price of logs. Higher export prices of the agricultural exports reflected increases in world market prices for some of the commodities, combined with the depreciation of the kina against the currencies of Papua New Guinea's major trading partners.

The volumes of all agricultural commodities exported declined in 1997, compared to 1996, with the exception of palm oil and rubber. The decline in coffee export volume was due to a lower level of harvesting during the 1997 national elections, combined with the adverse impact of the drought. Lower export volumes of cocoa, copra and copra oil were attributed to lower levels of harvesting during the 1997 national elections and the unfavourable weather conditions, including cyclone Justin and the drought.

Agriculture, logs and fisheries exports

The export volumes of all agricultural commodities, logs and marine products declined in 1997 compared to 1996, with the exception of palm oil and rubber. The export prices of all agricultural commodities increased in 1997 compared to 1996. Excluding logs, the net result of these movements was a 33.0% increase in the weighted average price of non-mineral exports. The average price of logs declined by 3.4% in 1997, relative to 1996.

The prices of coffee, cocoa, copra and palm oil were still above the government's minimum guaranteed prices. Therefore, no advances were paid under the agricultural export commodity price support schemes in 1997. Subsequently, the industries continued to repay the government in 1997, with the Coffee Industry Corporation (CIC) repaying K8.3 million and the Copra Marketing Board (CMB) repaying K0.8 million. In addition, there was a debt relief from the European Union Stabex fund to the government with K2.1 million paid for coffee and K1.5 million for copra.

The volume of coffee exported declined by 5.6% to 58,800 tons in 1997, compared to 62,300 tons in 1996. Coffee production in 1997 was estimated at 1,017,423 bags (60 kg each), 7.5% lower than the 1,100,000 bags in 1996. The decline was due to a lower level of harvesting during the 1997 national elections, combined with some adverse impacts from the drought. The average

export price of coffee increased by 80.4% to K5,510 per ton in 1997, compared to K3,055 per ton in 1996. The increase followed higher international prices as a result of fears of a frost in Brazil, the world's largest coffee producer, and drought in Indonesia and Vietnam, combined with the depreciation of the kina. The increase in export price more than offset the decline in export volume and resulted in a 70.3% increase in the value of coffee exports to K324.0 million in 1997, compared to K190.3 million in 1996.

The volume of cocoa exported declined by 10.5% to 36,700 tons in 1997, compared to 41,000 tons in 1996. The decline was due to lower production in the major producing regions as a result of the disruptions caused by cyclone Justin in March 1997, which had a carry-over effect to the other quarters in 1997, combined with the drought which had a negative impact on the fruit bearing process. The average export price of cocoa increased by 16.4% to K1,880 per ton in 1997, compared to K1,615 per ton in 1996. This was due to higher international prices caused by concerns of an expected shortfall in production from West Africa and South East Asia, combined with the depreciation of the kina. The increase in export price more than offset the decline in export volume, resulting in a 4.2% increase in export value to K69.0 million in 1997, compared to K66.2 million in 1996.

The volume of copra exported declined by 9.0% to 90,300 tons in 1997 compared to 99,200 tons in 1996. The decline was due to lower harvesting during the 1997 national elections combined with unfavourable weather conditions, including cyclone Justin and the prolonged drought. The average export price of copra increased by 5.8% to K523 per ton in 1997, compared to K494 per ton in 1996. This was mainly due to the depreciation of the kina as the international price actually declined as a result of increased production in the Philippines and Indonesia, two of the major copra producing countries. The decline in volume more than offset the increase in price and resulted in a 3.7% decline in export value to K47.2 million in 1997, compared to K49.0 million in 1996.

The volume of copra oil exported declined by 2.0% to 48,600 tons in 1997, compared to 49,600 tons in 1996. The decline was due to a lower volume of copra sold for domestic milling due to lower copra production. The average export price for copra oil increased by 1.4% to K1,051 per ton in 1997, compared to K1,036 per ton in 1996. The

increase was mainly due to the depreciation of the kina as the international price for copra oil declined, attributed to higher world supply. The decline in volume more than offset the increase in export price and resulted in 0.6% decline in export value to K51.1 million, compared to K51.4 million in 1996.

The volume of palm oil exported increased by 3.0% to 274,900 tons in 1997, compared to 267,000 tons in 1996. The increase was the result of both higher production and extraction rates from newly matured palm, which more than offset the decline in harvest from some plantations as a consequence of the prolonged dry weather. The average export price for palm oil increased by 10.2% to K753 per ton in 1997, compared to K683 per ton in 1996. This was mainly due to higher international prices as a result of fears of an anticipated production shortfall caused by the bush fires and the haze in Indonesia and parts of Malaysia, two of the major palm oil producers, as well as the depreciation of the kina. The combined increase in export price and volume resulted in an increase in the value of exports by 13.5% to K207.1 million in 1997, compared to K182.4 million in 1996.

