

The Development of Indigenous Agriculture, Land Settlement, and Rural Credit Facilities in Papua and New Guinea

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Development Prior to 1939-45 War.

THE early development of Papua (known as British New Guinea until 1905) was associated mainly with exploration and pacification of the indigenous inhabitants. As the number of people contacted by Europeans increased, and the influence of the colonial government established in 1888 expanded, tribal warfare ceased and steel implements replaced the more primitive traditional tools. The government considered that development of commercial agriculture in the colony was important and encouraged villagers to utilize the surplus labour that these changes created by engaging in cash cropping.¹ However, it lacked the capital and services necessary to carry out a comprehensive development programme. Subsistence farmers on the other hand, were indifferent to cash cropping in villages and invariably diverted their surplus labour into other traditional pursuits such as leisure, hunting and ceremonial activity. The government adopted coercive methods of development, and a series of regulations designed to compel villagers to participate in commercial agriculture was introduced. The first was Regulation No. 2 of 1894 which enabled district magistrates to compel villagers to plant coconuts. The magistrates were empowered to fix the minimum number of coconuts that would be planted each year in a village.

(1) In a post-war study of the Siane people in the New Guinea highlands it was estimated that the introduction of steel axes led to a 30 per cent. reduction in the amount of male labour required to maintain the existing level of subsistence production. Salisbury, R. F., *From Stone to Steel*. Melbourne University Press, Melbourne, 1962. A more detailed theoretical treatment of the concept of surplus labour within the subsistence sector is given by E. K. Fisk in "Planning in a Primitive Economy: Special Problems of Papua-New Guinea", *The Economic Record*, Vol. 38, No. 84, December, 1962, pp. 462-478.

Because of the poor results obtained with these regulations emphasis shifted to developing the colony with European plantation agriculture. Although several Europeans had begun to establish coconut plantations by 1891 the development of plantation agriculture was severely restricted by the lack of internal communications, settlers and capital. In 1899 the government initiated an advertising programme in England and Australia to attract settlers and capital. There was a poor response to early advertisements and by 1907 only 1,467 acres were under development, although some 29,000 acres had been alienated for the purpose. A period of rapid expansion followed and by 1914 there were 42,921 acres under development. During the war the settlement programme stagnated and increased emphasis was placed on the development of indigenous agriculture. Much greater use was made of the planting regulations to force villagers to engage in cash cropping and additional ordinances designed to increase indigenous participation in cash cropping were introduced. They were to supplement the existing regulations. A Native Plantations Ordinance was introduced in 1918 and was followed by a Native Taxation Ordinance in 1919. Every able bodied male villager between the ages of 16 and 36 years was required to complete 60 days labour each year in developing an area with coconuts, coffee, rubber or rice. The only people exempted were government and mission employees and those under contract of service, or who had been under contract within the preceding three months. Crown land could be declared a native reserve for the purpose of establishing a plantation, or village land could be used. In practice most plantations were established on village land that was resumed for the purpose. Two months work entitled the villager to a

remission of the whole of his tax. The government supplied seeds and tools and supervised the planting and maintenance. Profits from the sale of produce were divided equally between the villagers and the government, with each villager being paid according to the number of days worked. The government's share could only be spent on projects concerning native welfare. Penalties were provided for those who did not comply with the regulations, which remained in use until the 1939-45 War.

Before the German government annexed New Guinea in 1884 several Europeans had established coconut plantations in the Bismarck Archipelago. After annexation and formation of the German New Guinea Company there was a further expansion in plantation agriculture. Villagers were compelled to grow food crops and coconuts for sale under the Planting Ordinance of 1887, and until the 1914-18 War a large proportion of the copra exported from the German colony was produced by village farmers harvesting nuts in excess of subsistence needs. By 1909 some 45,000 acres of land had been developed under the plantation system. After 1910 the area under plantation agriculture expanded rapidly. This trend continued during the 1914-18 war when the colony was occupied by the Australian military forces, and by 1919 there were 145,000 acres under development on plantations. When the Australian government began administering New Guinea in 1921 plantations were sold to Australian ex-servicemen. Plantation agriculture continued to expand until 1939 but at a much slower rate. Indigenous commercial agriculture was developed in many parts of New Guinea by the continued use of the planting regulations used in Papua.

Although substantial areas of coconuts, and smaller areas of coffee, rubber and rice were established prior to the 1939-45 War the attempt to develop indigenous commercial agriculture was generally considered to be unsuccessful. There are a number of reasons why cash cropping was not a success. The planting regulations could only be used effectively in areas that were close to established government stations. Villagers preferred traditional activities to cash cropping and were opposed to the government's use of

compulsion to develop commercial agriculture. Other important factors were the lack of qualified agricultural officers, the inadequate processing and marketing facilities that were provided by the government, the practice of distributing profits from native plantations among villagers only once a year, and the meagre returns received by villagers because of low prices obtained for the produce on overseas markets.²

In 1938-39 the value of the principal agricultural exports from Papua was £221,000 and from New Guinea £799,000.³ Paucity of statistical data precludes any attempt to accurately determine what proportion was produced by village farmers, but it was probably no more than a quarter of total exports by value.

