

Can rural development alleviate poverty in Papua New Guinea?

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The phrase “rural development for poverty alleviation” entered the vocabulary of development and poverty studies in the 1990s. It can now be found in the policy documents of a range of development agencies. For example, ESCAP reported in 1999 on measures to alleviate poverty which contained a section on the “impact of *rural development on poverty alleviation*”² (this and all subsequent emphases added). In 2004 FAO held an international meeting in order to “spearhead” “regional cooperation on agricultural and *rural development for poverty alleviation* and food security in Asia and the Pacific”³.

AusAID’s policy document on rural development⁴ does not use the phrase but implies that the primary objective of its rural development policy is poverty reduction. It states:

“The Australian Government’s strategy for the rural development sector in the aid program is *to focus on reducing rural poverty* by increasing opportunities for the poor to generate income.” (AusAID 2000, 5).

This AusAID paper was prepared before the publication of Baxter’s 2001 report on Papua New Guinea (PNG) poverty which rightly recommends that the aid program should be used to increase rural productivity and to improve rural incomes. He

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² ESCAP (1999) Emerging issues and developments at the regional level: socio-economic measures to alleviate poverty in rural and urban areas. Report of the committee on socio-economic measures to alleviate poverty in rural and urban areas, 55th session, 22-28 April 1999, Bangkok.

³ FAO (2004) The Report of the Regional High Level Round Table, 23-24 February 2004, Bangkok, Thailand. Sub-regional Cooperation for Eradication of Poverty and Food Insecurity in Asia and the Pacific. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific RAP Document 2004/14, Bangkok.

⁴ AusAID (2000) Income generation for the rural poor: the Australian aid program’s rural development strategy. The Australian Agency for International Development, Canberra.

demonstrated that funds allocated to rural areas do not reach them; government plans for rural development are rarely achieved; and planning and expenditure are carried out without reference to real rural situation; rural social and economic growth is difficult in rural areas; poverty alleviation needs to be specifically “pro-poor” and not part of other programs; and that government officers responsible for rural development need to be made accountable. However, Baxter’s primary objective was to show that poverty in Papua New Guinea is overwhelmingly rural and he emphasized the differences between the rural and the urban sectors more than the differences that exist within the rural sector⁵.

We argue that poverty in Papua New Guinea is significantly located in the most isolated and environmentally disadvantaged parts of rural PNG, where development has not occurred to any extent and where a number of severe constraints make it unlikely to occur. Hence rural development, as that term is normally understood, will not significantly alleviate poverty in PNG.

An important determinant of whether a person is poor in Papua New Guinea is *where* they live. Poverty is strongly associated with poor quality environments. The contemporary pattern of Papua New Guinea ‘poverty’ was recognised in the late 1940s and these locations have been known variously as “less developed”, “underdeveloped” and “disadvantaged” areas. The pattern has remained relatively stable from 1950 to the present. It strongly suggests that PNG poverty is chronic and will therefore be difficult to

⁵ Baxter, M. (2001). *Enclaves or equity. The rural crisis and development choice in Papua New Guinea*. International Development Issues No. 54. Australian Agency for International Development, Canberra, Baxter makes the point that “some rural areas are much poorer than others” and refers to our own work as evidence of this.

alleviate. It also means that aid programs must distinguish clearly between the objectives of promoting rural development and alleviating poverty.

The contemporary pattern of poverty

The contemporary pattern of poverty in Papua New Guinea has been identified from the 1996 Household Survey⁶ (Gibson and Rozelle 1998), the 2000 National Census, the Papua New Guinea Resource Information System (PNGRIS)⁷ and the Mapping Agricultural Systems in PNG Project (MASP)⁸. Statistical techniques have been developed that predict poverty rates estimated from a restricted sample household survey in all national administrative units⁹. In rural PNG, these techniques have been used to create disaggregated maps of poverty¹⁰. The pattern of poverty predicted by this analysis, disaggregated to the level of the district,¹¹ is shown in Figure 1. Places in which the predicted poverty rate is high occur right across the western end of the country, in Sandaun Province in the north and Western Province in the south. Only the Ok Tedi mine in the northwest of Western Province disrupts this pattern. Other districts that are predicted to have a high poverty rate are located along the northern and southern fringes

⁶ Gibson, J. and Rozelle, S. (1998). Results of the household survey component of the 1996 poverty assessment for Papua New Guinea. University of Waikato and Stanford University.