The volume of tea exported declined by 30.1% to 6,500 tons in 1997, compared to 9,300 tons in 1996. This was attributed to the adverse impact of frost. The average export price of tea was K1,600 per ton in 1997, an increase of 17.1%, compared to K1,366 per ton in 1996. The decline in volume more than offset the increase in price and resulted in a decline in the export value of 18.1% to K10.4 million in 1997 compared to K12.7 million in 1996.

The volume of rubber exported increased by 57.1% to 4,400 tons in 1997, relative to 2,800 tons in 1996. The substantial rise was due to the harvesting of newly matured trees as well as favourable weather conducive for harvesting. The average export price of rubber increased by 0.9% to K1,477 per ton in 1997, compared to K1,464 per ton in 1996. The increase was mainly due to the depreciation of the kina as international prices declined, reflecting an increase in world supply. The increase in both the export price and volume resulted in a 58.5% increase in export value to K6.5 million in 1997 compared to K4.1 million in 1996.

The volume of logs exported declined by 8.9% to 2,375.9 thousand cubic metres in 1997, compared to 2,607.4 thousand cubic metres in 1996. This was due to a lower number of shipments as a result of lack of demand from Asia, combined with the exhaustion of some logging sites according

to licensing agreements. The average export price of logs declined by 3.4% to K172 per cubic metre in 1997, compared to K178 per cubic metre in 1996. The decline reflected a fall in demand by the Asian market, caused by the currency crisis. The combined decline in export price and volume resulted in a decline in export value of 11.9% to K409.3 million in 1997, compared to K464.6 million in 1996.

The value of marine products exported declined by 8.7% to K9.5 million in 1997, compared to K10.4 million in 1996. This was due to a decline in export volume, which more than offset an increase in export prices.

Agricultural planning in PNG

Political and bureaucratic institutional setting

The bureaucratic institutional setting cannot be explained in isolation from the political setting. In 1978, three years after political independence from Australia, the PNG Parliament passed an important piece of legislation called the Organic Law on Provincial Government. Thus was born the provincial government system with the objective of decentralizing powers and functions to the 19 provinces in the country. This meant that the provinces would have the financial, material and manpower resources to develop policies and strategies, and plan and implement development programmes and projects. However, when the actual parting of the bureaucracy occurred, most of the highly skilled and technically qualified manpower was retained at the national level. This meant that the provinces were left with lower level staff, who had very low levels of qualification and hence, provincial capability and to some extent, capacity, were much weakened. Thus, from the outset, the provincial departments were disadvantaged in terms of effective planning and implementation of policies, programmes and projects.

Agriculture sectoral planning (and overall national sectoral) setting

After the political and bureaucratic decentralization was completed, the national Department of Agriculture and Livestock (DAL) underwent a restructuring in line with its somewhat limited scope and mandate. Its primary mandate is in the following areas:

- develop national policies and strategies,

- quarantine and regulatory responsibilities,
- support the provinces in research and extension training,
- support the provinces in planning and implementation of joint programmes and projects through the national government's newly introduced (in 1985) five-year medium term rolling plans under the Public Investment Program (PIP) Act, and
- co-ordinate donor or external loan funded programmes and projects that are of national importance.

In terms of emphasis, most agriculture PIP programmes and projects are export crop oriented. Individual commodity PIP projects such as for coffee, coca, rubber, oil palm and spices are jointly planned and implemented.

However, these arrangements did not work well for most programmes and projects and for some provinces. Programmes and projects were, and still are, not very well implemented and the main reason was found to be poor extension service delivery and poor linkage between research and extension. These problems are of course compounded by the chronic problem of low levels of funding.

Upon realizing that extension support from the provinces to the farming household was poor to non-existent, the DAL facilitated through various acts of parliament the creation of various industry corporations. This strategy commenced in 1991 with the creation of the Livestock Development Corporation (LDC) and this was followed up with various crop industry corporations such as the Coffee Industry Corporation (CIC), the Oil Palm Industry Corporation (OPIC), and the Rubber Industry Corporation. This specialist approach was aimed at these individual corporations to develop their own research and extension programs and their delivery mechanisms and to be largely funded through levies from the industry and from other service fees. A more recent addition was the creation of the National Agricultural Research Institute (NARI) and National Agricultural Quarantine Agency (NAQIA), both in 1996, to oversee the overall research planning, implementation and extension linkage of the entire agriculture industry. There is a special emphasis on food security issues on the part of NAQIA to facilitate quarantine and other regulatory activities in the agriculture sector.