Post-War Development of Indigenous Agriculture.

Following the 1939-45 War the element of official compulsion was removed from indigenous agriculture and a more liberal policy of raising levels of living within the rural population was evolved. The aim of the policy was to raise output of village farmers by improving land use and labour efficiency. Emphasis was placed on expanding commercial agriculture within the framework of traditional tenure systems. The development programme that was drawn up involved an expansion of the area cultivated with export crops such as coconuts, cocoa, coffee and rubber; cultivation of import replacing crops such as rice; and development of local food markets with fruit and vegetables.

After the war, farmers were encouraged to jointly develop a single area of cash crop in their village in preference to numerous individual family plantings. Although the composition of a group developing an area of cash crop was related to traditional social groups within the village, the members were

(2) For a more detailed discussion, see J. Miles, "Native Commercial Agriculture in Papua", *South Pacific*, Vol. 9, No. 2, September-October, 1956, pp. 318-327.

(3) Shand, R. T., "The Development of Cash Cropping in Papua and New Guinea", being a paper given at the Annual Conference, Australian Agricultural Economics Society, Sydney, February, 1963, Tables 1 and 3.

not necessarily accustomed to interacting for any long term economic activity. As the government did not apply constraints to those villagers not interested in continued participation in a project, there was a need for leaders of the group concerned to develop appropriate sanctions. The existing legislation, however, did not provide for the exercise of such sanctions by village leaders. In addition, problems of land tenure were created when people of one sub-group were obliged to cultivate perennial tree crops on land held by another sub-group in the village. As the apparent disadvantages of this system of planting cash crops became known, emphasis shifted to encouraging each family to cultivate an area of cash crop separately. This policy was clearly established by 1956. Farming has been carried on by nuclear families in some cases and extended families in others, and income from sales has been shared among members. Some families draw on the labour of kinsmen to help with certain seasonal tasks; payment is sometimes made in cash or kind but more often in reciprocal assistance at a later date.

It is likely that the main avenue for future indigenous agricultural development will continue to be family farming. The Minister for Territories, Mr. Hasluck, has stated that "... the big majority of the present population are likely to find their advancement in changing from village subsistence to cash cropping, forming a native peasantry that ... will not be a major employer of wage earning labour."⁴

Social accounts prepared by Swan and White indicate that substantial progress has been made in raising indigenous farm income. They have shown that the total income received by indigenous farmers rose from £700,000 in 1950-51 to £4,000,000 in 1959-60.⁵ This increase has mainly been the result of an expansion in the area cultivated with perennial tree crops for export markets. Within the rural population the variation in the degree of contact with the money economy,

and participation in commercial agriculture, has led to marked differences in income per capita. It was estimated that the employable male population in 1959-60 was 600,000 and of these 250,000 were partly or fully self-employed in agriculture.⁶ Epstein estimated that in 1959-60 Tolai income from cash cropping was £30 per capita.⁷ Shand calculated that indigenous farmers other than Tolais received £9 10s. per capita from cash cropping in the same year.⁸ However, these data may underestimate per capita incomes because many farmers also engage in wage employment.

A limited amount of attention has also been given to improving traditional systems of agriculture, most of which are based on some form of bush fallow rotation. Attempts have been made to raise the level of nutrition within the rural population by introducing new or higher yielding cultivars of food crops. Crops that can be stored after harvest have also been introduced to supplement the more perishable traditional foods. Although there has been no attempt to make radical changes to traditional systems of subsistence agriculture it is apparent that in some areas the population may soon reach the critical density that can be supported by the systems at existing levels of subsistence. To safeguard the level of living of the people concerned it may be necessary for the government to undertake re-settlement programmes to relieve population pressures, or to modify traditional methods of food production. Alternate systems of production may include more efficient rotations that increase output per acre of the land under cultivation and permit a greater area of land to be cultivated at any one time. Research to devise more efficient rotations (in Papua and New Guinea, and overseas) has largely evolved about the use of green manure and leguminous crops to replace the natural bush fallow. This research has not yet produced

(6) Hasluck, P., "The Economic Development of Papua and New Guinea", being an address to the Economic Society of Australia and New Zealand (New South Wales Branch), Sydney, 20th October, 1961, pp. 7-8.

(7) Epstein, T. S., "European Contact and Tolai Economic Development: A Model of Economic Growth". Australian National University (Mimeo), 1961, p. 11.

(8) Shand, *op. cit.*, p. 24.