⁷ Created by the Division of Land and Water Resources, Commonwealth Scientific and Industrial Research Organisation - Bellamy, J.A. and McAlpine, J.R. (1995). *Papua New Guinea Inventory of Natural Resources, Population Distribution and Land Use: Handbook*. 2nd edition. Australian Agency for International Development, Canberra.

⁸ Allen, B.J. (1999). The Mapping Agricultural Systems Project provides new information on village agriculture in Papua New Guinea. *Development Bulletin* 49:103-105.

⁹ Hentschel, J, J. Lanjouw, P. Lanjouw and J. Poggi (2000) Combining census and survey data to trace the spatial dimensions of poverty: a case study of Ecuador, *World Bank Economic Review* 14(1): 147–165.

¹⁰ Gibson, J., Datt, G., Allen, B.J., Hwang, V., Bourke, R.M. and Parajuli, D. (2005). Mapping poverty in rural Papua New Guinea. *Pacific Economic Bulletin* 20(1):27-43.

¹¹ The lowest level to which it is possible to disaggregate these data is the Local Level Government Area (LLGA). However, in this paper we do not go below the district because the LLGA is a new unit in the 2000 National Census, based broadly, but not exactly, on the Census District, which was not used in 2000, but has been used in all previous PNG censuses. This makes comparisons between censuses difficult.

of the highlands (the highlands valleys are noticeably low poverty areas), along the Huon Peninsula and down the central mountainous spine of the mainland into Central Province. Low levels of poverty are predicted for the Islands Region.

That this pattern of 'poor places' has been relatively stable over the past 50 years can be shown by examining three previous studies. Over 30 years ago, using 1967–68 data, Brookfield with Hart observed:

... the virtual exclusion of wide areas, especially in the west, from any significant participation in the production of exports, except through migrant labour. There is very little cash-production indeed west of the longitude of Mt Hagen, yet almost half of the total area of the country lies west of this line. The heavy concentrations in parts of the Bismarck Archipelago, and the secondary concentrations in the central highlands, and in some coastal and island areas of the eastern peninsula, emerge very clearly¹².

Brookfield with Hart argued that the underlying reason for this pattern was the severe environmental constraints to the establishment of cash cropping in poorer areas, leaving people who lived in the environmentally poorer areas who wanted to participate in the cash economy with no alternative but to migrate to the better-off areas. They also made explicit links between the income earned from cash cropping with improvements in local infrastructure and services.

Much else goes with these contrasts in incomes, for the higher spending power of wealthier districts tends to command a higher level of services, not only from the commercial systems, but also from Government. Local council taxation levels vary with capacity to pay, but the ability of councils to contribute to the costs of schools

¹² Brookfield, H.C. and D. Hart (1971) *Melanesia: a geographical interpretation of an island world*. London: Methuen, 296

and medical aid-post construction has an effect on the level of education and health services provided. Thus the rich get richer¹³.

Brookfield with Hart were “startled” by the almost ten-times order of magnitude difference between per person incomes being received for cash crops in the Island provinces of East New Britain and New Ireland and the emerging highlands coffee-growing provinces typified by Eastern Highlands, compared with the ‘almost pitiful incomes of the four westernmost [provinces] – East Sepik and West Sepik, Southern Highlands and Western’. Other poor areas in 1967 included all the coastal provinces of the mainland except Milne Bay and all of West New Britain.

Brookfield and Hart’s work was followed by Wilson’s¹⁴, who used 1969–70 data and applied six “socio-economic indicators” to “investigate differences in socio-economic development between different areas in Papua New Guinea”. Wilson compared the then 79 subdistricts on village cash crop production, hospital and health centre beds, administration staff, school enrolments, access to services, and the grade of local government councils and ranked them into six groups. Most of the districts that fell into Wilson’s most developed Group 1 had a major urban centre within them. The rest of the districts that fell into Groups 1 and 2 were either in the Islands Region, or were close to the Highlands Highway in Morobe and the highlands provinces east of Mt Hagen. Wilson attributed the reasons why districts fell into his least developed Groups 5 and 6 (mapped in Figure 2) to “isolation” and “poor environments”.

