

# ENGA PROVINCE

By Gwaibo Banaga,  
Formerly Provincial Rural Development Officer  
in Enga Province.

*Gwaibo was born in Kemaea near Kwikila in the National Capital District. He attended primary school at Daumagini, then he went to Kwikila High School.*

*Gwaibo then went to Vudal Agricultural College and graduated in 1969. His first posting was to Cape Rodney on Ramu Settlement Scheme. He was then appointed PRDO for the Gulf Province in 1972 until 1973 when he requested a field job to get more field experience. He was posted to Abau District as the DRDO in 1974 to June 1975. Gwaibo was appointed PRDO for the Enga Province after that.*

*Gwaibo has been to Queensland, Australia, to do an Agricultural Extension Course. Other courses he did are, Piggery Course, Rubber Technology, Middle Management, Rural Development, Local Officers' Executive Course, Supervisory Course and various extension courses.*

*Gwaibo is married with three children, namely Vereto, Banaga, Vagi, plus one adopted one, Meabo. His wife Vickana stays at home and looks after the children.*

## PROVINCE DESCRIPTION

The rainfall averages 2 500 mm per year. From June to September it averages 100 to 150 mm per month, from October to May 225 mm per month, and from December to March up to 300 mm per month.

October to May is the wet season, and June to September the dry season.

The cloud cover is generally complete during early morning and late afternoon in the wet season. Morning fog is common. Sunshine is 4 to 6 hours in the wet and 7 to 9 hours in the dry.

Light frosts are common from July to September, above 2 450 m above sea level. Severe frosts in 1971 and 1972 destroyed subsistence gardens, and feeding of 60 000 people for 4 months was required.

The mountains rise from 600 m to 3 250 m above sea level.

The soils are shallow red or brown clay loam on the hillsides, with low fertility and deep black loams on the valley floors, with good fertility. There are some peat swampy soils.

The major rivers are the Lagaip and the Wabag Lai. The lesser rivers are the Marient Wage and the Kandep Lai, the Wale and the Tarua and Maramuni. All systems drain into the Sepik, Fly and Purari Rivers.

Swamps are extensive in the Lai and Marient basin, at Kandep, and the headwaters of the Lai around Sirunki.

There are some large areas of grassland at high altitudes. In other places there are dense rainforests with good milling timber, and grassland in rotation with subsistence use.

There is road access to all areas except the Maramuni and Wale Tarua areas. Maintenance of roads is a problem. The Mount Hagen to Wapenamanda and Wabag to Laiagam roads are being upgraded as an extension to the Highlands Highway.

There are seven airstrips - Category B type at Wapenamanda and Wale and Category C type at Laiagam, Progera, Kandep, Kompam and Category D type at Maramuni. A new strip is under construction at Kaman. Three mission strips are located at Paiela, Lapolama and Yangis.

#### PEOPLE

The population is 174 000. There are 35 000-40 000 male taxpayers, mainly farmers. Population distribution in the districts are - 37% in Wabag district which covers 31% area of the province, 20% in Wapenamanda district which covers 9% of the province and 43% in Lagaip district which covers 60% of the province.

There is one main language group, Enga, and some dialectal distribution in the south-west tied in with Huli and Enga.

Malnutrition in children is common; protein levels in the diet are low. Food action groups and committees have been set up.

There are three high schools - Wapenamanda Lutheran Mission (up to Form IV), Wakumare (Wabag) Provincial High School (up to Form IV), and Laiagam (up to Form III). There are two Vocational Schools. There are 45 primary schools with a total enrolment of 8 800 students, 25% of which are girls.