(4) Hasluck, P., "Employment Policy in Papua and New Guinea", being a statement in the House of Representatives, Canberra, 15th August, 1961, p. 13.

(5) Bettison, D. G., *et. al.*, *The Independence of Papua-New Guinea*. Angus and Robertson, Sydney, 1962, pp. 27-28.

systems that are suited for subsistence farmers with low per capita incomes, and that are significantly more efficient than the existing traditional ones. The success of any large scale re-settlement programme may be largely determined by the extent to which the schemes are planned to meet the needs of the people concerned. Though there may be a tendency to establish schemes in which farmers would be expected to increase output per head considerably above their existing level of subsistence output, some groups in need of resettlement may be opposed to the significant changes in time patterns that would be expected of them. They may prefer a lower level of living in their existing habitat to re-settlement in a scheme in which conditions are considerably different from those to which they are accustomed.

The rapid expansion in indigenous cash cropping in the post-war period has focused attention on the suitability of the existing agrarian structure as a long-term base for the development of commercial agriculture. Particular attention has been given to traditional systems of land tenure in which the presence of rights of different types, held by related persons and social groups, has often caused difficulty in defining the rights of individuals. A Native Lands Commission was established in 1952 to settle land disputes and to define and register indigenous land ownership. The aim was to record existing rights rather than to change tenure systems, and in practice it was found that rights were usually held by social groups rather than by individuals. The traditional systems were widely criticised for their inability to support advanced agricultural development, and the government decided that a tenure system of universal application, based on individual title to land, should be introduced. In 1960 it was announced that the long-term objective of policy was "to introduce a single system of land holding regulated by the Administration and providing for individual titles along the pattern of the Australian freehold system."⁹ Legislation to provide for implementation of this policy has been tabled and is being debated by the Legislative Council.

Given that the traditional tenure systems in many ways impede agricultural development, the extent to which a system of tenure based on individual titles will overcome these impediments has yet to be determined. Individual tenure may permit farmers to make greater use of credit facilities. Credit institutions have placed severe limitations on provision of capital to those not farming land under freehold or leasehold title, partly because of the absence of a recognised land market and the complexity of ownership within traditional systems. Most indigenous farmers have few if any assets other than land held under a traditional system which could be offered as security for a loan. It is frequently said that by replacing the traditional systems of tenure with a system of individual titles, the present problem of multiplicity of right-holders in land would be removed, thus providing individual farmers with a greater incentive to expand their production of crops. Individual title will not remove the possibility of fragmentation of land holdings which is usually associated with congestion of rural population and the operation of laws of inheritance that prescribe division of property among surviving relatives according to fixed rules. The existence of the right of the land holder to freely transfer and alienate his rights in the land, particularly the right to subdivide or add to the existing holdings, greatly facilitates progressive fragmentation of holdings.

Development of a Land Settlement Programme.

The extent to which output per head has been raised in the post-war period has been determined largely by the rate at which the rural population has accepted the technical, economic and institutional innovations that have been introduced. Villagers may be assumed to act in the most advantageous and least costly manner apparent to them, in terms of the values they themselves hold, even though the range of their perception may be extremely limited. The government has recognized that acceptance of these innovations depends largely on a successful demonstration of the advantages that result from their adoption, and has attempted to demonstrate these in a series of land development schemes.

⁽⁹⁾ Anon., "Land Tenure in Papua and New Guinea", *Australian Territories*, Vol. 1, No. 1, December, 1960, p. 15.

The first scheme was started in 1952 when the Administration provided the Rabaul Local Government Council with a 99 year agricultural lease over 1,000 acres of land in the Keravat area. It was the first experiment in providing individual title for villagers wishing to re-settle and engage in cash cropping. An area of 500 acres was reserved for subsistence gardening and any resident in the Council area could cultivate there. In 1954 the remaining 500 acres were subdivided into 96 blocks, each of 4.9 acres, for sub-lease to individuals for cultivation of cocoa.¹⁰ After an encouraging start enthusiasm began to wane, particularly when it was found that the water table rose substantially as bush was cleared. By 1956 it was evident that many blocks were unsuitable for cocoa because of severe waterlogging. There was little prospect of drainage. When the scheme was reappraised in 1959 it was found that 19 blocks were totally suitable for cocoa, 23 were partly suitable for cocoa, and 19 were partly suitable for subsistence gardening. An additional area of land was made available to the Council and the total area re-surveyed in 1960. Where possible the size of each block was increased to eight to ten acres. Thirteen of the original blocks remained intact, 16 were set aside for leasing to people of the Vunadadir Council area, and 34 were held for applicants from other areas in the Gazelle Peninsula. All blocks are now being developed with cocoa.