All these corporations plan and implement their own programs and projects. Although it is too early to assess the performance of these corporations, general observations indicate that these corporations have a high cost structure and are limited in their scope and geographic area of coverage and, thus, defeat the very purpose of their creation.

The much-contracted national DAL then has all its mandated roles and responsibilities as above except for those on research, extension and quarantine services. Some divisions after the forthcoming reorganization will cease to exist as their functions are being taken over by the corporations. However, the DAL will play a prominent role in terms of policy, overall regulation and control of these corporations and in assisting the provinces in planning and implementing their agricultural development programmes and projects.

Agricultural planning under the current crisis situation

Crisis situation affecting PNG and PNG agriculture

The above discussion gives a good background on the existing economic, institutional, organizational, planning and implementation situation affecting agriculture in PNG. The main crises that have occurred over the last decade (since 1989) can be listed for clarity as follows:

- the Bougainville rebellion in 1989 leading to closure of the Panguna Copper and Gold Mine, thereby cutting over 30% of PNG's foreign earnings and tying up a lot public funds in finding solutions to the conflict;
- the consequent Structural Adjustment Program (SAP) implemented under the World Bank's insistence and its attendant conditions notable of which is to reduce domestic spending (investment) particularly in agriculture and allied activities;
- the devaluation of the kina by up to 20% in 1992 and 1994;
- the floating of the national currency in 1995/96 thereby making it very prone to currency exchange rate fluctuations against currencies of major trading partners;
- the extended drought due to the El Nino which affected agricultural production both for export and food for domestic consumption;

- the El Nino effect on the mining industry and its requirement of large volumes of water for operations and the consequent temporary closure of some major mines due to water shortage;
- the damage to crops and livestock following the destructive cyclone Justin that affected most parts of PNG in 1995 and consequent reduction in export and food crop production;
- following the cyclone, the destructive frost that hit the high altitude areas, affecting coffee and other cash and food crop production;
- following the devaluation and later the floating of the kina, the depreciated national currency made the importation of inputs, notably mining and agriculture tools and equipment, too expensive and thereby increased the costs of production;
- the mid-1997 national parliament and local level government (provincial level) election and consequent reduction in production of export commodities notable of which is coffee; and,
- the Asian financial crisis affecting some sectors of the economy, particularly forestry and log export and to some extent, copper exports; the Asian countries affected by the crisis were net importers of PNG logs and timber products and copper concentrate.

The above listed problems had a direct bearing on agriculture production and exports. They have consequently affected agricultural planning at all levels, the national DAL level, the industry corporations, and the private sector organizations particularly the large plantation sector with its requirement for high levels of inputs, most of which are imported. Finally, the provinces and the DAL simply have not had sufficient funds since 1989 to implement any appreciable level of agricultural investment in PNG.

Management of the agricultural sector during this period

It must be noted that this crisis is continuing. However, the important question is, were any counter measures taken by various players, notable of which is the DAL, in support of the agriculture sector since 1989? Apparently, there were none. There was no major policy change in view of the changing circumstances affecting the sector. There were no studies nor forecasting of future trends and counter measures that were to be taken.

It was fortunate that due to the diverse nature of PNG's exports, the devalued kina and the appreciated value of the currencies of some of our major Western trading partners, plus the sale of some state assets, the damage to PNG's national economy and the agriculture sector in particular has not been greater. The agriculture sector is particularly sensitive, as it is the mainstay of over 85% of the population.

No major investment planning by any player in the agriculture sector occurred over this period, particularly after the devaluation and subsequent floating of the kina. Due to the economic downturn and the continued loss in value of the kina against major currencies, most expatriate contract workers left, thereby robbing PNG of the much needed technical expertise just when it was needed most. Hence, the problems of management of the crisis in the agriculture sector, as in other sectors of the economy, were greatly accentuated.

Prospects in the planning and management of agriculture under the current situation in PNG

The major task to be performed by all players in the planning and management of agriculture in PNG today is to assess the impact on the sector of the current economic crisis, and then based on these findings, decide whether any reasonable agricultural planning can be done for both macro and micro levels of management of the agriculture sector.

This brings to the fore the need for a serious look at the overall and specific policies and strategies including:

- organizational structure,
- human resources development including appropriate levels and quality of staffing, and
- the need to have an office of agricultural information which should be responsible for data gathering, analysis, both short and long-range forecasting and information dissemination.

Only when forewarned can we plan and implement a set of forward looking policies and strategies. Then, under such a situation, agricultural investment, planning and implementation can be effective. It will then reach its intended target beneficiaries and have the desired impact.