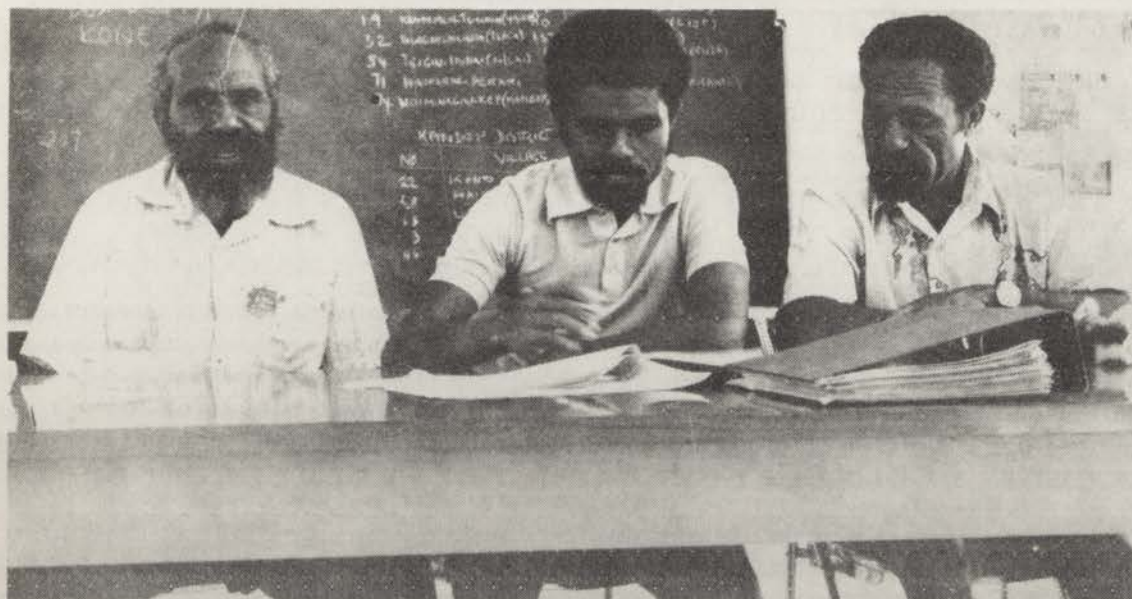
There is excellent co-operation between the schools and the Department of Primary Industry, with increased agriculture in schools. Wabag High school has a piggery, fish, poultry, vegetables and will soon be self-sufficient in food for boarders.

There are three main denominations, namely, Catholic, Lutheran, and SDA.\* There are smaller ones - Baptist in Kompam and Apostolic in Laiagam. The Catholic mission has a weaving centre, they buy wool from Yogos and Pompabus Vocational centre. The Lutheran mission has about 12 ha of coffee, grazes cattle, runs a piggery and a poultry project. SDA mission is involved in vegetable production. All missions co-operate satisfactorily, have lots of influence on the people, and are playing a major role in rural development.

\*Seventh Day Adventist

The Yangpela Didiman organization is operating in Wapenamanda, and is particularly successful with standard 6 school leavers.

Communally owned projects are common, with vegetables and pigs the exception. Self-help groups include: Samu Pty Ltd, a newly formed potato company with good prospects; Aburin Business Group; a pyrethrum-producing company; and Sau Co-operative, which has coffee plantings and trade stores.



*Gwaiibo Banaga, former PRDO Enga province,  
in centre, with Kepa Pupi on left and Don Kapi on right.*

#### ECONOMY

The main cash crops of the province are arabica coffee (about K1.7 m), potatoes (about K53 000), and pyrethrum (about K80 000) in 1975/76.

Cattle is a growing industry, and sheep have recently been introduced. There are some commercial pig projects.

There are no plantations in the province.

Other industries include gold-mining at Porgera, timber-milling at Meriamanda, coffee factories at Wapenamanda and Wabag; and workshops at Wabag.

There are 20 land settlements blocks, growing mainly potatoes.

## AGRICULTURAL DEVELOPMENT PROGRAMME

### PROJECT MANAGEMENT

The Department of Primary Industry Headquarters is at Wabag with Extension centres at Wabag, Laiagam, Porgera, Wapenamanda and Kandep. Base camps are at Pumas, Serwiki, Maramuni, Pausa, Andatali, Yogos and Tsals.

In 1977-78 training courses will be held on cattle and buffalo. In 1979 a cardamom training programme will be initiated. In 1980 a Rural Development Officer will be trained to specialize in orchids.

By 1981 there should be enough officers and farmers to start pilot projects in cardamoms and buffaloes. Three buffalo ploughs will be made.

### COFFEE

There are about 2 500 ha which produce 1 522 tonnes green beans.

