

Valuing customary land in Papua New Guinea

Abstract

This paper discusses the economic value of customary land in Papua New Guinea. Data from pilot surveys of land use in the Eastern Highlands Province and Madang Province is used to engage with the national debates over land. An opportunity cost evaluation approach demonstrates that low financial returns mislead and lease valuations probably greatly underestimate the real value of productive land in PNG. Average family farm cash income ranges widely, but is often only around 1000 Kina per year, on farm land of about one hectare. However when that figure is combined with the subsistence food and housing value of the land, the equivalent value may be well in excess of 15,000 Kina. Lease valuations may only be 50 Kina per hectare, plus uncertain royalties; and some have been less than this. An 'education effect' may help those employed and in small business gain similar or greater incomes from their farm land, than the 'full-time' farmers. Customary landowners would do well to consider fuller valuations of their land, and the range of possible income supplementation options. The idea of a choice between poverty-struck subsistence farming or corporate development (logging, plantation cropping) seems to be a false dichotomy. There is evidence to suggest that customary land owners would do best to look at supplementing (rather than abolishing) their subsistence practices and maintaining (rather than alienating) their customary lands.

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In discussing the economic value of customary land in Papua New Guinea, we must recognise the ongoing polemic over land use. Much of this debate is driven by the special interest groups which want access to customary land. Customary land owners in PNG, on the other hand, have been mostly well served by their system of custodianship. Land has been the basis for social cohesion, food security, cultural reproduction and ecological management. This is a view supported by the PNG constitution and reflected, in many ways, by the international discussion of the 'multifunctionality' of small farming (eg. Mazoyer 2001).

The practical question, however, is whether small landowners are able to pursue the best income generating opportunities while holding onto the various social and subsistence advantages provided by their customary lands? This paper suggests that they can.

In introducing a revised approach to the valuation of customary land, I will begin by outlining the opposing views of land, including the introduced notion of a 'market value' for land, in a country where land is non-marketable. The likely undervaluation of land by this approach can be tested, by reference to the opportunity cost of land which has been alienated. I therefore present a model, and some data from pilot studies in the Eastern Highlands and Madang Provinces, of a opportunity cost valuation of customary land. Finally, again based on pilot studies, I compare the distinct approaches to income generating opportunities for customary land owners.

The land debate

The polemic over land use in PNG is fairly clearly split between the indigenous recognition of the wider value of customary land and the western insistence on commercial reductionism.

It is common place to hear PNG intellectuals speak of the cultural, ecological and subsistence values of land, as additional to and underlying the potential commercial value of land. PNG writers also point to the sustainability and inter-generational equity values built into the customary ownership system. These values can be expressed in elegant language, somewhat inaccessible to normal economic discourse: "Land is the link between the earth and the sky, the sea and the clouds, the past and the future. Because land is eternal, it is held in trust for succeeding generations" (Narokobi 1988: 8). Similarly, "the African saying that 'land belongs to the few who are living, many whom are dead and the countless yet unborn' is relevant and deep-rooted" (Lakau 1994: 80). Such statements have a resonance in traditional Melanesian culture, but also point to important contemporary economic principles.

On the other side, a consistently opposed group of non-PNG intellectuals have insisted on the common themes of individual property rights, a market-oriented transformation of

Melanesian institutions, and in particular the commodification of land. A crisis is often suggested, at the root of which is the supposed failure of Melanesian institutions. So some say Papua New Guinea is at a crossroads and needs to make 'property' out of customary land. Hughes (2004: 4) claims that the institution of customary land is "the primary reason for deprivation in rural Pacific communities." While the system of customary land, (which she wrongly equates with "communal ownership") has food security benefits, this is said to be "at the cost of agricultural productivity and output." Many western writers have repeated these points, sometimes drawing on some western liberal philosophers (eg. Lea 2004), to the point that the "need for land reform" has become a form of accepted wisdom, especially amongst those with land related commercial interests, such as those in the financial press (e.g. Callick 2005) and the development banks (e.g. Deininger 2003).

The involvement in the land debate of those with economic interests gives the semblance of 'economic logic' to their arguments. However this is more a rational than an empirical logic, and so testing of claims should assume some importance. This is more especially the case in view of the conflicts of interests involved. The Centre for Independent Studies, for example, produces some of the most virulent attacks on the system of customary land in PNG and native title in Australia (eg. Hughes 2004; Hughes and Warin 2005). Yet the CIS board members are mostly directors of Australian banks and mining companies (CIS 2005), with actual and potential interests in accessing indigenous land. Similarly, the World Bank, presenting itself as a independent adviser on 'good governance' (e.g. World Bank 1999), is in fact a lobby group for foreign investors, as article one of its constitution makes clear (see also Anderson 2003). So, whatever may be said about the interests of customary landowners, World Bank views on land are conditioned by the specific land and property interests of foreign investors.

AusAID and the World Bank have in the past developed programs of land mobilisation and land registration, with the aim of shifting areas of land under customary title into the registered and indefeasible Torrens Title system. Economic arguments used to justify this particular form of 'land reform' (see Deininger 2003), firstly suggest the macroeconomic desirability of export oriented resource industries and cash crops (such as oil palm), and secondly suggest that ordinary poor communities can better make use of their land assets by registration, which would give them access to mortgage finance, as well as income from leases.