¹³ Ibid, 302.

¹⁴ Wilson, R.K. (1975) Socio-economic indicators applied to sub-districts of Papua New Guinea, *Yagl-Ambu* 2: 71–87.

A decade later, de Albuquerque and D'Sa¹⁵ used 1979–80 data to examine “spatial inequality” in Papua New Guinea. They hypothesised that the “best intentioned policies for redistribution and promoting basic needs” had not been able to overcome the forces of the “historical patterns of colonialism” and colonial development policies, the “unequal distribution of natural resources” and the problems of “accessibility”. They derived a set of indicators of development with which to group districts and to compare these findings with Wilson’s studies. Their main findings were that levels of education, low child dependency ratios, urbanisation, good access to services and the proportion of the population living in rural non-village settings were positively associated with socioeconomic development. Their “most developed” districts were located in the Islands Region on New Britain, Bougainville and New Ireland provinces (Figure 3). The next-ranked districts were those surrounding national and provincial centres of Port Moresby, Lae, Alotau, Mt Hagen, Wewak, Lorengau and Kerema, a spatial pattern that can be seen emerging in Wilson’s Group 1 districts. Least-developed districts were located in the central western end of the country across the main mountain range from the Indonesian border east to the highlands valleys, from where they split to run down both sides of the highlands, and join again in the Owen Stanley Mountains. In the Islands Region, the south coast of New Britain was relatively undeveloped.

The most recent attempt to investigate development patterns in Papua New Guinea was by Hanson *et al.*¹⁶ who ranked the 85 rural districts on an index of “disadvantage” using five variables: land potential (as a measure of future development

¹⁵ de Albuquerque, K. and E. D'Sa (1986) Spatial inequalities in Papua New Guinea: a district-level analysis. *IASER Discussion Paper* 49. Port Moresby, Papua New Guinea Institute of Applied Social and Economic Research.

¹⁶ Hanson, L. W., B. J. Allen, R. M. Bourke and T. J. McCarthy (2001) *Papua New Guinea Rural Development Handbook*. Canberra: The Australian National University.

potential), estimated cash income from agriculture (from MASP), agricultural pressure (measured by population density against land quality), access to services (the estimated time required to reach the nearest service center by surface transport), and child malnutrition (from the 1982–83 National Nutrition Survey redistributed into the 2000 districts). The spatial pattern of the most “disadvantaged” districts is by now familiar (Figure 4): they are located along the Indonesian border in the west, to the north and south of the highlands, along the Huon Peninsula and the Owen Stanley mountains on the mainland and along the south coast of New Britain.

Environmental constraints and nutrition

For short period in the early 1900s, environmental determinism became a popular theory. It proposed that aspects of the environment, particularly climate, influenced the psychology and intelligence of individuals which was in turn manifested in aspects of cultures and societies. One popular idea was that tropical climates resulted in lazy unintelligent people with simple, even primitive, cultures, while the strongly seasonal climates of the middle latitudes, with frequent frontal activity and cold winds led to vigorous, intelligent, hard working people and rich cultures. The reactions to environmental determinism were severe, especially after both Nazi and Communist regimes adopted aspects of deterministic ideas about race and society. By the 1950s it had become distinctly unfashionable to argue under any circumstances that the environment determined human behaviour or social outcomes. In development practice this led to project designs which ignored environmental constraints and to projects, such

as Margarini in Kenya,¹⁷ which failed because known environmental constraints were disregarded during the design phase. The recent realization that global warming will have significant impacts on developed economies has given environmental influences on human affairs greater standing.

In PNG environmental determinism has taken the form of gross optimism over the country's natural resources as the drivers of economic development. Within the last five years critics of the slow rate of development in Papua New Guinea have written of the "rich natural resources"¹⁸ or the "rich agricultural potential"¹⁹ when in fact 70 percent of the total land area of Papua New Guinea is not occupied by humans or used for agriculture²⁰. Only 10 percent of the rural population in 2000 lived and practised agriculture on high quality land, while 42 percent lived on low quality land²¹.

