

Papua New Guinea — a case study*

the population and sago palms mainly grow in the lowlands. Large quantities of water are required to process sago and water shortages cut back food production; some palms were also lost in wildfires.

A drought assessment concluded that by December 1997 around 260 000 people were in a critical life-threatening situation with no food other than that collected from the bush (e.g. leaves, seeds and uncultivated tubers). A further 980 000 were estimated to have small and inadequate amounts of food available from gardens, sago palm, coconuts or freshwater fish. Water supply was also a major problem with 47 000 people having only limited amounts of water for drinking and another 363 000 carrying water of questionable quality extensive distances. Inadequate food and water had an impact on people's health. The problems were spread across all provinces.

The two largest mining ventures, Ok Tedi and Porgera, had their operations disrupted between August 1997 and February 1998 because of lack of water for operations and river navigation. The loss of mineral export revenue because of drought could be as high as US \$200 million.

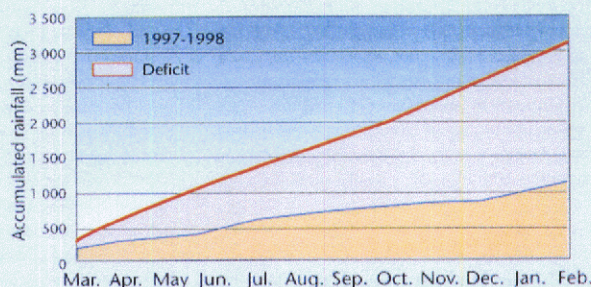
Hydroelectricity normally supplies between 60 and 70 per cent of Papua New Guinea's electricity needs and the level is approximately 90 per cent for Port Moresby. Water levels in the Port Moresby system had reached low levels by June 1997 and load shedding commenced in November 1997 — half of the city was supplied between

7:00 am and midday, and the other half of the city was supplied between 12:30 pm and 6:00 pm. The lack of water forced a shift to more expensive diesel-fired power plants with an overall increase in cost of US \$10 million.

International aid to Papua New Guinea was commenced in December 1997 and supported national efforts to assist the estimated 1.2 million people suffering a severe, and to some a life-threatening, food shortage. Australia initiated a discrete drought relief programme that was operated jointly with the national government. The focus was the delivery of food to the worst affected and inaccessible areas by Australian and Papua New Guinea defence personnel. In total, Australia contributed approximately US \$19.5 million to drought relief with other international donors providing direct support of around US \$5 million. The national government provision for drought relief is estimated to have been more than US \$12.5 million.

* Source: Report by the Australian Agency for International Development [AusAID]

Figure II.47
Accumulated rainfall and deficit from normal for the period March 1997 to February 1998 at Kavieng, Papua New Guinea



(Figure II.44c — 700 hPa is approximately 3 km altitude) show a consistent pattern of suppressed ascent or even subsiding air (shaded yellow/green) south of the equator. The tendency for reduced upward motion also extends into the Northern Hemisphere over Kalimantan and past the southern Philippines into the western Pacific Ocean. The positive anomaly of vertical motion (reduced ascent and suppression of convection) and the positive anomaly pattern of outgoing longwave radiation over the same region (Figure II.44d — positive anomalies green/orange) are consistent with reduced convection and rainfall over the islands of the maritime continent.

The 'dry season' over the islands of Indonesia (defined as consecutive months with less than 150 mm of rainfall) usually

occurs within the period April and September with minimum rainfall in July and August. The season coincides with the outflow of air from Australia during the Southern Hemisphere winter. Consequently, the islands towards the eastern end of the archipelago tend to have a more marked dry season than do those to the west. The impact of the 1997-98 El Niño event on rainfall over Indonesia was to significantly extend the dry season over many parts. The map in Figure II.45a shows that the duration of the dry season during 1997 was more than six months over a large part of Indonesia, and the duration was between eight and ten months for many islands of the southeast. The map in Figure II.45b shows that many parts received less than 50 mm per month for extensive periods.