New plantings are at Wabag 25 ha, Lagaip 25 ha and Wapenamanda 4 ha. The Wapenamanda programme has been hindered by pig damage and tribal fights (25 ha was destroyed in the Tsak). Growers are still reluctant to prune bearing (and income producing) bush.

In 1977-78 new plantings will include Wabag/Kompam 20 ha, Laiagam 50 ha and Wapenamanda 7 ha. There will be 80 new nurseries established at Wabag and 50 at Laiagam (Paiela). These nurseries will mainly be on family unit basis. About 20 kg of Aiyura seed will be obtained for Wabag, 50 kg for Laiagam, and 10 kg for Wapenamanda. Growers will be encouraged to increase production by about 10% - from 1 500 tonnes to 1 700 tonnes green bean. Field officers will increase patrolling and intensify the campaign on pruning and quality control. A further 250 ha should be coming into production late 1978.

In 1979 it is hoped that plantings will have increased to 2 600 ha. Quality control will be intensified. Production in the Paiela area will increase.

In 1980, 2 500 ha will be in production giving over 3 000 tonnes. The Maramuni area should commence production, . . . . .

In 1981 Department of Primary Industry involvement should decrease as growers become more self-sufficient and assistance and materials are supplied by Councils. A replanting programme of senile coffee will commence.

### CATTLE

There are 288 projects with 1 412 head. Missions have 8 holdings with a total of 313 head. Department of Primary Industry owns 5 bulls. There is great potential in the Lagaip and Wapenamanda districts. In other areas land pressures, social obligations and tribal fighting affect the industry. Land development schemes have been proposed, but no definite plans have yet been made.

The Lai development is slower than expected. The site for the Kandep slaughter slab has been prepared. The yard, fence and pasture improvement programme was carried out. Tuberculosis and brucellosis testing was commenced. The Papua New Guinea Development Bank loans have decreased as people have ample money from coffee sales.

In 1978-79 outstanding cattle accounts will be cleared and the remainder of the 618 head of cattle will be delivered to projects. T.B. (tuberculosis) and C.A. (contagious abortion) testing will be completed at Wapenamanda, Laiagam and Kompam. The Kandep Local Government Council will be pressured to complete their slaughter floor by December 1978.

In 1979 the Lai Lands projects will be further developed and with the present rate of progress continuing cattle population should reach 3 000 head.

In 1980 the Lai Lands project will be stocked with 500 head. Some of the smaller project owners could convert to sheep and others take up buffalo farming. Tuberculosis and contagious abortion testing will be recommended. A slaughter floor at Wabag will be built.

In 1981 cattle members should stabilize out at 3 000 head on smallholder projects and 1 000 head on the Lai Lands Scheme. A slaughter scale will be constructed at Laiagam and Wapenamanda. The possibility of establishing a central provincial abattoir at Sernuke will be investigated.

#### PYRETHRUM

Production has dropped to 210 tonnes and is continuing to fall. About 230 ha were replanted giving a total area of 500 ha. Price has averaged 37.5t/kg - the people are not satisfied with this return and many are turning to market gardening instead. A scheme at Pumus involving the Aburin business group has commenced.

In 1977-78 replanting will include 12 ha at Kandep, 100 ha at Wabag/Kompam, 200 ha at Laiagam and 44 ha at Wapenamanda. About 50 ha of the new polycross variety will be planted in the Ambun Valley and 110 ha at Laiagam. A new buying point will be set up at Petendals (Kandep). People will be encouraged to replant on kaukau mounds.

In 1979 if the planting programme and the Pumus scheme are successful, production should reach 270 tonnes from about 600 ha. With the higher pyrethrum content there is a possibility of a price rise.

In 1980 the main emphasis will be on replacing old plantings with the new polycross material.

The possibility of draining and using the Sirunki swamp area will be investigated in 1981 - this could be subdivided and used for pyrethrum. Production could reach 300 tonnes.

## CHILLIES

Production for 1975 was 3 tonnes. About 200 growers are involved. Still a comparatively new introduction, expansion is mainly in the lower altitude areas of Maramuni and Kompam. The crop is not very popular in Wabag and Wapenamanda due to high prices of coffee and vegetables. Plantings were not done at Pausa, Paweri and Awalibus - coffee was planted instead. The crop is encouraged in schools, by SDA people and in remote areas. Wet weather affects both production and transport of produce. People are becoming more accustomed to handling the crop and picking is done regularly. Coffee growers are being encouraged to plant chillies as a cash crop to provide income while coffee is still immature. Prices range from 42t/kg to 52t/kg.