Agricultural Planning in Thailand

Nareerat Roonnaphai¹

Economic overview

Starting in the middle of 1997, the economy of Thailand entered a very serious recession. During the steep economic downturn, the monetary and fiscal crisis came to the forefront of Thai policy concerns. The National Social and Economic Development Plan VIII, took a sharp turn from the targeted growth of 8% per year to an expected growth of 0.63% in 1997.

The agricultural economy was effected along with other sectors of the economy, although not all the effects were negative. In the period of Plan VII (1992-96), a steadily expanding trend of growth was noted for the agricultural sector. This combined with the weakened baht currency drove up farm export value in the latter half of 1997. In the meantime, the farm production damage experienced in some Asian agricultural producing countries due to common natural disasters and the El Nino phenomena collectively favoured a greater demand for Thai farm products. Hence the Thai farm sector in 1997 appeared to be less severely affected in relation to other sectors.

The agricultural sector

In spite of the Thai economy advancing to a newly industrialized status, the farm sector has maintained its essential role in the economy as seen by the following:

- Approximately 60% of the national population still remains in the agricultural rural areas.
- More than 42% of the national land area is utilized in agriculture.
- Farm exports remain a major foreign exchange earner.
- Agricultural activity provides the main raw material supplies for local industries.
- The agricultural sector feeds the whole population of the kingdom as well as being a major food exporter.

- The agricultural sector supplies most of the workforce in the industrial sector.

The farm sector accounted for 11% of the gross domestic product in 1997, and the rest (89%) was shared by all of the non-farm sectors. The farm sector's contribution was divided into 6 sub-sectors as follows.

- Crops: The crop sub-sector provided a majority (58.64%) of the farm economy. The major crops include rice, rubber, sugarcane, maize and cassava. These five crops in 1997 took a total share of 66% of the crop sub-sector.
- Livestock: Its share of the farm sector was 10.09%. In the livestock sub-sector, 21% of output was from swine production, 16% from cattle, 23% from broilers, 12% from buffaloes and 28% from others.
- Fisheries: Fisheries took a 14.8% share of the farm sector's GDP. Within the fishery sub-sector, 89% and 11% of production was provided from marine and in-land fisheries, respectively.
- Forestry: Forestry accounted for 1.15% of the sector's GDP.
- Agricultural services: The services related to agriculture provided 2.65% of the farm sector's GDP.
- Simple agro-processing: This sub-sector in 1997 provided 11.66% of the farm sector's GDP.

Agricultural production situation in 1997

Agricultural production in 1997 expanded only 1.76%. This was much less than the previous year's expansion of 3.8%. A lengthy dry spell drove down the production of crops together with the acreage reduction of certain crops, e.g. cotton and kenaf, which had poor price incentives. Sugarcane suffered the most with 16% reduced production. Maize production suffered an 8.4% reduction. Fruit production suffered also. The production of lychee was down by 33% and longan by 7%. Rice was the exception with a rapid production expansion. Although the major rice crop in 1997 was nearly the same as the previous year, the area planted to the second crop increased. This was motivated by a better price and good rainfall which was stored in the big dams.

The production of livestock grew by 2.16% in 1997. This is a little less than in 1996. Nevertheless, there were some conditions conducive to continued

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growth. For example, there is a farm production-restructuring programme with a dairy farming promotion component. Its purpose is to serve the great demand for dairy products. Broilers gained greater export growth in 1997 due to the cheaper baht. Favourable external factors were the pig disease epidemic in the Netherlands and mad cow disease in the EU, which led people to consume more broilers. Local consumption of chicken meat and eggs also continues to grow.

Fishery production remained stagnant in 1997. It fell by 0.59% in spite of a continued expansion of the inland fishery. The marine fishery fell by a much larger amount. There was a rush to increase prawn culture in the latter half of 1997 in response to greater demand by the EU and Japan.

Overall, the growth of the agricultural economy depends largely on the crop sub-sector, which normally takes a 60% share of the farm sector.

Changes in the exchange rate and increasing inflation

The baht devaluation

The economic crisis faced by Thailand in 1997 forced it to adopt a managed baht float policy since July of the year. Before this, the exchange rate was 24-25 baht per dollar, but since the flotation the baht has weakened continually. The currency fell from 29.84 baht per dollar in July 1997 to 53.34 baht per dollar in January 1998.

In the period of January to June 1997 before the float, the baht exchange rate had strengthened by 0.03%. Immediately after the float was implemented, the baht value fell by 7.8%. In the longer period of July 1997 - March 1998, the devaluation reached 5.64%.

