

Food Aid and Traditional Strategies for Coping with Drought: Observations of Responses by Villagers to the 1997 Drought in Milne Bay Province

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Abstract

A prolonged annual dry season and unpredictable rainfall are common to both the Goodenough Island and Cape Vogel areas in Milne Bay Province, PNG. The challenge for these areas is ensure that food is available throughout the year. During normal times, food security is ensured by the management of staple crops. In a drought, normal management of crops is not sufficient to sustain food availability and there is a change in both gardening practice and food procurement strategies. Experiences from Bogaboga village on Cape Vogel and Utalo village on Goodenough Island during the severe 1997 drought illustrate the changes in gardening strategies and in food procurement behaviour that occurred in these areas in response to the drought.

Both communities have traditional strategies for coping with food shortages. However, in 1997, food aid and money altered the traditional strategies in Bogaboga as villagers relied on government assistance and outside help. Planting materials and gardens were not widely maintained, ultimately hindering a quick recovery from the drought. In contrast, the more isolated and self-sufficient villagers of Utalo received very little aid rice or government assistance. They used yam and a drought-resistant taro cultivar, and then survived on wild cassava, yams and figs. Planting materials were maintained in Utalo, so gardens recovered quickly when rains arrived. This illustrates that management of crops at cultivar level and preservation of diversity are essential for long-term food security while food aid and money can alter customary strategies for coping with drought.

THIS paper explores traditional means of coping with drought in PNG, and considers what happens today in respect of government aid and the ability to buy food. The focus is on food production systems and food security. The two areas of interest are Bogaboga village on Cape Vogel and Utalo village on Goodenough Island in Milne Bay Province, PNG. Bogaboga is on the coast of mainland Milne Bay whilst Utalo is about 5 kilometres inland from Diodio, on the west coast of Goodenough Island (Fig. 1).

Food security is achieved 'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO 1996). This concept of food security has to

be differentiated from that of food self-sufficiency, which is when a household or a community produces enough food for its own consumption. A high degree of food self-sufficiency is not necessarily a precondition for food security—many wealthy urban regions can buy food security, though they produce little food.

The two main factors that affect food security in these areas are access to government services and climatic conditions. Government services influence food availability, directly or indirectly, because they determine services such as transport and access to cash income. Bogaboga has greater access to government services because it has an active local government council and has access to Alotau, the administrative centre of Milne Bay Province, by boat and air. Both Cape Vogel and Goodenough Island are classified as having unproductive environments with low cash incomes; Goodenough is also categorised as having poor access to services (Hanson et al. 2000).

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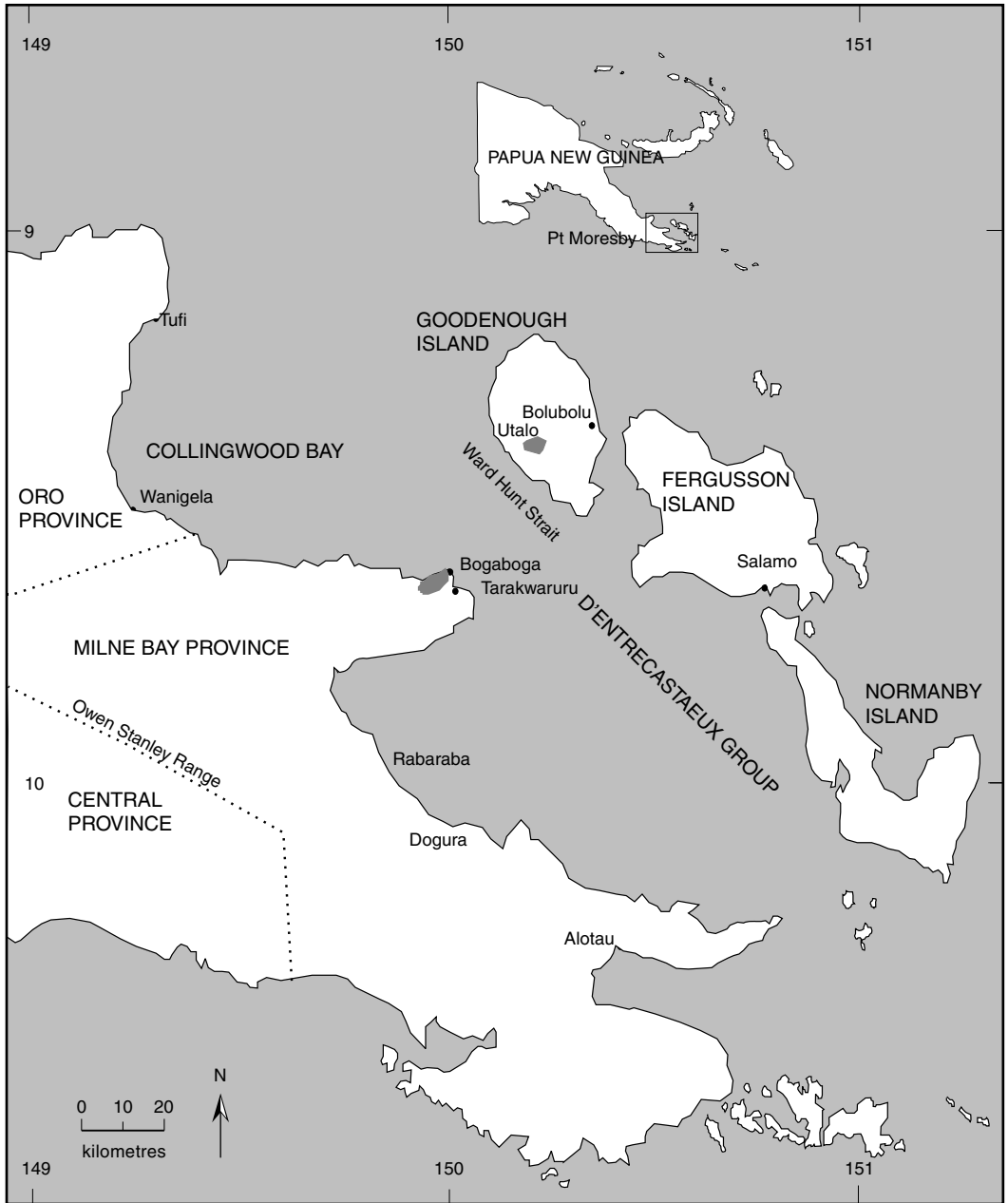


Figure 1. Milne Bay and adjacent provinces showing study sites.

Climatic factors are a critical factor influencing food security. Climatically, Cape Vogel and Goodenough Island have very marked wet and dry seasons. There is a long dry season dominated by southeasterly winds from late May to September. Most rain falls from December to May. The general rainfall pattern on Goodenough Island is similar to that on Cape Vogel (Fig. 2), although rainfall is higher there because of orographic effects.