In 1956 a cocoa planting project was launched by the Ambenob Local Government Council in the Madang area. As well as demonstrating the advantages of individual title to land it was intended that with adequate technical guidance the scheme would be a suitable means of demonstrating the correct techniques of cocoa cultivation. People from a number of villages in the Council area agreed to sell land to the Administration. The 11 blocks of land purchased were located in various parts of the Council area. They varied in size from 18 to 129 acres. A total area of approximately 800 acres was purchased. The land was leased from the Administration to the Ambenob Council and subdivided into 276 blocks, each of three acres. The blocks

were allotted to individuals by ballot, with preference being given to the original land owners. Each block was to be developed by a family. It was intended that village farmers who sub-leased blocks would continue to reside in their villages and would cultivate subsistence gardens on land held under the traditional tenure system. Although cocoa planting commenced in 1959 the rate of development has been variable. Some blocks have been fully planted, while on others there has been no work at all.

In 1957 the Vunamami Local Government Council obtained a 99 year agricultural lease over 390 acres of land in the Warangoi Valley. The area was subdivided into 34 blocks of 10 to 12 acres each. In allocating blocks the Council decided that two be leased to two persons from each of the 17 villages in the Council area. A total of 33 blocks was allocated. One was retained as a reserve for lessees to reside on. Some blocks were cleared with wage labour paid by the Council and others were cleared by voluntary workers from whom the lessees were later drawn. It was intended that the majority of blocks be developed with cocoa and coconuts, but most planting carried out to date has been with cocoa.

There has not been a detailed analysis of these local government council schemes to determine what factors contributed to their limited success. Observers have suggested that the lack of adequate advisory services and credit facilities may have been important. Other possibilities are that the lessees had some misconceptions about the nature of the rights associated with a leasehold title, and that they often had access to ample supplies of land within their traditional tenure systems. As the blocks were primarily considered to be for commercial agriculture there was a tendency to divorce cash cropping from subsistence. In a number of cases settlers in the Rabaul and Vunamami Council schemes continued to cultivate subsistence crops some distance from their cash crops, on land held under traditional tenure systems.

On several occasions councillors rejected an Administration suggestion that blocks be at least ten acres in area in favour of much smaller blocks. The councillors' view that a

(10) The number of sub-leases was later reduced to 72 when it was found that some were encroaching on an adjoining lease.

two or three acre block was quite adequate for cash cropping probably reflected a similar widely held view among village farmers. The Administration believed that a village farmer, using the labour available in his nuclear family, could cultivate more than two or three acres of cash crop given adequate extension services, capital and other resources. In 1958 it planned the introduction of another series of settlement schemes in which settlers would be able to cultivate both cash and subsistence crops on their blocks.

The Land Development Board devised the concept of a minimum economic area that could be farmed by a nuclear family.¹¹ A minimum economic area for any given system of land use was defined as that area on which subsistence crops could be cultivated in the traditional manner and cash crops, sufficient to provide a gross farm income of £600 a year, could be cultivated. The farm size for each system of land use was determined by making a series of value judgments concerning the mean size of a nuclear family, the labour inputs required to develop a given area of the cash crop being grown, the labour

requirements for other activities such as housing and subsistence gardening, and trends in factor product prices. In 1958 it was expected that a gross farm income of £600 a year would be obtained from six acres of cocoa or coffee, or five acres of coconuts interplanted with either cocoa or coffee, or 20 acres of coconuts in areas not suited for cocoa or coffee, or four acres of rubber. In areas suited for cocoa, coffee, rubber, or interplanted coconuts the blocks were subdivided so as to contain at least 15 acres of land suitable for cultivation.¹² In those areas suitable for coconuts only blocks with up to 30 acres of cultivable land were subdivided. In each block more land was included than was necessary to develop a minimum economic area of cash and subsistence crops. The additional land was intended to provide settlers with the opportunity to expand their plantings beyond the minimum economic area, if they had sufficient labour and capital resources.

Land available for leasing was advertised throughout Papua and New Guinea, and the Land Board interviewed applicants at various centres in order to assess their ability to fulfil

Table 1.

Blocks under 60 acres made available from September, 1959, to March, 1963.