Under the IMF bailout program Thailand strictly adhered to the IMF rules and the economic situation was recently improving. In March 1998, the exchange had strengthened to 40 baht per US dollar.

Increasing inflation

The domestic general consumer price index for January to June 1997 rose 0.4% per month. In the latter half of the year, the monthly rate was up by 0.9% and inflationary pressure was noted in 1997, with prices rising 5.5% over 1996. The general consumer price index for March 1998 was 1.1%

over February 1998 and 9.5% for the March 1997 to March 1998 yearly rate.

One cause of inflation from March 1997 over March 1998 was the rise of 11.6% in the price index of the food and beverage group. Rice and cereal products in particular rose as much as 46.7%. This was due largely to a rise in price of milled rice of 40-50%.

Besides cereal products, the price index of fruit and vegetables rose by 5.4%, while that of other food bought in the market such as vegetable oil, sugar, confectionery, etc., climbed up 9.6%. However, the price index of meat, eggs, poultry and fish rose by 1.6% due to a higher cost of production, thus reducing supplies. As a result, the price index of the group continued to rise.

The price of eggs and milk products rose by 9.7%. This was caused by the much higher feed cost. The higher feed costs forced some producers to go out of business, and this coupled with the bright export prospects reduced local supplies.

The trade situation in 1997

Greater export growth in terms of the baht

The latter half of 1997 has seen export growth as high 52.1% in some sectors. This is the result of the floating exchange rate, which came into force in July of the year and the subsequent depreciation of the baht. With the exchange rate of the baht declining from 25.72 baht per dollar in June to 42.42 baht per dollar in December, the export value in terms of baht has grown spectacularly. For the whole year, it became 1,806,932 million baht, a 28.1% rise over last year.

The 1997 export value in terms of the US dollar was 58,438 million dollars, which is an increase of 4.5% over 1996.

Factors contributing to the high export growth in 1997 are as follows:

- The continued depreciation of the baht keeps Thai goods cheaper in the eyes of foreign markets. These goods include farm products, agro-processed products and manufactured goods with high local content.
- The serious determination to solve the crisis by both the government and the private firms.
- The adjustment of the private sector to redirect the trade competition abroad.

Major farm and agro-processed exports

Farm exports were worth 248,016 million baht in 1997. This is an 11% rise in value over 1996. The increase was mostly due to exchange rate fluctuations as the actual volume of export grew much less. The items with increased exports were rice, chilled prawns, cassava products (in particular cassava flour), chilled chicken meat, processed broiler meat, chilled and frozen fish, chilled and frozen squid and chilled and frozen fruits. The items with lower exports were rubber, beans and green coffee.

The agro-processing exports were worth 156,474 million baht, a rise in value of 18.8%, whereas the increase in volume of exports was very little. The export increases were shared by seafood, rubber products, rice and wheat products, feeds, beverages and seasonings. However, export decreases involved sugarcane and canned pineapples owing to decreased local production.

The slowdown of imports

In 1996 and the first half of 1997 imports declined. This was due to a downturn in the economy causing less investment and local consumption. However, with the adoption of a floating exchange policy in July 1997, the value of imports started to rise. For the whole year, the import value was 1,924,263 million baht, a 5% increase over the previous year. In US dollar terms, it was 63,285 million dollars.

Reduction of the balance of trade

In 1997 the trade deficit continued to decline, and since September it has been positive. In 1997, the annual net trade balance was only a 117,331 million baht deficit, a reduction of 72.2% over last year. Thailand's trade deficit decreased with Japan, South Korea, Australia and Eastern Europe. However, with the Middle East and China the unfavorable balance grew. Thailand has a favorable trade balance with ASEAN, the US, Hong Kong and Taiwan. Surprisingly, in 1997, Thailand had a positive balance of trade with Europe of 21,959 million baht, compared to a negative balance of 51,233 million baht the year before.

Farm prices received in 1997

Prices for major farm crops were favorably higher in the year mainly due to the baht float, which

raised the baht income in general and especially in the case of forward trade agreements before the flotation. The baht float also accelerated purchases of farm commodities for export, which, coupled with greater overseas demand, pushed up domestic prices. In the meantime, imports became more expensive in baht terms. Fetching better prices were rice, prawns, broilers, sugarcane, soybeans and maize. The production of maize and soybeans was not adequate to supply local demand, which may have also caused some price rise.

To sum up, those major farm crops gaining better prices over last year were paddy (5.5%), maize (3.2%), soybean (2.9%), sugarcane (11.4%), shrimps (23.0%), and broilers (3.2).