In 1977-78 ten ha will be planted at Maramuni and 3 ha at Kompam.

In 1979 trial plantings at Paiela will begin. Isolated areas such as Maramuni will have the most expansion. If prices remain high production should rise to 12 to 15 tonnes.

By 1980, about 15 ha throughout the province should be in full production and the Maramuni area should continue to expand.

In 1981, if the Paiela plantings are a success the people will be encouraged to expand. The replanting of 1978 gardens should commence.

## POTATOES

Production in 1975 was about 600 tonnes worth about K53 000. The Samu Company at Laiagam bought about 570 tonnes from the Kandep area. Production has declined as individuals seem less interested. A Papua New Guinea Development Bank project was completed at Laiagam. A local business group at Pumas has mechanical cultivation in conjunction with pyrethrum planting. There is evidence of disease build-up - in particular bacterial wilt and early blight. A Department of Primary Industry field officer has been seconded to the Samu Company full time.

In 1977-78 potato trials will be set up at Kandep, Vogos and Wabag. A Papua New Guinea Development Bank supported project will be commenced at Kandep. Twenty-five ha of land will be mechanically cultivated for potatoes at Laiagam. The Department of Business Development will investigate a possible potato powder or chip industry. About 20 tonnes of certified seed will be imported from Kuk at Mount Hagen. Seminars and an education programme will be commenced to sponsor quality control, avoidance of too early harvesting and shallow planting. Investigation will be done into the disease problem and crop sanitation encouraged.

By 1979 the certified seed gardens at Kuk should be ready to harvest. After the 2nd multiplication is completed adequate certified Sequoia seed should be available. The local Samu Company should be the sole provincial distributor.

In 1980 certified seed gardens will have been established at Kirunki, Kandep, Wabag and Wapenamanda. These should provide all province requirements. More people will be encouraged to obtain Papua New Guinea Development loans to buy fertilizer.

In 1981 with sufficient grower enthusiasm and freedom from pests and disease, production could reach 2 000 tonnes. All present varieties should have been replaced by Sequoia.



*Planting sweet potato in the traditional way at Wapenamanda.*

#### VEGETABLES

Production is estimated at 500 tonnes produced by 6 500 growers from about 80 ha. Seasonal variation and traditional customs affect continuity of production. Land pressure also restricts expansion.

Tribal fighting in the major producing area (Tsak) also inhibited development. A field day at Wapenamanda High School conducted by Kuk staff was well attended by officers and farmers. Development Bank loans were processed in the Wabag area.

In 1977-78 further efforts will be made to process 3 Bank loans at Wapenamanda. A major education programme will be initiated - starting with a vegetable seminar, by excursions and with the assistance of Hagen Agricultural College. Eight Community Schools will have small vegetable projects in the Wapenamanda and Wabag areas. Growers will be discouraged from producing large quantities of cabbage. A green house will be built in the Tsak to produce 1 000 vegetable seedlings a week. A hand-operated rotary hoe was purchased for demonstration purposes.

In 1979 the education programme combined with field days will be intensified and will be aimed at field staff and farmers. Full-time vegetable extension officers will be appointed to all centres. Growers will be encouraged to produce at a rate of 1 000 tonnes per annum.

In 1980 and 1981 - Department of Primary Industry's involvement in the programme will have increased by 30%. By making this a high priority activity and maintaining an intensive education campaign it is hoped to reach 2 000 tonnes of green vegetables, by the end of 1981.

## FISH

A further 50-60 000 trout fingerlings have been released in Enga rivers. Legislation to prevent fishing out of rivers is not now required as most fish have survived the danger period and more than enough fish are spawning. No rivers have been fished out. A full-time fisheries officer was not obtained as planned. There were difficulties in obtaining Mendi fingerlings at the right time and transporting them to rivers. The fish population in most rivers is very high and they are breeding prolifically, particularly in Kandep and the Lagaip headwaters. Both lakes Rau and Sirunki are stocked with trout and carp.