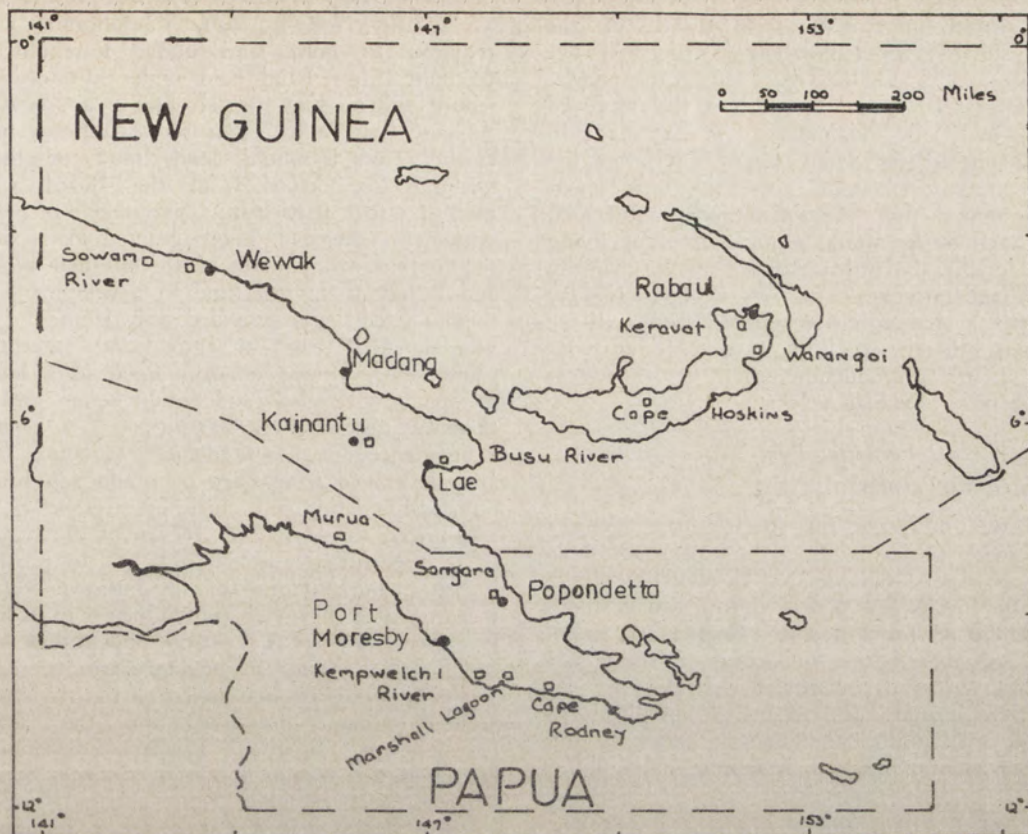
Locality	Year Made Available					Total No. Leases Made Available
	1959	1960	1961	1962	1963	
Warangoi	33	...	50	...	...	83
Sangara	...	87	19	83	35	224
Kempwelch River	...	22	...	...	...	22
Cape Rodney	...	6	53	47	45	151
Cape Hoskins	...	...	...	45*	...	45
Busu River	...	...	...	30	...	30
Sowam River	...	...	...	15	...	15
Murua	...	...	...	45	...	45
Kainantu	...	...	...	1	...	1
Wewak	...	...	...	1	...	1
Keravat	...	...	...	...	15	15
Marshall Lagoon	...	...	...	...	2	2
Total	33	115	122	267	97	634

* 57 blocks were advertised but 12 were later cancelled.

(11) The Land Development Board advises the Administration on matters concerning land development, settlement and patterns of land use. The Assistant Administrator is the Chairman of the Board. The other members are the Directors of the Departments of Lands, Surveys and Mines; Native Affairs;

Agriculture, Stock and Fisheries; Public Works; and the Executive Officer (Policy and Planning).

(12) It is now general practice to include at least 20 acres of cultivable land in each block. However, blocks of up to 60 acres have been subdivided because of the presence of areas of grassland considered unsuitable for development.



Locations of Land Settlement Schemes.

development conditions of the lease.¹³ The assessment made by the Board is based on the applicant's previous experience in agriculture and other employment, education, capital resources and his presentation before the Board. After hearings are completed the Board allocates blocks to successful applicants, subject to the Administrator's approval. A lessee receives a 99 year leasehold title to his block. The first blocks were advertised in September, 1959, and by March 1963, a total of 634 had been made

available for development.¹⁴ These are detailed in Table I. Location of the various settlement schemes is shown on the accompanying map.

Although the government expected that the majority of settlers would use no labour beyond their own nuclear families to develop their land, they could not be prevented from drawing on other members of their extended families for assistance. Those who had sufficient resources could engage wage labour. They are required to carry out

(13) The Land Board is a statutory body empowered to consider applications for the leasing of land and related matters. Its three members are appointed by the Administrator, who may also appoint additional members to act in relation to certain localities for a specified period.

(14) Under the current five year plan, it is proposed to subdivide 7,500 blocks by 1967. Hasluck, P., "The Five Year Plan—a reprint", *Journal of the Public Service of the Territory of Papua and New Guinea*, Vol. 3, No. 4, December, 1961, p. 101.

agricultural improvements to 1/5th of the area suitable for cultivation in the first five years, 2/5ths in the first ten years and $\frac{3}{4}$ in the first 20 years. In addition, the improved area must be maintained at a standard acceptable to the Land Board.¹⁵ Given the satisfactory operation of the settlement programme the Administration anticipated that each settler would enjoy a level of living considerably above that enjoyed by the majority of village farmers. This was expected to give rise to a demonstration effect among village farmers, thereby creating favourable attitudes towards the introduction of a tenure system based on individual titles.