Impact of the baht float on the farm sector

The major factors of farm production cost are labor and inputs. Many of the inputs are tradables including fertilizers, pesticides, fuel, machinery, breeders and feedstuffs, especially soybean meal, maize and fishmeal. The weakening baht drastically raised farm costs and the larger holders employing modern technologies were more affected than the smallholders who use traditional technologies.

The rising farm costs were not always offset with increased prices. Prices for the products are determined by market mechanisms. The increased cost of fertilizer pushed down its use. Remaining low product prices might eventually create a production decline. A price rise should reduce local demand, but as most farm products are food, it should not reduce demand by very much.

The Office of Agricultural Economics (OAE) conducted an assessment of the effects on farm costs of the baht float by commodity. This was conducted before the baht was actually floated with an assumed exchange rate at 30 baht/dollar, a 16% reduction.

Rice

The rice farming activities involving imported tradables are land preparation, fertilizer and pesticide use and harvesting (Table 1).

Usually the price received for rice is determined by market forces. As the rice prices are already at a very high level, the farmers are not expected to get even more. For the retail price, traders may add to it according to the changing

milling and transport costs in relation to the fuel prices.

Table 1 Rice production cost (baht) before and after the float.

Commodity	Before Float	After Float	Change (%)
Major rice			
production cost/rai	1,383	1,520	9.9
production cost/ton	4,445	4,886	9.9
Second rice			
production cost/rai	2,081	2,335	12.2
production cost/ton	2,875	3,225	12.2

The depreciation is expected to raise the fertilizer prices by 16.10%. So, rice production may be reduced by 3.86% or 0.8 million tons paddy from the usual 21 million ton production total.

In sum, the baht float would damage the rice growers very much via higher production costs, while the price received is normally determined by the market. Eventually, the farmer would earn less. As the fertilizer prices rise, the growers will be forced to use less. As a result, rice production will decrease and therefore so will exportable supply.

Maize

Farm activities that use imported tradables are land preparing, the use of fertilizers and pesticides and harvesting, with cost descriptions as shown in Table 2.

Table 2 Maize production cost (baht) before and after the float.

Cost	Before Float	After Float	Change (%)
Hybrid maize			
production cost/rai	1,369	1,478	7.9
production cost/kg	2.59	2.79	7.9

Most locally-produced maize is currently meant for local use; hence its price should be partly determined locally as well. The higher maize production cost should in part push up the price received. But it cannot be determined right now that the rise in price received will be equal to the production cost increase. The increasing fertilizer price due to the baht float would reduce the usual maize production of 4.5 million tons by 0.225 million tons.

For imported maize the reduced exchange rate would raise the import maize price by 10%. The breakdown price per kilogram is 5.30-5.50 baht/kg,

which is certainly above the current price for local maize. Consequently the demand for local supplies would rise.

In sum, the impact of the baht float would raise the maize import price by 10% and increase production costs. As the local maize production is normally channeled for local use, the growers can shift the cost to their purchasers. The floatation's impact upon maize growers is possibly less than on other farm producers.

Soybeans

Changes in the input tradables affected the soybean production cost as shown in Table 3.

Table 3 Soybean production cost (baht) before and after the float.

Cost	Before Float	After Float	Change (%)
Production cost/rai	1,526	1,594	4.5
Production cost/kg	6.9	7.2	4.5

The local supply inadequacy prompts large imports annually in the form of soybeans and soymeal. The floatation causes changes in the import prices as shown in Table 4.

Table 4 Import soybean prices (baht) before and after the float.

Price	Soybeans	Soymeal
Import price in June (B/ton)		
Before float	9,561	9,220
After float	11,018	10,622
Change (%)	15.2	15.2
Local wholesale price (B/ton)	9,170	9,890
CIF price above the local price (%)	20.2	7.4

Devaluing was therefore raising the CIF price of soybeans 20% over the price of locally-produced soybeans, while imported soymeal prices were only 7.4% above the local soymeal price. Thus, the floatation caused a small rise of 4.5% in the soybean production cost, whereas soybean imports were 20% more expensive. The crushers are therefore trying to buy more local soybeans. The grower's price could rise by more than the increase in production cost. At the same time the feed mills would petition for a reduced import tariff for soymeal, currently charged at 5% down to 0, in their bid to be at par with the baht float. The local price for soymeal would depend on these factors. And eventually it is the crushers who would suffer more than the growers and the feed millers.

Broilers

The imported tradables in the broiler industry are breeders, vaccines and veterinary products, some feedstuffs and additives, especially soymeal, maize and fishmeal. The baht float causes the production cost to change (Table 5).

Table 5 Broiler prices (baht) before and after the float.