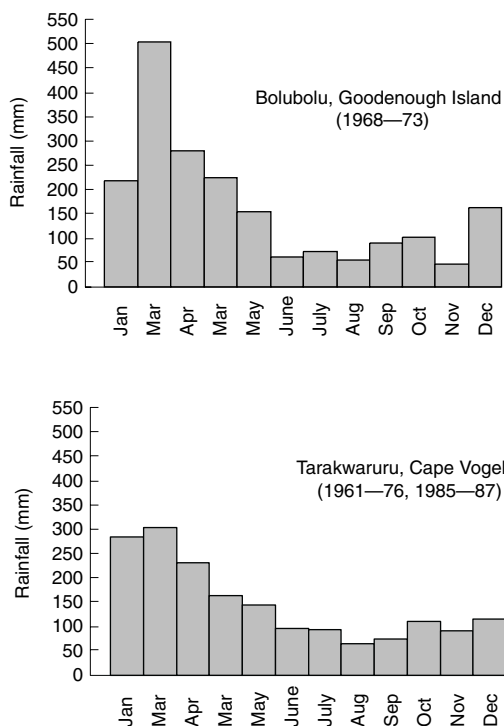


Figure 2. Rainfall patterns on Goodenough Island and Cape Vogel (PNG Bureau of Meteorology).

Over the past 100 years, five major droughts have been recorded in 1899–1901, 1911–12, 1946–47 (Young 1971), 1957–58 (McBarron 1958) and 1997. Of these, the 1946–47 drought is considered to have been the most severe, and the 1997 drought was of comparable severity (Allen and Bourke 1997). Given this history of severe droughts and long dry seasons, food security is an important issue on Cape Vogel and Goodenough Island, both at normal times and during unpredicted prolonged drought conditions.

This paper argues that food security can be ensured in drought-prone areas by maintaining crop diversity, cultivar diversity and food distribution systems. These factors are complementary in enabling food security in such areas.

Methods

During 1997–1999, I studied crop use on Cape Vogel and Goodenough Island and was able to observe the impact of the drought on village communities in these areas. My study focused on two villages: (i) Utalo village on Goodenough Island (a traditional subsistence community); and (ii) Bogaboga village on Cape Vogel (a community with a stronger association with the urban and national economy).

Qualitative information was obtained through observation and informal interviews of individuals and groups. This information was validated with formal interviews with individuals, survey of gardens for cultivar diversity and abundance, and household surveys of food consumption.

Crop Diversity

Very high crop diversity occurs in many of the gardens at both Bogaboga and Utalo. In any one garden, up to 40 different crop species may be grown for consumption. However, the following discussion focuses on basic starch or staple foods. The staple foods on Cape Vogel and Goodenough depend on the time of the year and type of garden visited. Both areas have four or five major food crops as staples that contribute most to daily consumption and are most highly valued culturally. At Cape Vogel, these staples include two species of yam, *Dioscorea alata* and *D. esculenta*, banana and sweet potato. In periods of low food availability, sago is also important. On Goodenough Island, taro, yam and banana are most important culturally. Cassava is not of cultural importance, but it forms a significant part of the diet.

Diversity of cultivars

A high diversity of cultivars was observed in some species (Table 1). Although each crop may show many cultivars, within taro and banana gardens the most productive cultivars are most common. Small numbers of other cultivars are maintained in moderate numbers as an insurance against adverse conditions, while the rest of the cultivars are maintained for ‘sentimental’ reasons. Yam, which can be stored, has many

Table 1. Numbers of different cultivars of important food crops grown in gardens at Utalo and Bogaboga and proportion that are drought tolerant.

Region	Taro	Yam (<i>Dioscorea alata</i>)	Yam (<i>Dioscorea esculenta</i>)	Banana
Utalo	42	24	12	22
Drought-tolerant varieties	1	6 (25%)	3 (25%)	2 (9%)
Bogaboga	10	26	23	15
Drought-tolerant varieties	0	5 (19%)	3 (13%)	3 (20%)

cultivars. New crops such as cassava have been integrated into the local crop management system. Taro at Utalo and *D. alata* at Bogaboga illustrate the diversity and management of traditional crops, while cassava at Utalo illustrates management of an introduced crop.

At Utalo villagers identify 42 cultivars of taro. Three cultivars dominate, with a further cultivar (Kwadogana) also present in moderate numbers. The remaining cultivars are present in very small numbers. Normally, people do not eat Kwadogana but this variety can survive drought and is available even in severe dry periods. Such varieties are planted year after year as an insurance against drought, even if they are not eaten every year.

Bogaboga people identify 25 cultivars of *D. alata*. Half of these yam cultivars are planted in large numbers while the other half cover a small area. Yam cultivars vary in time of maturity and storability. While some cultivars are consumed as soon as they are harvested, others go into storage. Overall, yams are managed such that their availability for consumption is prolonged.

In Utalo, seven known cultivars of cassava that mature at different times are grown. Most cultivars are planted in about equal numbers but one or two cultivars are planted in lower numbers. Cassava can be eaten all year round if constancy of planting is maintained. Although cassava is available in Bogaboga, it is not a status food as are yams and banana, and not everyone grows or eats it.

Crop Management Systems

Different crops have different ecological requirements. For example, yam needs good drainage and has a high nutrient requirement. Therefore new forest plots are cleared each year on hill slopes to cultivate it. Cassava, on the other hand, grows in nutrient-poor soils and is therefore used in the second or third planting in

old yam gardens, or cultivated in poor grassland soils or water-logged floodplain soils.

In Utalo, yam gardens are cleared annually on forested hill slopes and are planted in September and October. The first taro is also planted during this period. Taro is planted in pure taro plots or intercropped with yam. Yam harvest starts in April and ends in July. A mixture of sweet potato, banana and cassava is planted in the harvested yam mounds. When the sweet potato and cassava from the second planting are harvested some 6–9 months later, cassava and *pitpit* (*Saccharum edule*) are planted but no further weeding occurs. The variety of cassava in the last planting is called *fiti* and will serve as food for wild pigs and people if food becomes scarce during the next year. The average fallow period in these areas is 15 years or more.

At Bogaboga, yam gardens are usually planted in October and early November on hill slopes cleared from secondary forest. Yams mainly occupy the top part of the slope, while some bananas mixed with sweet potato are planted on the lower part of the slope. Gardens are fenced to keep out wild pigs and wallabies. Yam is harvested from May to August. Some of the yam is left unharvested while sweet potato and bananas are planted in the mounds where yam had been harvested. The unharvested yam produces the first crop of yam in the following year. Little taro is grown at Bogaboga. The garden is abandoned after the third year and left fallow for 20–30 years.