Rural Credit Facilities For Indigenous Farmers.

It was necessary for special loan agencies to provide settlers with credit because of their lack of assets suitable for developing blocks and the prolonged period during which there would be no farm income. Commercial banks did not regard the financing of individual farmers in the settlement schemes as an attractive proposition because it involved so many small units, and because most of the settlers had no previous experience in handling credit.

In May, 1958, the Australian government announced that it would make capital available to finance agricultural development by Australian, Papuan and New Guinean ex-servicemen. An Ex-servicemen's Credit Board was established to be responsible for the distribution of loan capital.¹⁶ Those eligible to apply for a loan were ex-servicemen of the Second World War who had lived in Papua or New Guinea for at least five years since discharge and who had knowledge and experience in tropical agriculture. The Board required that land being developed be offered

as security for a loan. Applicants were required to hold land under leasehold or freehold title. Land held under a traditional tenure system was not acceptable as security. As very few Papuans or New Guineans held freehold or leasehold land, most of those wishing to borrow from the Board were obliged to participate in one of the settlement schemes. Those granted loans were required to reside permanently on their blocks and devote their full time to development of them. Credit was provided only if the Board was satisfied that an agricultural enterprise could be developed or maintained to a home maintenance standard and would be no greater than was necessary for that purpose. A "home maintenance area" was defined as being "an area developed to a stage of production based on suitable land use, which on average yields and prices, would in the opinion of the Board, in each particular case be sufficient to provide a reasonable living for a borrower after meeting such financial commitments as would be incurred by a person possessing no capital."¹⁷ A home maintenance area for each system of land use was taken as the minimum economic area prescribed by the Land Development Board. Farmers developing blocks in the various local government council schemes were excluded from obtaining credit as their blocks were too small to be developed to a home maintenance standard.

The Credit Board considered cocoa, coffee and coconuts to be the most suitable crops for settlers to cultivate. Those growing cocoa or coffee were required to establish six acres during the first two years of development. Although settlers growing coconuts were not required to interplant with cocoa or coffee the Board expected that in those areas which were suitable, most settlers would do so after the coconuts were five years old. Settlers were expected to establish 20 acres of coconuts by planting five acres a year for four years. The Board drew up a budgeted development programme for settlers to follow in order to reach a home maintenance standard. It was decided that those growing cocoa would receive a loan of £750 in which there would be a maximum cash expenditure of £600 over a four-year period. Those growing coconuts would

(15) *Land Ordinance 1911-1960*, Section 30.

(16) The Ex-servicemen's Credit Board was established under the Ex-servicemen's Credit Ordinance which became effective on 6th November, 1958. It was intended to operate for three years but was extended for another year in 1961. The Board is responsible for granting of loans to eligible ex-servicemen and for the supervision of development carried out by grantees. Its members are the Treasurer and Director of Finance, the Director of the Department of Lands, Surveys and Mines, and the Director of the Department of Agriculture, Stock and Fisheries.

(17) *Ex-servicemen's Credit Ordinance 1958-1961*, Section 4.

receive a loan of £1,200, of which a maximum of £1,050 could be spent over a seven-year period. With each loan granted £150 was held by the Board as a reserve to meet contingencies. The most likely contingency was extension of the period during which there would be no income, because of unfavourable weather or attacks by pests and diseases in the development period. When the ordinance was promulgated it was intended that the Board would provide a non-repayable living allowance to each cocoa or coffee grower in the fifth year, and each coconut grower in the eighth year of development. During this year (referred to as the "assistance year") settlers would not be required to make any repayment of principal or interest. A recent change in the legislation permits the Board to determine the "assistance year" at its discretion. Principal and interest must be repaid within 25 years from the date the loan was granted. Interest was at the rate of $3\frac{3}{4}$ per cent. per annum.

Loans provided for controlled expenditure on hand tools and equipment, building materials, agricultural supplies such as seeds and insecticides, rent, conveyance fees, and where necessary, cost of travel to blocks at the commencement of settlement. These items represented about one-third of the total amount of loan money granted. The remainder was consumption credit provided as living expenses to compensate for the absence of a cash income in the initial years of development. Rations and a small cash allowance were provided during the first six months of settlement before food gardens came into bearing. After gardens matured, rations were dispensed with in favour of a higher cash allowance. The amount paid to a family each month was calculated on a sliding scale related to the number of dependants who must be supported; the maximum monthly payment was £8. The cash allowance enabled settlers to purchase a variety of imported foodstuffs and other consumer goods such as clothing, soap and kerosene. The first loans to Papuans and New Guineans were granted in the latter part of 1960. When the scheme closed in November, 1962, 136 loans had been granted.