Cost	Before Float	After Float	Change (%)
Production cost/head	43.5	48.8	12.2
Production cost/kg	23.2	26.1	12.1

Broiler suppliers are usually very quick to respond to changing prices. With regard to the demand, a rising broiler price will depress consumer demand as the rural people rely more on backyard poultry raising.

Export normally takes a 40-50% share of the production and the volume often influences the growers' selling prices. The devaluation benefits the exporters because of rising prices in terms of the baht and they are able to cut down the FOB broiler prices, thus becoming more competitive.

To conclude, the broiler farmers would receive negative effects in the short term from rising costs. In the long term, however, export is expected to expand and the farmers would benefit from their production expansion and the possible upward adjustment of prices.

Recommendations

The baht devaluation in fact helps expand farm exports, and the nation will earn more to reduce the unfavorable balance of trade. At the same time, farm costs are higher for imported inputs and inflation will gradually intensify. Where price increases are higher than production cost increases, the farms will benefit. On the other hand for any products having a modest price rise below their changing cost, the farmers earn less.

In cases of poorer earnings, the following guidelines are proposed:

- Enhance farm production efficiency, especially for farms serving the manufacturing sector.
- Production should focus on export-oriented and import-substitution products, e.g. sugarcane, maize, soybeans, fast growing trees and oil palm.
- Crop zoning is urged together with quality and product standardization.
- For smallholders, self-sufficiency and risk aversion should be the aim.
- More community industries, for instance involved in food preservation and simple processing, should be promoted.
- New farm product exports, other than broilers e.g. freshwater fish, fruits and poultry, with market potential should be promoted.

CGPRT Centre News and Activities

HRD/IS

The proceedings of the workshop on "Agricultural Planning in Asia" held 13 to 24 April 1998 at the CGPRT Centre have been published. The volume contains country reports of fifteen participants from eleven countries in Asia and the Pacific, focusing on the current situation of agriculture, planning machinery, major issues and constraints to policy implementation in their respective countries. Selected papers contributed by the guest speakers are also included in the compilation. The workshop was the final activity of two HRD projects funded by the Government of the Netherlands.

Currently, the Centre is planning to hold a two-week training course at an advanced level on

"Database Management and Eco-regional Analytical Techniques for Agricultural Planning" 12-23 July 1999 at the Centre. This will be the second activity arranged under the project "Dissemination of Tools for Eco-regional Analysis and Planning for the Development of CGPRT Crops in Asian Monsoon Agricultural (TERAP-1)" funded by the Government of the Netherlands for 1998/1999. Indonesia, the Philippines and Vietnam are invited this year to the course with three participants from each country. This training course aims to offer the participants, through lectures and exercises, current knowledge, information and methods on comprehensive database management techniques in agricultural planning in connection with eco-regional analysis tools (ECOPOL).

TRADELIB

The draft report meeting for the second phase of the project was held 13-15 April 1999 at the Centre. National experts from ten participating countries, the regional advisor and Centre staff discussed the draft country reports in detail.

The first draft review meeting to expedite revision of draft country reports of the second phase was held from 22 June to 1 July.

A project workshop is scheduled for 5-8 October 1999 in Bogor.

ECOPOL

The "Economic and Policy Analysis for the Eco-regional Approach in Southeast Asia (ECOPOL)" project is designed to bring methodological and applied answers to the issue of sustainable income increase in rural areas.

In Indonesia, current activities focus on the identification, collection and analysis of socio-economic, agro-ecological and biophysical data for the southern part of West Java in order to set up village and subdistrict typologies in relation with rural poverty distribution. These typologies coupled with geographic location will be used to define where to focus field research. This step is expected to be achieved by late June.

In Vietnam, the first phase activities are almost completed. The ECOPOL-Vietnam team surveyed 120 farmers in two provinces of the Red River Delta, with special attention to their economic situation and their relations with the markets of rice and pigs, the two main products of the region. Similarly, 120 actors of the rice and pig commodity chains were interviewed. These surveys were done at all levels of the commodity chain, from the local collectors to the retailers (wholesalers and processors included). The aim was to understand the marketing situation of the two products and to see if these actors face problems that could have an impact on the farmers' situation.

Data analysis has started and already leads to some preliminary conclusions.

Concerning rice, farmers do not seem to face a lot of difficulty in selling their production. The problems seem to lie more in the quality of inputs (seeds, pesticides) which can constrain further increase of productivity or quality. On the other

hand, the presence of numerous buyers and sellers in the rice commodity chain induces very low net margins per kg. The marketing circuits, thus, look very effective for consumers and for farmers since none has to suffer from high trade margins. However, these low margins can lead to difficulties for traders, especially when prices aren't stable or when selling with credit (postponed payment), which is often the case.