'Banana gardens' are made annually at both Utalo and Bogaboga in low woody regrowth on areas of flat or gently sloping land. These gardens are made close to the village and, while dominated by bananas, they also grow cassava and sweet potato. Although the gardens are abandoned after two years, the bananas remain productive for the next 3–5 years. The fallow period is 5 years.

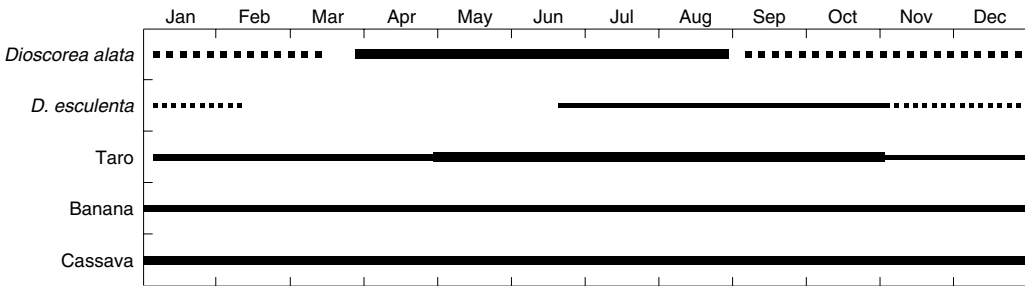
Food Availability

'Cassava and sweet potato gardens' are made in grasslands along streams. The gardens are abandoned once the cassava and sweet potato are harvested, usually within nine months, and are left fallow for two years. These gardens serve as a convenient source of food close to houses.

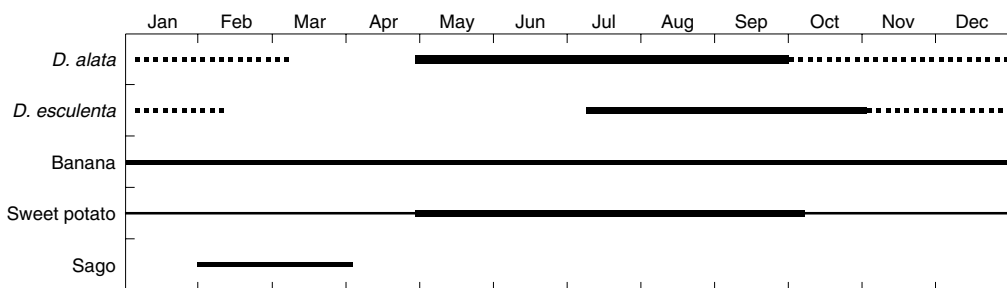
All three types of gardens are essential for managing the necessary staple crops and their cultivars. The most important source of food is from the yam and banana gardens. Food is harvested from each garden at different times of the year. During periods when yam is not available, banana from floodplain gardens and cassava from old yam gardens are harvested. All three gardens have to be managed to ensure yearlong food availability.

Because of the different types of gardens cultivated and the large number of cultivars maintained, food is generally available throughout the year at Utalo and Bogaboga (Fig. 3). Different types of food are eaten at different times of the year. In Utalo, banana, sweet potato, cassava and taro are all available all year round in varying quantities. Sweet potato, cassava and bananas mainly come from floodplain gardens or old yam gardens. Between December and April, food is harvested from the floodplain gardens, grassland gardens and old yam gardens. From April, yam forms a large component of daily meals, continuing through to October when yam is again planted. Different yam cultivars mature at different times and have different storage properties. Hence, the availability of yam can

Utalo



Bogaboga



The thickness of the bands indicates abundance:

- directly from gardens
- from storage

Figure 3. Food availability at Utalo and Bogaboga in non-drought years.

be managed, making it available in small amounts beyond the immediate yam harvest period.

Taro and banana are very dependent on high water availability. During prolonged dry periods, taro is the first to die and bananas become unproductive. During droughts, yams, sweet potato and cassava become the most important foods. Cassava is not a highly valued food: people in Cape Vogel will not eat cassava unless they are really desperate. At times of food scarcity, however, cassava becomes the main source of food at Utalo. For reasons not currently understood, very little sweet potato is eaten in Utalo.

Social Networks in Food Production and Redistribution

Social networks are critical for food production, maintenance of crop diversity and food redistribution in PNG, and serve to enhance food security. Members of a clan garden together, or help each other with garden work, and share the food produced. Clans have alliances to exchange food and reciprocity is common. Important occasions such as feasts are held to release and redistribute food. This sharing and reciprocity ensures general food security for all at all times, good or bad.

The 1997 Drought

In both areas, the drought started toward the end of March 1997 and the first rains came in December 1997, although heavy rain did not occur until late January 1998. The national assessment of food and water supply in October 1997 classified both areas as having no food available from gardens (Allen and Bourke 1997).

Utalo

Within two months of the onset of the drought, most of the taro plants at Utalo had died but small amounts of the drought-resistant cultivar Kwadogana remained available for a short time. In April, the yam harvest was much reduced and very little was stored. Yam was eaten as it was harvested from the gardens until July; stored yam was available until September. Until September, cassava served as a major food source and remained available for a long period. Further cassava was collected from fallow hillside gardens, and served as a major food source. Wild yams and figs (*Ficus capriosa*) were also eaten. In early January 1998, breadfruit became available (Fig. 4).

In September 1997, the community made copra, which they sold in Alotau. The money earned enabled people to buy rice (about 20–30 kilograms per family), which helped to sustain them until January 1998. People were only able to purchase this large quantity of rice once during the drought in Alotau, and they received very little food aid rice because of their isolation.

People continued to plant yam gardens on the hill slopes during the drought. In addition, they cleared gardens on river banks where they planted taro, cassava, sweet potato and pumpkin. All gardens recovered quickly when the rains arrived, although the first food harvested came from the gardens closer to the river, which produced food within two months of the rain arriving. By the end of March 1998, food was plentiful in those gardens, with people feeding sweet potato and pumpkins to pigs. Yams then recovered and the April–May harvest of 1998 appeared to be normal. Taro was slow to recover and material had to be taken from the river gardens to plant in the hillside gardens. By July 1998, the taro harvest was back to normal.