It was clear from the outset that the Ex-servicemen's Credit Scheme would only play a limited role in providing indigenous

farmers with capital for agricultural development. There was an obvious need for a permanent loan agency, able to make capital available to indigenous farmers as required.

In November, 1958, the Chairman of the Native Loans Board announced that the Board would make loans available to individuals.¹⁸ Previously it had been restricted to providing loans of money or goods to co-operatives, societies, councils or other groups or associations of Papuans or New Guineans for economic or welfare purposes. In March, 1960, the Board announced that loan applications from people who were not eligible ex-servicemen, and who were interested in taking up leases in the government settlement schemes would be considered.

In 1959 credit was granted to settlers who were developing blocks made available in the Warangoi area. Each applicant was granted a maximum loan of £144 payable at £12 a month over a period of 12 months. The purpose of the loan was to enable settlers to employ wage labour to develop their blocks. They were then expected to maintain plantings with family labour supplies. If, after four and eight months, development was not satisfactory it was proposed to discontinue payments. In a number of cases the rate of development was found to be unsatisfactory. Credit was also granted to settlers in the Rabaul and Vunamami Local Government Council schemes. The amount of credit each settler received depended on the development he had carried out. Those who had almost fully developed their blocks did not require as much capital as those who were still in the early stages of development. Monthly cash payments were made to settlers to employ labour and to purchase food and equipment.

When providing credit to farmers in other settlement schemes the Board adopted an approach similar to that followed by the Ex-servicemen's Credit Board. Settlers who were developing blocks with cocoa received loans of £600, budgeted over a four-year period. Those growing coconuts received

(18) The Native Loans Board was established under the *Native Loans Fund Ordinance* 1955. The Board consisted of three members until 1960, when a fourth was appointed. The Chairman is the Treasurer and Director of Finance.

£1,050 budgeted over a seven-year period. Allowances for various items in the budget were similar to those granted by the Ex-servicemen's Credit Board. There was no contingency reserve nor was there an "assistance year." Although no specific development conditions were laid down, the Native Loans Board expected a rate of development similar to that required of settlers with finance from the Ex-servicemen's Credit Board. No specific rates of repayment of principal and interest were required by the Board. Interest was at the rate of $4\frac{3}{4}$ per cent. per annum. Settlers were expected to reside on their farms and devote their full time to development of them.

In July, 1962, it was announced that the role of the Native Loans Fund would be altered. Emphasis was placed on economic development rather than welfare, with the Fund being used to fill more effectively the gap between existing commercial sources of credit and the needs of the indigenous people. An applicant can now apply to the Board for any amount of credit he wishes and may request such terms of payment of loan money and repayment of principal as he feels inclined. In contrast to its previous policy the Board now examines each applicant's assets when considering loans. Where an applicant possesses some capital the amount of credit made available may be restricted and the applicant required to make use of his own capital. Interest is at the rate of $4\frac{3}{4}$ per cent. per annum. The Board is empowered to postpone the repayment of any principal and or interest for up to five years on such terms as it thinks fit. Although there is no statutory limit to the amount of capital that can be borrowed, it is expected that the majority of applications will come from farmers who have no capital resources and who are interested in developing farms with family labour. As the Board requires security over the land being developed, and does not consider land held under a traditional tenure system to be an acceptable security, most farmers interested in borrowing capital must participate in one of the government settlement schemes at present.

Development budgets were drawn up for farmers wishing to grow cocoa, rubber and coconuts on the assumption that an applicant would be developing an unimproved farm

with family labour supplies.¹⁹ The data relating to labour inputs, yields and factor product prices previously used by the Land Development Board and Credit Boards were revised. The budgets include an allowance for tools, pest and disease control, seed supplies, building materials, processing and marketing equipment and share capital for establishing central processing facilities where required. Rations are provided until subsistence gardens are in production, and a cash allowance of £4 a month is paid during the loan period.

A number of loans of £673, budgeted over a six-year period, have been granted to farmers wishing to grow cocoa in the various government settlement schemes. They are required to establish ten acres of cocoa in the first six years. It is expected that they will sell wet cocoa beans to a central processing organization. If they receive four pence a pound for wet beans sold to a fermentary (equivalent to £100 a ton for dry beans) they could expect an income of £370 a year. For farmers wishing to cultivate rubber a loan of £704, budgeted over a five-year period, will be made available by the Board. They will be required to establish six acres of rubber in the first two years of development. Most probably farmers will coagulate latex in trays and carry out milling with central processing facilities. The loan includes an allowance for a £20 share in a co-operative processing unit. It is expected that farmers would have an income of £375 a year from six acres of mature rubber if they receive the equivalent of 15 pence a pound for dry rubber from the central factory. The Board proposes to make available to farmers wishing to cultivate coconuts a loan of £720 budgeted over eight years. They are expected to establish 15 acres of coconuts in the first seven years, and to produce hot-air dried copra on the farm for sale to the Copra Marketing Board.²⁰ They could expect an income of

(19) Budgets for robusta and arabica coffee have not yet been completed.