The reasons why the environment is so important in Papua New Guinea is that good environments enable people to engage in the cash economy by selling export cash crops, fresh food, firewood and betel nut. The cash earned in this way is used to purchase high protein tinned fish and tinned meat, to supplement what nutritionists have called "vulnerable" pre-cash economy diets. A wide range of dietary intake studies in Papua New Guinea in the 1960s and 1970s examined diets that had changed little from pre-

¹⁷ Porter, D., B.J. Allen, and G. Thompson (1991). *Development in Practice: Paved with Good Intentions*. Routledge Press, London.

¹⁸ Gosarevski, S., Hughes, H. and Windybank, S. (2004). Is Papua New Guinea viable *with* customary land ownership? *Pacific Economic Bulletin* 19(3):133-136.

¹⁹ Windybank, S. and Manning, M. (2003). *Papua New Guinea on the brink*. Volume 30. Issue Analysis. The Centre for Independent Studies, PO Box 92, St Leonards, NSW 1590 Australia.

²⁰ McAlpine, J. and Quigley, J. (n.d). *Natural Resources, Land Use and Population Distribution of Papua New Guinea: Summary Statistics From PNGRIS*. PNGRIS Report No. 7. Commonwealth Scientific and Industrial Research Organisation, Canberra.

²¹ Land quality assessed on altitude, flooding, slope, soil, annual rainfall and cloud cover and constraints to the production of sweet potato.

colonial times and found they ranged from “adequate” to “grossly inadequate”²². Diets based solely on Papua New Guinea’s starchy staples are low in protein and “if the diet is deficient in protein quality and quantity, the protein requirement of the individual will not have been met by the time energy requirements are met”²³. Heywood and Harvey conclude that before the introduction and rapid adoption of cash cropping,

“Nutritional status prior to economic change appears to have been vulnerable. A major body of literature shows growth retardation, high infant mortality, late menarche, low adult stature, and low intake of energy and protein to be widely shared characteristics, especially in the highlands and highlands fringe zones”²⁴.

The poorest people in Papua New Guinea live in places that have a number of attributes in common. They have at least one severe environmental constraint (annual flooding, steep slopes, high rainfall, poor soils, high altitude or high cloud cover); or are on a small offshore island; or are isolated by sea or have no road connection and as a result have very poor access to markets and services; or lie across the borders of two provinces so that no administration take responsibility for them; and they have very few well educated people in positions of influence to argue on their behalf, or in wage earning positions to send remittances home. Importantly, their inability to earn cash prevents them from supplementing their protein poor diets.

²² Heywood, P.F. and Hide, R.L. (1994). Nutritional effects of export crop production in Papua New Guinea: a review of the evidence. *Food and Nutrition Bulletin* 15(3):233-249.

²³ Heywood, P. and Nakikus, M. (1982). Protein , energy and nutrition in Papua New Guinea. In Bourke, R.M. and Kesavan, V. (eds). *Proceedings of the Second Papua New Guinea Food Crops Conference: Part Two*. Publications Section, Department of Primary Industry, Port Moresby. pp. 303-324.

²⁴ Heywood, P.F. and Hide, R.L. (1994). Nutritional effects of export crop production in Papua New Guinea: a review of the evidence. *Food and Nutrition Bulletin* 15(3):233-249.

A study near Tari in the 1990s²⁵ showed that women who earned even small amounts of cash through the sale of vegetables and pig meat in local markets significantly improved their nutritional status, especially through an increased intake of protein. Coffee production in this area was not important and the location was too far from a large urban centre for fresh food marketing for people to earn much cash. However the study demonstrated the significant benefits of using cash to purchase imported food to supplement a traditional diet of sweet potato and green vegetables. The study estimated that, to meet their minimal protein requirements from a traditional diet, people would need to eat around 1.5 times as much as they did during the survey. An optimal diet, which included purchased foods, required a household income of K4.40 per week. Because of the decline in the value of the kina, the amount of cash required will now be several times that amount. Nevertheless, most of the families studied could not earn that amount of money and received support in the form of remittances from wage earning migrants. Elsewhere in similar highlands environments people use money earned from sale of coffee or fresh food to purchase high protein food, usually in the form of tinned fish.

In two other related studies at Tari, the mean birth weights of 4676 children born between 1979 and 1986 were shown to vary significantly by environment. The heaviest children were born to mothers who lived in the most productive environments and the lightest to mothers occupying the least productive environments. The poorest

²⁵ Kuchikura, Y. (1999). The cost of diet in a Huli community of Papua New Guinea: a linear programming analysis of subsistence and cash-earning strategies. *Man and Culture in Oceania* 15:65-90.

environments were on steep slopes, at higher altitudes, with higher rainfall, on older degraded volcanic ash soils and had poor access to markets or service centres²⁶.