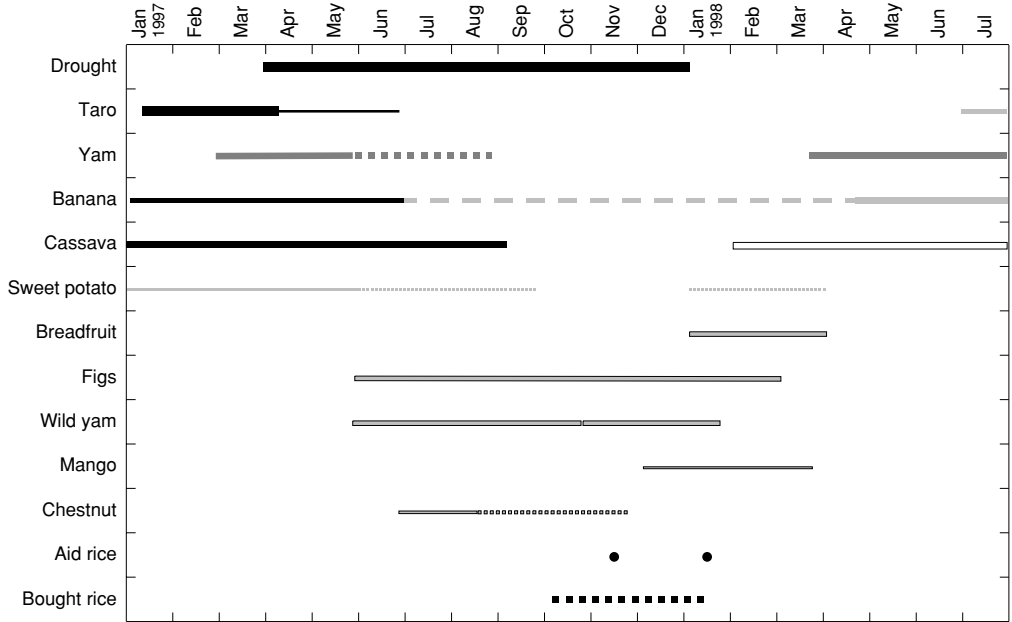
Feasting was limited during the drought but people engaged in *kweli*, which is a tradition of moving around, from one village to the next, singing. Singers received food as gifts. Rice that was bought with the money raised from the sale of copra and the small amount of aid rice often appeared as gifts in *kweli* events. Coastal people sang in inland villages to receive wild yams and wildfowl eggs, while inland people received fish from coastal villages.

Bogaboga

At Bogaboga, yams and bananas failed in most gardens as soon as the drought set in. A few of the gardens that were further inland in wetter areas had yams and bananas until September 1997. Most people ate sweet potato, which was available until June. From June to August, wild yams were harvested from remnant forest. From November, sago was made (Fig. 4).

Around October 1997, people were told that food was available from the government. They left their gardens and moved back to the main village. Many of the gardens were not planted again until late 1998. This was partly because people had eaten their planting material and partly because they did not have food to feed other people helping with clearing and fencing of gardens. In the latter part of 1997, mangos became plentiful and breadfruit became available in early 1998. People did not eat cassava during the drought, although they planted and ate it during the

Utalo



Bogaboga

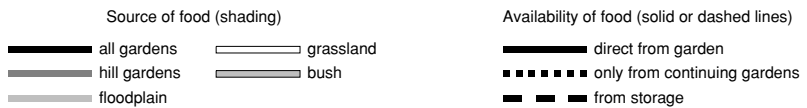
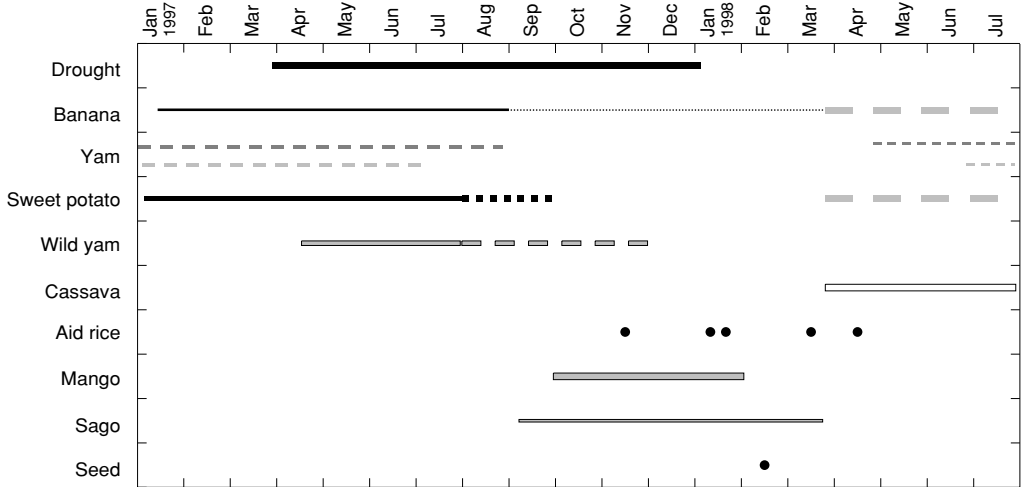


Figure 4. Food availability during the 1997 drought and recovery period in Utalo and Bogaboga.

recovery period from January 1998. Fish and shellfish were abundant and supplemented rice. Many families also received money from relatives living elsewhere and they used this to buy rice and other foods from trade stores.

The first aid rice arrived in early November 1997. From this time until April 1998 Bogaboga people received five shipments of aid rice: a total of about 100–150 kilograms of rice per household for a period of six months. Even by early 1998 many people had not made new gardens, mainly because they were confident that aid rice and remittance money would continue to flow in.

Discussion

In Utalo, people recognised that a drought had set in. They changed their garden behaviour by moving closer to wet areas to cultivate crops that were likely to tolerate dry conditions. At the same time they turned to food which in normal circumstances would not be eaten. They foraged for wild foods. When they realised that their natural sources of food were not sufficient they turned towards commercial food. However, they did not become reliant on it. Instead they treated it as luxury food by giving it away as they would with yam and taro in normal conditions. While foraging and living on wild foods, they continued to plant yam and other gardens in anticipation of rain. This anticipation paid off as those gardens recovered within two months of the rains returning. The social practices for redistributing food continued under a different guise. At no point did people depend on the government for food. The people's perception was that the government had no interest in their wellbeing and that they would have to be self-reliant.

In Bogaboga, reaction to the 1997 drought was very different from previous drought years. Traditionally, as soon as drought conditions prevail, people move closer to water sources and swampy areas and plant banana, sweet potato and pumpkin. The yam planting material is stored away and planted as soon as the rains arrive. People forage in the forest for wild yam and berries and in the grasslands they harvest wild *Pueraria* tubers. Their main traditional source of food during droughts is the underground stem of bananas called *bagana*. These are harvested when the swamp gardens are being planted. The stems are cleaned, baked and stored above the fireplace. *Bagana* can be stored for six months. When needed, it is peeled,

soaked, sliced or grated, and cooked again before being eaten. A diet of wild yam, *Pueraria* and *bagana* is always supplemented with fish and shellfish, which are plentiful.