In 1977-78 a fisheries biologist will report on the feasibility of establishing a breeding pond at Wabag. Further efforts will be made to recruit a fisheries officer. A watch will be kept on the possibility of overfishing rivers and streams. People will be encouraged to feed fish to young children. Rivers at Paiala and Maramuni will be stocked, also at Kompam and Wapenamanda.

In 1979 if the feasibility study is favourable then the fish pond at Wabag should be completed. All equipment will be funded by the Area Authority.

By 1980 the province should be self-sufficient - by providing fingerlings if needed and through good spawning in the rivers. If there is a surplus of fish, processing for fish meal could be introduced as well as smoking by 1981.

## CARDAMOMS

Cardamom is a new crop and is still at the trial stage. There are 8 plots at Kompam planted from 200 splits. It grows well and produces satisfactorily - we still do not know how it rates on world markets. The results will have to be good to compete with coffee and chillies.

In 1977-78 about a kg of dried capsules will be sent to Cardamom Traders, Lae. If funds are available an officer will be sent overseas to study the crop.

From 1979-81 the crop will be expanded at Kompam and introduced to such areas as Maramuni and other isolated locations. The future depends on market reports.

## POULTRY

Very little expansion has taken place due to the high level of management needed and the cost of feed. Most areas are too cold for successful chicken raising without introducing sophisticated techniques. There are problems in maintaining a constant supply of day-old chicks from the coast. WASO at Wapenamanda have a commercial unit supplying eggs. The Taluma Vocational Centre at Laiagam and the Wakumare High School have a small successful chick project. A poultry nutritionist sponsored by the Lutheran Mission is researching locally-produced feed. The Sau co-operative at Kompam and Wapenamanda Council have poultry feed.

In 1977-78 assistance will be given to the Wakumare High School to enlarge its chicks project to be the breeding centre for the province. Close liaison will be maintained with the poultry advisor at Hagen and the Lutheran Mission nutritionist. The local more hardy type of bird will be checked on to see if they should be promoted, rather than introduced varieties. The brooders at Wabag and Wapenamanda will be improved. The Laiagam vocational centre will be encouraged to enlarge its chick project.

In 1979 if research work is successful Councils will be asked to take over brooders and supply of chickens. More emphasis will be placed on duck projects.

In 1980 and 1981, provided feeding and breeding problems are overcome, management training will be given to interested farmers. The province will never be self-sufficient in poultry meat unless these problems are overcome.

## PIGS

There are 13 semi-intensive commercial projects with about 60 head. These are at Wakumare high school, Pompabus and Makulamanda (WASO). There are about 200 other small projects. Wakumare high school will continue with their breeding and distribution programme (25 to 30 head a year). Traditionally pigs are the people's wealth. Pig exchange (Moka Moka) which started in 1971 is still continuing. There is no Moka or commercial Piggeries at Laiagam. Most projects at higher altitudes free range on an excellent pasture of kikuyu-white clover mix.

In 1977-78 at least one pure-bred boar will be obtained for Wakumare High School. Other boars will be distributed to upgrade local stock. Seminars, excursions, field days and research will be carried out with the assistance of the pig adviser at Hagen.

In 1979 more boars will be obtained for distribution. Vocational school and Province-owned boars will be made available for mating with local pigs. More management training will be given to farmers.

By 1981 the vocational and high schools should have ample pigs for distribution. Perambulating and introduced boars should have had considerable effect on improving the local variety.

WASO Ltd is a national-owned company. It started in 1964 and deals in coffee, vegetables and other agricultural products. It also has a workshop and sells vehicles and is an airline agent.

## SHEEP AND BUFFALO

There are 365 sheep in the province. The Department of Primary Industry station at Yogos has 36 ha fenced holding 103 head. The Local Government Council has 52 head, the Catholic Mission at Pompabus has 100 (Border Leicester cross in very good condition) and the Wabag vocational school has 100. Production was 244 kg at 50t/kg. A total of 25 wethers were sold for K35 each in 1975; the price will be increased to K40. The overall aim is to use sheep for meat and coarse wool production in areas of land shortage which is not suited to beef cattle. The research is being supported by New Zealand aid. In 1975 all fences and gates were completed on the government station. A paddock was prepared in the Tsak valley. Pasture improvement was carried out. One officer was sent to New Zealand for training. Dogs and worms are both being kept under control. The industry is still in the research stage therefore no village projects have been set up.