(20) The Copra Marketing Board is a statutory body set up under the *Papua and New Guinea Copra Marketing Board Ordinance 1952-1957* to purchase and sell copra on behalf of producers. The Board consists of a Chairman and five members. There are two representatives of the copra producers of New Guinea, one representative of the copra producers of Papua, the Director of the Department of Agriculture, Stock and Fisheries, and another member.

£300 a year if a price of £50 a ton for copra was received from the Marketing Board. Each of the above income figures refers to income received by the farmer at the point where he disposes of his produce.

The considerable differences between the 1958 and 1963 data for returns per acre for the various crops is due to the use of more conservative yield data in the 1963 figures, and the deliberate use of price data more conservative than present market prices which, for some crops, have declined since 1958. In the case of cocoa the annual return per acre using 1958 data was expected to be about £100, and using 1963 data about £37. Although the decline in the product prices has been overstated, the past instability of the market for these crops suggests that there may be considerable variations in farm income. Farmers may have very little insurance against a fluctuating farm income in the absence of any price stabilization measures, or diversification in the farming systems being developed.

Conclusions.

In the development of indigenous agriculture in Papua and New Guinea a system of small scale family farming has gradually been evolved within the framework of the traditional tenure systems. This type of farming contrasts sharply with plantation agriculture (the other important system of agriculture in the economy) which has remained almost entirely under the control of expatriate groups. A widespread belief that indigenous farmers lack the necessary skills and managerial ability to operate large organizations has been an important factor in influencing the development of family farming.

The present indigenous land settlement programme, in which settlers are expected to develop small scale farms with family labour supplies, has not expanded very rapidly and in the first nine months of the current five-year plan only 243 of the 7,500 blocks to be made available for leasing have been subdivided and advertised. The imbalance between the geographic distribution of resources and population suggests that a much greater rate of re-settlement may soon be required. The existing programme may not be sufficiently flexible to meet all the resettlement needs of

the economy, particularly if the communities concerned do not have the propensity to change time patterns to the extent required in the present scheme.

The value of the settlement programme as a demonstration scheme will depend largely on the extent to which settlers are able to increase output per labour unit above that of the majority of village farmers, and the extent to which the various innovations used by the settlers can be introduced into village farming. The ability of a village farmer to emulate the settlers will be determined by the amount of land available to him for cultivation, the extent to which he is able to adjust time patterns to increase output of produce, and the amount of resources he has to cultivate the increased area of land. If he has to depend on credit he must be able to obtain either freehold or leasehold title to the land he proposes to cultivate. The multiplicity of rightholders that exist in most traditional systems of tenure means that the farmer must obtain the consent of the other rightholders to register the land under individual title. This implies that the other rightholders are prepared to forgo their rights to that piece of land.

It is widely believed that the rate of tenure conversion will not be very rapid, and that the most significant expansion in indigenous agriculture will continue to come from those farming within traditional tenure systems. Continued improvements in marketing and credit facilities, advisory services, and communications, will be required to ensure that it is profitable for villagers to increase output by expanding the area under cultivation, by cultivating crops with a higher value per acre, and by adopting improved agricultural practices. The present practice of restricting credit for land development to those farmers with a freehold or leasehold title may not be justified. Much more flexible credit facilities may be required to allow villagers to make better use of available innovations. A farmer's ability to repay may be a better criterion on which to provide loan capital than the present notion of "credit worthiness" in the sense of adequate tangible farm assets.

The increased output in indigenous agriculture in the post-war period has largely been a function of the extent to which villagers

have adopted innovations and have substituted cash cropping for traditional activities such as social obligations, leisure and hunting. In many communities some farmers have exhibited a desire to change their time patterns more rapidly than the majority of the people in their community, but they have found that opportunities to increase output have been limited by a need to conform with accepted patterns of activity in the village. In some cases they have preferred to leave their village to obtain employment in other fields. The present land settlement programme has an important role to play in providing such people with the opportunity to engage in

farming under conditions that permit substantial increases in output. The scheme also provides farmers who have insufficient land in the village with an opportunity to engage in commercial agriculture.

However, the present rigidity in farm size and land use systems, and the absence of a land market in the economy will restrict some settlers who fully develop their farms and who wish to expand further. In an economy in which lack of skills and managerial ability is as great an obstacle to development as the lack of capital, the present land settlement programme may be unnecessarily restrictive if it cannot meet the needs of these settlers.