During the 1997–98 drought, however, only 12 households established swamp gardens and eventually returned to normal gardening practice when the rains arrived. For those who maintained their planting material and gardens, food was harvested by May 1998. Food was so plentiful that one clan from among this group challenged another clan to a competitive food exchange (a way of distributing excess food that would otherwise spoil).

Purchased rice and food aid rice replaced the need for *bagana* or *Pueraria* tubers. Prolonged availability of rice removed the need to establish grassland and floodplain gardens. Recovery of gardens was difficult because people lost planting material. Most of the people started returning to grassland and floodplain gardens around mid-1998. They had to wait another year to establish yam gardens when planting material again became available.

Recovery would have been much quicker but people in Bogaboga not only lost a lot of planting materials but also stopped making their gardens, particularly the most important yam and banana gardens. The people of Bogaboga relied on cash and government assistance, which ultimately hindered their recovery.

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The El Niño Drought: an Overview of the Milne Bay Experience

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Abstract

The El Niño drought struck PNG between April 1997 and March 1998 with an impact that had not been experienced by the present population of Milne Bay Province. Food gardens, water supplies and livelihoods were all but destroyed on a wide scale. As a result, the national government, provincial governments and aid donors were obliged to provide relief supplies to those who had been severely affected.

Milne Bay Province had its share of the devastating effect of the drought. The distribution of relief supplies was daunting because of the fragmented nature of the province, with more than 80% of its population physically located in the three island districts, and the complex logistics needed to overcome this. This paper highlights the Milne Bay experience.

THIS paper discusses the effects of the 1997–98 El Niño drought and the efforts involved to mitigate its effects, especially in the Milne Bay Province. While this paper will attempt to highlight the Milne Bay experience, the views expressed are the writer's and not necessarily those of the Milne Bay Provincial Government nor its implementing agency, the Milne Bay Administration.

Geography of Milne Bay

Milne Bay Province comprises the southeastern portion of PNG and takes its name from the deeply indented Milne Bay. It is the most fragmented province in the entire country with its geographic boundaries encompassing some 16,200 square kilometres of land and more than 100,000 square kilometres of sea.

Approximately 25% of the total land mass comprises 10 relatively large islands and 150 smaller islands and atolls. The most dominant feature of the province's mainland is the Owen Stanley Ranges,

rising in height to three mountain peaks of more than 3000 metres above sea level.

Extending eastwards over the higher sections of the submerged extremities of the range are the Engineer and Conflict groups of islands and the islands of the Louisiade Archipelago, covering the Misima, Sudest and Rossel Islands in particular. Directly north of the mainland is the D'Entrecasteaux group of Normanby, Fergusson and Goodenough Islands. Goodenough Island is one of the most mountainous islands in the world with its central peak rising to a height of 2536 metres above sea level, flanked by numerous sharp ridges falling suddenly to the narrow coastal alluvial plains. The D'Entrecasteaux Islands are mostly metamorphic rock and volcanoes surrounded by coral and raised limestone formations.

Further to the north of the D'Entrecasteaux group are the Trobriand Islands. The largest island is Kiriwina which is only just above the sea level at its highest point. To the east of the Trobriand Islands are the Lachlan group of Iwa, Gawa and Kweiwatta Islands and, further east, the Woodlark Islands of which Budibudi Island is the most easterly inhabited island.

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Vegetation

The most common natural vegetation found in Milne Bay Province is forest that covers most of the mainland and the higher parts of the D'Entrecasteaux, Misima and Woodlark Islands. Grasslands are very extensive on the north coast and in the Sagarai valley, southwest of Alotau on the mainland. Smaller grasslands can be found on Goodenough and Fergusson Islands. A wide variety of mangroves are also common on the mainland coastline and on the major islands.

Climate

Climatic conditions vary throughout the province and are related to topography. A general climatic description would be: wet from November to March; and dry from April to October. However, in parts of the province, the seasonal rainfall patterns are quite reversed, and in other locations rainfall is high throughout the year. As well, the seasonal northwesterly and southeasterly winds can make seas quite treacherous for coastal vessels.

Population Statistics

The 1990 National Population Census showed a total of 157,288 residents in Milne Bay Province, an increase of 18.7% over the 10 years from 1980–90. District populations are as listed in Table 1. Approximately 94% of the total population live in the rural areas compared to a national average of 85%.

Table 1. Increases in Milne Bay Province district populations between 1980 and 1990.

District	1980	1990	% increase
Alotau	37,622	47,776	39.4
Esa'ala	20,755	24,416	14.9
Kiriwina– Goodenough	41,205	50,845	37.8
Samarai–Murua	28,289	34,251	32.8
Total	127,891	157,228	18.7

Source: PNG 1990 National Population Census

Cultural groupings

There are three main cultural groupings in Milne Bay Province—*island, coastal and mountain people*—with distinct differences in customs, language, behaviour and general lifestyles. Clan groupings are ancestral and are mixed patrilineal and matrilineal. There are 22

different ethnic groupings with 10 predominant languages spoken in the province.

The El Niño Drought

Milne Bay Province is prone to natural disasters and in 1997 we experienced two.

First, cyclone Justin hovered near Sudest and Rossel Islands in the Misima area of the Samarai–Murua district for 13 days from 6–20 March 1997. Windspeeds of 80 km per hour at its centre and from 140 to 160 km per hour on the outer perimeter caused damage estimated at 1.3 million PGK (PNG kina).¹ Damage was recorded as far west as Rabaraba on mainland Milne Bay. In all, an estimated 22,000 people in all four districts of the province were affected by cyclone Justin.

Second, and soon after, the El Niño drought followed, affecting 15 of the 29 census divisions (CDs) in the province, with eight CDs declared as category 5 (the most serious category) and seven as category 4 (the second most serious category) during the December 1997 Phase 2 Drought Assessment. This amounted to 79,882 people, involving approximately 11,000 households and accounting for about 50% of the 1990 population.

With regard to these figures, however, we suggest that:

- another three CDs should have been assigned a category 5 listing and the affected population should have been reduced in two other CDs; and
- it would have been more realistic to take into account the 18–20% increase in population since 1990 for purposes of distribution of relief supplies.

Overall effect of the drought

The most notable consequences of the drought in Milne Bay Province were:

- food gardens were completely destroyed by lack of rain;
- food sources became restricted on the coast and island areas to coconut, fish, breadfruit, wild yams, roots and nuts and on the mainland to wild yams, nuts, berries, breadfruit, banana corm, immature banana, cassava, sweet potato and some sago;
- gardening activities were abandoned because of the lack of rain;
- infestations of hawkmouth caterpillar and fruit piercing moth appeared in some parts of the province (Rabaraba and Alotau);

¹ In 1997, 1 PGK = approx. US\$0.70 (A\$0.94).