There are no buffalo in the province but an area at Kandep has been fenced in preparation.



*Urai Polona with sheep at Yogos.*

During 1977-78 about 5 ha of Kenya white clover will be established for seed production. If approval is received then five pilot sheep projects will be set up - Wapenamanda 3, and Kandep and Laiagam one each.

Three or four buffalo will be introduced to Kandep to assist in cultivation of vegetable projects. A special plough will be made.

Development of the sheep programme depends on present research. If it is to go ahead then sheep numbers could have increased by 60% in 1980.

As buffaloes are accepted they will be distributed as village draught animals working mainly on production of vegetables.



*Sheep in Enga Province.*

#### ORCHIDS AND BEES

This is a new project and an officer to work full time on orchids has been posted to Laiagam. His duties include the preservation and collection of orchids from Paiala, Chimbu and Mendi. A high-altitude orchid station is at present being established at Laiagam, which will serve all Papua New Guinea with the purpose of conservation, botanical studies and tourism. So far ten collections of orchids valued at K4 000 have been made and sent via the University of Papua New Guinea for overseas export.

Bees are still very much in the research stage. There are 12 hives at Laiagam. The Area Authority has shown an interest in supporting this industry.

In 1977-78, an orchid house and botanic garden will be commenced at Laiagam. A field officer will be trained in general orchid husbandry. People will be encouraged to collect orchids in the low income areas such as Paiala and lower Lagaip. Orchid production will be increased to meet the overseas market.

Four bee hives will be established at Wabag on a trial basis.

In 1979 the Laiagam botanic garden and orchid house will be opened to tourists. An agricultural graduate majoring in Botany will be posted to Laiagam.

If bee trials are a success expansion will commence.

In 1980 the graduate at Laiagam and another Specialist will take charge of all orchid and bee work in the Province. It is expected that both industries will be well established by 1981.

#### SUBSISTENCE NUTRITION

Malnutrition is partly or wholly the cause of 60% of deaths in children 0 to 5 years old. Both government officers and village people are to varying degrees unaware that malnutrition is a real problem. Ignorance, beliefs and social and cultural factors hinder the awareness and consequently the education of village leaders and Local Government Councillors - this makes field staff working on the project reluctant to approach those people.

WASO is conducting wing bean trials to find a variety suitable to high altitudes. The Public Health Department has a full time provincial nutrition specialist who works mainly at the clinics. A nutrition committee including representatives from Department of Primary Industry, Public Health Department and Missions meet frequently - their main aim is to create awareness of the problem. Most schools have a special programme which covers propaganda and maintains nutrition gardens. Department of Primary Industry has an officer full-time on nutrition at Wapenamanda where variety trials are conducted in wing bean and soya bean.

In 1977-78, Department of Primary Industry will introduce wing beans to the Paiala and other remote areas. A follow-up will be made on the idea of palm oil being mixed with kaukau especially for children, (high energy intake). More emphasis will be given to positive action from nutrition committee meetings. Present nutrition plots will be maintained and developed. People will be encouraged to regularly harvest and store high nutrition pandanas. More salted tilapia fish will be brought in from the Sepik.

For the period 1979-81 the programme will be intensified - Department of Primary Industry involvement will be increased by 50%.

#### SPECIAL PROJECTS

*Mechanised Pyrethrum and allied projects.*

Following the FAO/UNDP recommendations broadacre mechanically cultivated schemes growing both pyrethrum and vegetables as a means to developing large areas of the Highlands are being carried out. Department of Primary Industry commenced development through the Aburin Business Group at Laiagam, by cultivating some 300 ha at Sirunki and Pumas with possible later expansion to Lake Rau and Tsiabai near Mount Hagen. This programme, apart from opening up large areas of unused land, and increasing potato production and pyrethrum exports, would ensure the more efficient operation of the Kagamuga Natural Products factory at Mount Hagen by bringing the present annual pyrethrum figure of 260 tonnes to 600 tonnes by 1979, thus helping to avoid the closure of this factory.