The second study showed that no statistically significant difference existed in the total energy expended to produce food by the women in the better or poorer environments. However women in the poorer environments produced significantly less food than those in the better environments (1300 kilocalories/ha compared to 3419 kilocalories/ha) and cared for fewer pigs (0.6 pigs per person compared to 1.9 pigs per person). A food intake study showed that women in the poorer environments consumed significantly less energy, protein and fat than those in the better environments, such that women in the poorer environments were in a negative energy balance. Similar results were observed for men. The women in the poorer environments were about the same height but weighed less, and had a significantly lower body mass index. They also had less body fat. It is concluded that this situation almost certainly explained the significantly lower birth weights of the children born to the women living in the poorer environments observed in the first study.

Conclusions

We have attempted to provide a picture of the pattern of poverty in contemporary Papua New Guinea and to show how it is closely associated to the quality of the environment. We have concentrated on the relationships between poor environment, poverty as expressed by low cash incomes and malnutrition in children and have not pursued a number of other dimensions to this problem. In conclusion we make a number

²⁶ Allen, B.J. (2002). Birthweight and environment at Tari. *Papua New Guinea Medical Journal* 45(1-2):88-98.

of points that we believe could improve the situation, while emphasizing that solutions will be long term and will involve on-going learning and consultations with poor people.

It is very important that the phrase “rural development for poverty alleviation” is not used without qualification when the Papua New Guinea situation is being referred to. If “rural development” is taken to mean improved agricultural production, increased cash incomes, improved infrastructure and improved supply of services then it is unlikely to bring about important changes in Papua New Guinea’s poorest areas, where conditions have not changed significantly since colonization. Wilson in the 1980s and de Albuquerque and D’Sa in the 1990s both argued that the “environment” and consequent “isolation” were the primary causes of the under development that they identified. de Albuquerque and D’Sa suggested that rural development initiatives had been unable to “overcome” these constraints. We believe that situation persists today, severely exacerbated by what Baxter terms a “failure of governance”²⁷.

A second need is to develop the means of delivering basic and effective health and education services to poorest area. This will probably involve setting up incentives for teachers and health workers to live and work in very isolated areas and some means of ensuring that if they accept the incentives, they deliver the service. Incentives may include salary loadings or direct financial assistance with the costs of educating the children of teachers and health workers who work in the poorest parts of the country.

A third area is to explore innovative ways of increasing cash incomes in poor areas. Marketable commodities with high value-to-weight ratios are required that can

²⁷ Baxter, M. (2001, 27). *Enclaves or equity. The rural crisis and development choice in Papua New Guinea*. International Development Issues No. 54. Australian Agency for International Development, Canberra, 27.

bear the costs of air transport; certain spices are an example. Such an initiative involve private enterprise, because all known examples of government involvement in marketing of agricultural products in Papua New Guinea have ended in disappointment.

Finally, there is clear evidence of a national pattern of migration in Papua New Guinea in which people are moving from the poorest areas to better off areas and of rural-to-rural and rural-to-peri urban migration becoming at least as important as rural-to-urban migration²⁸. People from the poorest places should not discouraged from migrating to better off places. It would be best if, before migrating, people could be well educated to Grade 6 level and were able to proceed to secondary and even tertiary education elsewhere, or could find gainful employment. In the meantime the way that migrants are treated at their destinations should be reviewed. Many rural-to-urban migrants are forced to live in informal settlements around the edges of towns, are stigmatized and blamed for high crime rates. Some are subjected to illegal forced removal and the destruction of their houses by province administrations. On the other hand there is anecdotal evidence that many rural-to-rural and rural-to-peri urban migrants adjust well to their new lives, and that they can earn reasonable incomes and educate their children. Despite often poor housing and sanitation, they see themselves as being better off closer to markets and health and education services than they were in their distant and isolated home lands.

²⁸ Allen, B.J., Bourke, R.M. and Gibson, J. (2005). Poor rural places in Papua New Guinea. *Asia-Pacific Viewpoint* 46(2):214.