- water sources near villages dried up requiring villagers to walk considerable distances to collect water from creeks and rivers;
- smaller rivers and creeks dried up;
- an increase in skin diseases and diarrhoea resulted from the use of contaminated water;
- widespread damage by bushfires, many of which were deliberately lit to flush out animals as a protein source; and
- 19 schools were shut down and 31 others were reduced to half-day classes.

Major tasks to alleviate the effects of the drought

- The distribution of relief supplies (of basic food and water) to the worst affected areas of the province.
- The purchase and collection of seed and planting materials from the least-affected areas for distribution to the worst-affected areas.
- The planting of four seed multiplication gardens at Bubuleta Agricultural Station with quick-growing crops, such as sweet potato, cassava, *aibika* (*Abelmoschus manihot*), corn, giant swamp taro and high-yielding coconuts, for continued distribution even after the effects of the drought had abated.
- The formulation of short- and long-term fishing and agricultural rehabilitation programs in the light of this experience.

Funding

The Milne Bay Provincial Government had appropriated 100,000 PGK in its 1997 budget for disaster and emergencies within the province. However, this funding was exhausted by April 1997 in the aftermath of cyclone Justin in the Sudest and Rossel Island areas of the Samarai–Murua District.

An additional 100,000 PGK was secured from the Milne Bay Provincial Government and, together with only 40,000 PGK of a 100,000 PGK commitment from the National Disaster and Emergency Services (NDES), the Provincial Disaster Office continued to deal with the aftermath of cyclone Justin. In all, 240,000 PGK was spent on the cyclone relief exercise. Almost 60% of this funding was spent on sea transportation between Alotau and the Sudest–Rossel Island area.

After cyclone Justin, there was no funding available to address the effects of the El Niño drought.

Because of the enormity of the drought, the Milne Bay Provincial Government released another 113,300

PGK in August–September 1997 from savings identified in the normal budgetary review process. The national government assisted with another 30,000 PGK and donations from private enterprise and the general public amounted to 5000 PGK.

For the second half of 1997, a total of approximately 150,000 PGK was available for the El Niño drought relief exercise and, given the maritime nature of the province, and the extent of the drought, this funding was insufficient to say the least. However, the funding formed the basis for our Phase 1 operations (see below).

While an urgent request to the Milne Bay Provincial Government for an additional 250,000 PGK had been approved, funds could not be released owing to the end of the year closure of accounts.

The national government, through the Department of Finance, had also released to the chairpersons of the province’s four district planning committees, a combined amount of 105,000 PGK which was allocated to districts as follows:

- Alotau District—21,907 PGK;
- Esa’ala District—26,860 PGK;
- Kiriwina–Goodenough District—27,032 PGK; and
- Samarai–Murua District—30,176 PGK.

Because of the Department of Finance’s instructions that these funds only be used under the authority of the respective district chairpersons, it was difficult to access the funds. In some cases, it was necessary to commit funds in the respective districts without the chairperson’s approval and this resulted in some problems for provincial government staff.

For 1998, the Milne Bay Provincial Government appropriated 225,000 PGK in its budget to address all disaster and emergency occurrences throughout the year, including the El Niño drought.

Two local level governments (LLGs), Kiriwina and Goodenough, had assisted the Provincial Disaster Committee with 20,000 PGK each, which was tied to cover only the costs for the transportation of relief supplies to their respective areas.

The national government, through the then Minister for Provincial and LLGs under whom NDES fell, committed 620,000 PGK to assist Milne Bay in this exercise with an initial amount of 120,000 PGK in mid-January and another 500,000 PGK by the third week of January 1998. Only 75,000 PGK was released under this commitment, with instructions for it to be divided equally to cover transportation and expenses incurred.

A local politician had managed to secure approximately 68,000 PGK directly from NDES for relief supplies, which he forwarded directly to his electorate for

distribution. We were informed that this would come out of our provincial funds allocation. For obvious reasons, we had flatly rejected this situation and, as well, we had refused to be accountable for the distribution of these supplies.

Phase 1 Operations

Initial reports of the effects of the El Niño drought were received from rural-based government officers in July 1997. These reports indicated that although this was the dry season (April to October), which is the normal harvesting season, villagers had reported that the harvest had not been good and that most root crops were ‘burnt and/or shrivelled’ prior to the harvest. Most reports indicated an acute shortage of food within the community.

The Phase 1 operation commenced in early October 1997 with a total funding of approximately 150,000 PGK. This involved the purchase of relief supplies for distribution to the drought affected areas and initially included items such as rice, flour, margarine, dried peas, sugar, tea and powdered milk. However, when the extent of the drought and the limited funds available were realised, we quickly reduced the items to rice, flour and dried peas.

Phase 1 operations covered Cape Vogel, Goodenough Bay Coastal, Maramatana and parts of Suau; CDs in the Alotau District; areas in the Kiriwina and Goodenough Islands in the Kiriwina–Goodenough District; the smaller island communities of the Samarai Island; the Rossel, Sudest and Calvados Chain in the Misima area; the smaller islands of the Woodlark Island Census Divisions in the Samarai–Murua District; and parts of the West Fergusson and Dobu LLG areas in the Esa’ala District. In all, 50 tonnes (2500 bales) of rice, 30 tonnes (600 bales) of flour and 600 cartons of dried peas were distributed to about 39,000 people.

Phase 2 Operations

Phase 2 of operation commenced in January and was completed by March 1998. It involved the distribution of 319 tonnes of rice donated by the Australian Agency for International Development (AusAID) in December 1997 and another 20 tonnes donated by the Republic of China.

Despite the lack of funding, during the first 17 days of the operation in January 1998 we moved 165 tonnes of rice to 13 CDs for approximately 50,000 people using 13 local vessels and 9 vehicles (whose owners

had agreed to be paid at a later date once funds were made available).

At the start of the new school year, we distributed some rice to all educational institutions that were taking in boarding students, as well as rural health centres with inpatient ward facilities. By the end of March, a total 319 tonnes of rice had been effectively distributed into all category 5 and category 4 areas within the province.

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- political interference and influence in the quantifying and distribution of relief supplies;
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While the distribution of the Japanese government’s donated relief supply of rice continued in the same manner as in the phase 2 operation, the emphasis was now on the agricultural rehabilitation process in all the affected areas.