Concerning pig production, farmers seem to suffer from strong instability of pig raising profitability, mainly due to the instability of pig prices. During the survey period, the price of one kg of live pig was around 9000 VND while the average price of feeding was close to 2500 VND/kg. Therefore, since on average 4 kg of feed are needed to produce 1 kg of live pig, the benefit of this activity is close to zero. Few pig farmers succeed in making profits. Successful farmers manage to have lower feeding costs and to have a more stable price by producing all year round, thus avoiding selling only at low prices. But in general, most farmers only grow pig to get manure, as a means of saving or to take advantage of food surplus and by-products. What isn't clear though, is why many farmers use their own rice for pig feed when the price of rice is higher than that of other feeds (3000 VND/kg for rice compared to 2000-2500 VND/kg for maize).

For the actors of the pig commodity chain, low margins per kg are also very common. But these actors face much greater difficulty in finding consumers than in the rice commodity chain. Due to the low level of income in Vietnam and, probably, to a rather high price level for meat, selling is often difficult and has to be done on credit.

Some questions remain after this preliminary analysis of the results. Additional surveys and data collection should allow the team to focus on these points and to prepare for the presentation of results to all involved actors. This presentation is scheduled for next September.

AGRIND

"Avenues for Agro-industrial Development in Southeast Asia (AGRIND)" is a two-year research project directly funded by the Agrotechnological Research Institute (ATO-DLO) of the Netherlands. The project aims to identify economically interesting crops which can be utilized in combination with current post harvest technologies to exploit new

opportunities in Asian agribusiness. Indonesia, Malaysia and Philippines are involved in the project. A supporting fund is provided by ATO-DLO to the Centre under a project "AGRIND-S".

Mr. Bart van Assen from ATO-DLO is assigned as the project leader. A workshop and a report are planned this year.

SouthPIC

A new project "Food Security Strategies for Selected South Pacific Island Countries (SouthPIC)" is now in the preparation stage for implementation. The participating institutes as well as the national experts of the four participating countries, Fiji, Papua New Guinea, Tonga and Vanuatu have been confirmed. It has also been confirmed that Dr Euan Fleming of University of New England, Australia, will be the regional advisor of the project.

Announcements

The Third International Soybean Processing and Utilization Conferce (ISPUC-III)

**Tsukuba, Ibaraki, Japan
Ocober 15-20, 2000**

The objective of ISPUC is to stimulate an exchange of scientific and technological information on all aspects of research and development of soybean processing and utilization. The ISPUC-III follows the previous two conferences: the first one was held in the Pople's Republic of China in 1990 and the second in Thailand in 1996.

The ISPUC-III to be held in Japan envisages, among other things, to share Japanese experiences and information with the worldwide communities associated with soybean processing and utilization, since Japan has made significant developments in this specific field.

For further information, contact:
Secretariat for ISPUC-III
c/o Congress Corporation
7th Akiyama Bldg., 5-3 Kojimachi, Chiyoda-ku
Tokyo 102-0083, Japan
Telephone: 03-3263-5896
Fax: 03-3263-4032
E-mail: ispuc3@congre.co.jp
Internet: <http://www.nfri.affrc.go.jp/gyoji/soybean.html>

29th International Course on Vegetable Production

**International Agricultural Centre
Wageningen/the Netherlands, August 8 –
November 13, 1999**

The course intends to extend and deepen participants' knowledge of vegetable growing and to acquaint them with various production and post harvest aspects.

The course aims at providing participants with information, tools and insights on how to make farmers achieve their vegetable production potential and to acquaint them with post harvest aspects such as handling and marketing.

For further information, contact:
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P.O. Box 88
6700 AB Wageningen, the Netherlands
Lawickse Allee 11
Telephone: +31-317-490111
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E-mail: iac@iac.agro.nl
Internet: <http://www.iac.agro.nl>

CGPRT Centre

The Regional Co-ordination Centre to Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

Programmes

1. Research, which entails the preparation and implementation of studies covering production, utilization and trade of CGPRT crops in the countries of Asia and the South Pacific.
2. Training of national research and extension workers,
3. Information and documentation which encompasses the collection, processing and dissemination of relevant information for use by researchers, policy makers, and extension workers.

Palawija News

Contributors are invited to submit concise summaries of significant social research related to CGPRT crops for publication. Figures (graphs or tables) may accompany the article. All articles are subject to editing to meet space limitations.

Please send all queries relating to articles in *Palawija News* to Publications Section, CGPRT Centre, Jalan Merdeka 145, Bogor 16111, Indonesia.

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