One of the major agricultural areas in the province, the Rabaraba area on the north coast mainland, had been severely affected by the drought. Other areas such as Duau, the eastern half of Normanby Island and the east Fergusson Island area had not been affected as much, and the Huhu and Sagarai areas of Alotau fared relatively well. It was from these areas that we collected local planting material, donated free of charge for the rehabilitation program, for distribution. Material included, banana suckers, cassava sticks, yam setts, sweet potato runners, *aibika*, Chinese taro (*Xanthosoma*), *pitpit* (*Saccharum edule*), sugarcane, corn, pumpkin and coconuts.

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Esa'ala district; the Lusancay, Kilivila and Kitava CDs of the Kiriwina–Goodenough District, and Woodlark Island CD in the Samarai–Murua District.

The next phase of the agriculture rehabilitation program covered the distribution of seedlings and planting materials to the West Calvados, East Calvados and Deboyne–Reynard CDs in the Misima area of the Samarai–Murua District.

A seed multiplication garden with planting materials purchased from the Lowlands Agricultural Experiment Station at Keravat had been planted at Bubuleta Research Station and were ready by June or July 1998 for distribution.

The investigating entomologist on the fruit piercing moth and sweet potato and taro hawkmoth infestations recommended letting these run their natural cycle. Although certain cultural practices and control measures could have lessened the damage, their impact would not have been significant: thus economic losses were high.

Public Health

All 154 health institutions throughout the province (including 14 health centres, 16 subhealth centres and 124 aidposts) were sufficiently stocked with drugs during the drought. The major concern was the movement of health personnel in the event of an outbreak of any diseases.

In February 1998, two major outbreaks of a complication of malaria, pneumonia and influenza had been reported at Aragip in the (lower) Daga CD of the mainland and on the outer islands of Egum, Iwa and Gawa in the Woodlark CD. Health teams despatched to these areas had brought both situations under control.

Aragip reported 13 deaths, of which two were children. On Egum, Iwa and Gawa islands, eight deaths were recorded (four adults and four children) and one death was reported in the Suau CD in the Alotau district.

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tralian navy barges. Our attempts to deliver water using the same vessels to the outer islands (Egum, Yanaba, Iwa and Gawa) were not successful due to navigational constraints.

The Geological Survey Division of the then Department of Minerals and Energy had despatched its officers to Milne Bay Province with a proposal to drill for water on the more isolated islands of the province; we are not aware of the results of this activity. The nongovernment organisation Adventist Disaster and Relief Agency (ADRA) of the Seventh Day Adventist Church had been successfully finding underground water sources and digging them out in the Rabaraba area using divining rods.

Despite the severe shortage of drinking water in all the drought-affected areas, most people had reverted to traditional water sources, previously been abandoned because of difficult access, in favour of the more accessible water tanks and bore waterpumps.

With the exception of Samarai, there had not been any reported major need for drinking water.

Conclusion

Following the drought, agriculturalists from the Milne Bay Administration who had been part of the Milne Bay Province drought relief team drew up food security proposals for Milne Bay Province covering subsistence and semicommercial food production, rice and grain development, atoll farming, fisheries and marine resources and seed distribution projects as short-, medium- and long-term proposals. It now remains for the government to approve funding for these proposals.

We were very well able to address most of the health problems that arose during this drought. However, we were not successful in addressing the need for water in all the affected communities. We can only pray that someone will solve this problem before the next El Niño-type drought appears and that, when it does, the need for water does not become a pressing issue.

In all, the people of Milne Bay Province were able to withstand the effects of the El Niño drought very well, given the severity of its effect on their livelihoods.

The El Niño Drought: an Overview of the Milne Bay Experience

Allen Jonathon*

Abstract

The El Niño drought struck PNG between April 1997 and March 1998 with an impact that had not been experienced by the present population of Milne Bay Province. Food gardens, water supplies and livelihoods were all but destroyed on a wide scale. As a result, the national government, provincial governments and aid donors were obliged to provide relief supplies to those who had been severely affected.

Milne Bay Province had its share of the devastating effect of the drought. The distribution of relief supplies was daunting because of the fragmented nature of the province, with more than 80% of its population physically located in the three island districts, and the complex logistics needed to overcome this. This paper highlights the Milne Bay experience.

THIS paper discusses the effects of the 1997–98 El Niño drought and the efforts involved to mitigate its effects, especially in the Milne Bay Province. While this paper will attempt to highlight the Milne Bay experience, the views expressed are the writer's and not necessarily those of the Milne Bay Provincial Government nor its implementing agency, the Milne Bay Administration.

Geography of Milne Bay

Milne Bay Province comprises the southeastern portion of PNG and takes its name from the deeply indented Milne Bay. It is the most fragmented province in the entire country with its geographic boundaries encompassing some 16,200 square kilometres of land and more than 100,000 square kilometres of sea.

Approximately 25% of the total land mass comprises 10 relatively large islands and 150 smaller islands and atolls. The most dominant feature of the province's mainland is the Owen Stanley Ranges,

rising in height to three mountain peaks of more than 3000 metres above sea level.

Extending eastwards over the higher sections of the submerged extremities of the range are the Engineer and Conflict groups of islands and the islands of the Louisiade Archipelago, covering the Misima, Sudest and Rossel Islands in particular. Directly north of the mainland is the D'Entrecasteaux group of Normanby, Fergusson and Goodenough Islands. Goodenough Island is one of the most mountainous islands in the world with its central peak rising to a height of 2536 metres above sea level, flanked by numerous sharp ridges falling suddenly to the narrow coastal alluvial plains. The D'Entrecasteaux Islands are mostly metamorphic rock and volcanoes surrounded by coral and raised limestone formations.

Further to the north of the D'Entrecasteaux group are the Trobriand Islands. The largest island is Kiriwina which is only just above the sea level at its highest point. To the east of the Trobriand Islands are the Lachlan group of Iwa, Gawa and Kweiwatta Islands and, further east, the Woodlark Islands of which Budibudi Island is the most easterly inhabited island.

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Vegetation

The most common natural vegetation found in Milne Bay Province is forest that covers most of the mainland and the higher parts of the D'Entrecasteaux, Misima and Woodlark Islands. Grasslands are very extensive on the north coast and in the Sagarai valley, southwest of Alotau on the mainland. Smaller grasslands can be found on Goodenough and Fergusson Islands. A wide variety of mangroves are also common on the mainland coastline and on the major islands.

Climate

Climatic conditions vary throughout the province and are related to topography. A general climatic description would be: wet from November to March; and dry from April to October. However, in parts of the province, the seasonal rainfall patterns are quite reversed, and in other locations rainfall is high throughout the year. As well, the seasonal northwesterly and southeasterly winds can make seas quite treacherous for coastal vessels.

Population Statistics

The 1990 National Population Census showed a total of 157,288 residents in Milne Bay Province, an increase of 18.7% over the 10 years from 1980–90. District populations are as listed in Table 1. Approximately 94% of the total population live in the rural areas compared to a national average of 85%.

Table 1. Increases in Milne Bay Province district populations between 1980 and 1990.

District	1980	1990	% increase
Alotau	37,622	47,776	39.4
Esa'ala	20,755	24,416	14.9
Kiriwina– Goodenough	41,205	50,845	37.8
Samarai–Murua	28,289	34,251	32.8
Total	127,891	157,228	18.7

Source: PNG 1990 National Population Census

Cultural groupings

There are three main cultural groupings in Milne Bay Province—*island, coastal and mountain people*—with distinct differences in customs, language, behaviour and general lifestyles. Clan groupings are ancestral and are mixed patrilineal and matrilineal. There are 22

different ethnic groupings with 10 predominant languages spoken in the province.

The El Niño Drought

Milne Bay Province is prone to natural disasters and in 1997 we experienced two.

First, cyclone Justin hovered near Sudest and Rossel Islands in the Misima area of the Samarai–Murua district for 13 days from 6–20 March 1997. Windspeeds of 80 km per hour at its centre and from 140 to 160 km per hour on the outer perimeter caused damage estimated at 1.3 million PGK (PNG kina).¹ Damage was recorded as far west as Rabaraba on mainland Milne Bay. In all, an estimated 22,000 people in all four districts of the province were affected by cyclone Justin.

Second, and soon after, the El Niño drought followed, affecting 15 of the 29 census divisions (CDs) in the province, with eight CDs declared as category 5 (the most serious category) and seven as category 4 (the second most serious category) during the December 1997 Phase 2 Drought Assessment. This amounted to 79,882 people, involving approximately 11,000 households and accounting for about 50% of the 1990 population.

With regard to these figures, however, we suggest that:

- another three CDs should have been assigned a category 5 listing and the affected population should have been reduced in two other CDs; and
- it would have been more realistic to take into account the 18–20% increase in population since 1990 for purposes of distribution of relief supplies.

Overall effect of the drought

The most notable consequences of the drought in Milne Bay Province were:

- food gardens were completely destroyed by lack of rain;
- food sources became restricted on the coast and island areas to coconut, fish, breadfruit, wild yams, roots and nuts and on the mainland to wild yams, nuts, berries, breadfruit, banana corm, immature banana, cassava, sweet potato and some sago;
- gardening activities were abandoned because of the lack of rain;
- infestations of hawkmoth caterpillar and fruit piercing moth appeared in some parts of the province (Rabaraba and Alotau);

¹ In 1997, 1 PGK = approx. US\$0.70 (A\$0.94).

- water sources near villages dried up requiring villagers to walk considerable distances to collect water from creeks and rivers;
- smaller rivers and creeks dried up;
- an increase in skin diseases and diarrhoea resulted from the use of contaminated water;
- widespread damage by bushfires, many of which were deliberately lit to flush out animals as a protein source; and
- 19 schools were shut down and 31 others were reduced to half-day classes.

Major tasks to alleviate the effects of the drought

- The distribution of relief supplies (of basic food and water) to the worst affected areas of the province.
- The purchase and collection of seed and planting materials from the least-affected areas for distribution to the worst-affected areas.
- The planting of four seed multiplication gardens at Bubuleta Agricultural Station with quick-growing crops, such as sweet potato, cassava, *aibika* (*Abelmoschus manihot*), corn, giant swamp taro and high-yielding coconuts, for continued distribution even after the effects of the drought had abated.
- The formulation of short- and long-term fishing and agricultural rehabilitation programs in the light of this experience.

Funding

The Milne Bay Provincial Government had appropriated 100,000 PGK in its 1997 budget for disaster and emergencies within the province. However, this funding was exhausted by April 1997 in the aftermath of cyclone Justin in the Sudest and Rossel Island areas of the Samarai–Murua District.

An additional 100,000 PGK was secured from the Milne Bay Provincial Government and, together with only 40,000 PGK of a 100,000 PGK commitment from the National Disaster and Emergency Services (NDES), the Provincial Disaster Office continued to deal with the aftermath of cyclone Justin. In all, 240,000 PGK was spent on the cyclone relief exercise. Almost 60% of this funding was spent on sea transportation between Alotau and the Sudest–Rossel Island area.

After cyclone Justin, there was no funding available to address the effects of the El Niño drought.

Because of the enormity of the drought, the Milne Bay Provincial Government released another 113,300

PGK in August–September 1997 from savings identified in the normal budgetary review process. The national government assisted with another 30,000 PGK and donations from private enterprise and the general public amounted to 5000 PGK.

For the second half of 1997, a total of approximately 150,000 PGK was available for the El Niño drought relief exercise and, given the maritime nature of the province, and the extent of the drought, this funding was insufficient to say the least. However, the funding formed the basis for our Phase 1 operations (see below).

While an urgent request to the Milne Bay Provincial Government for an additional 250,000 PGK had been approved, funds could not be released owing to the end of the year closure of accounts.

The national government, through the Department of Finance, had also released to the chairpersons of the province’s four district planning committees, a combined amount of 105,000 PGK which was allocated to districts as follows:

- Alotau District—21,907 PGK;
- Esa’ala District—26,860 PGK;
- Kiriwina–Goodenough District—27,032 PGK; and
- Samarai–Murua District—30,176 PGK.

Because of the Department of Finance’s instructions that these funds only be used under the authority of the respective district chairpersons, it was difficult to access the funds. In some cases, it was necessary to commit funds in the respective districts without the chairperson’s approval and this resulted in some problems for provincial government staff.

For 1998, the Milne Bay Provincial Government appropriated 225,000 PGK in its budget to address all disaster and emergency occurrences throughout the year, including the El Niño drought.

Two local level governments (LLGs), Kiriwina and Goodenough, had assisted the Provincial Disaster Committee with 20,000 PGK each, which was tied to cover only the costs for the transportation of relief supplies to their respective areas.

The national government, through the then Minister for Provincial and LLGs under whom NDES fell, committed 620,000 PGK to assist Milne Bay in this exercise with an initial amount of 120,000 PGK in mid-January and another 500,000 PGK by the third week of January 1998. Only 75,000 PGK was released under this commitment, with instructions for it to be divided equally to cover transportation and expenses incurred.

A local politician had managed to secure approximately 68,000 PGK directly from NDES for relief supplies, which he forwarded directly to his electorate for

distribution. We were informed that this would come out of our provincial funds allocation. For obvious reasons, we had flatly rejected this situation and, as well, we had refused to be accountable for the distribution of these supplies.

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