However these arguments rest on certain presumptions about the operations of markets, which are inappropriate in PNG. Lease values on rural land, relying on willingness to pay and prior transactions, have come up with values as low as 50 Kina per hectare per year, plus some uncertain royalties (Gou and Higaturu 1999). In another case, a group of West New Britain villagers appear to have leased over 700 hectares of land for forty years (a lease-lease back arrangement, for an oil palm developer, but through the state), for the total sum of 10 Kina (Mara and others 1999). Valuer-General schedules on rentals for residential, commercial and industrial land show much higher values (DTI 2001) but these are mostly urban based and reflect the highly restricted supply of urban property. Rural land markets are highly limited, the customary land owners are asset-rich, cash poor and have very little information on the real opportunity cost value of their land.

Important implications of the limited nature of rural land markets include the facts that: value is assessed in terms of cash income, but typically excludes considerations of:

- 1 the land based non-cash values, eg. food, housing and other benefits;
- 2 the customary landowner vulnerability in markets, due to money being scarce and highly valued and land being abundant, and lowly valued;
- 3 town rental housing being scarce and highly valued;
- 4 food being abundant and relatively cheap, in areas where land is widely held; and
- 5 customary landowners having little experience in establishing and managing leases or mortgages.

The effect of this is that customary landowners typically value their land at very low cash rates and are vulnerable to (i) agreements for low value leases, and/or (ii) dispossession of their major asset, through registered mortgages and an inability to meet mortgage commitments.

The Pacific Islands Forum has repeatedly expressed the view that land disputes require "deeper understanding and action" (eg. Forum Secretariat 2000). However consensual notions of land management are often blended with economic liberal suppositions about particular market mechanisms (eg. PIFS 2001; Lea 2004; ADB 2004) - despite the highly attenuated nature of land markets in PNG. In practice, a 'market' approach to land value in PNG (which stresses 'preparedness to pay') seems artificial and inappropriate. Customary landowners are at high risk of their land being undervalued and misappropriated.

The noncommercial economic value of customary land

A more appropriate way to understand land value in economic terms - but distinct from simple commercial values - is to assess the value equivalence of subsistence production. Such assessments have begun through use of PNG's household surveys, but have not yet been applied to a microanalysis of small farms.

Papua New Guinea is a resource rich country, but mountainous and with great transport and access problems. About 30% of PNG land is arable (UNDP 1999: 12), and about half of this has been estimated as under cultivation (Rere 2004). That is, in the 1990s almost 7 million hectares of land was under cultivation, or about 1.5 hectares per person. About 97% of PNG's total land is said to be under customary title.

Gibson points out that estimates of total food production in PNG have been poor, and that the national accounts seem to greatly underestimate the contribution of farming. Using the 1996 PNG Household Survey data he estimates that the total value of household food consumption was 2.253bn Kina, while total domestic production was estimated at 1.3bn Kina. However locally produced food was also estimated as providing "80% of available calories" (Gibson 2000: 41-42). That is, domestic production accounts for the bulk of food consumption - 80% of basic nutrition, though only 58% by money value. Bourke estimates that 4.5 million tonnes of energy (staple) foods are grown in PNG every year - that is, "a little more than one tone a year for every rural villager. He valued this production at K2,850 in 2004, based on the cost of substituting that food with the

cheapest imported source of food energy" (Bourke 2005: 7). Being underrepresented in the National Accounts, this food production is poorly recognised in economic policy debates.

A mixture of indigenous and imported crops flourish across PNG. Van Helden (1998: 163) notes the main Bismarck-Ramu (north coast) crops as sweet potato, taro cassava, yams, cucumber, corn, pumpkin, pitpit, ruingia, beans, soy and lima beans, various greens, ginger, tobacco, chillies, spring onions, peanuts, oranges, bananas, passionfruit, pawpaws, pineapples and melons. He lists a total of 46 cultivated food crops, 34 wild foods, 23 mammals and 44 birds hunted in this area (Van Helden 1999: 163-186). Apart from a food source, birds are hunted for their feathers and for sale. Chickens are an occasional food source and an economic option for villagers, while pigs are killed for food on special occasions. Fish form part of the diet in many coastal areas.

As one example, garden produce in village P in the East Highlands, was rich and diverse, including: kau-kau, banana (7 varieties), peanuts, sugar cane, corn, snake beans, butter beans, pumpkin, pineapple, pawpaw, taro (2 types), cabbage, tapioca, yam, ginger, broccoli, cauliflower, custard apple, some rice, plus honey, building materials and firewood (Buno 2004, Oruga 2004 and observations). This is a quality of diet well above the subsistence levels of many other poor countries, even though these people are cash poor. 'Subsistence' production in PNG should be recognised as having an enhanced meaning.

Bourke et al (2004) list 180 traded ('economic') crops across the whole of PNG. In 1995 the Fresh Produce Development Corporation estimated total PNG fruit production at 58.35 million kilograms (valued at 88.08 million Kina) and total PNG vegetable production at 47.32 million kilograms (valued at 53.53 million Kina). Biggest fruit and vegetable crops by value were apples, watermelon, bananas and pawpaw, and potatoes, cabbage, tomatoes and carrots (FPDC 2004: Table 1c). High and diverse production keeps the average of price of fruit and vegetables quite low - at 1.5 Kina/kg and 1.13 Kina/kg respectively.

In addition to non commercial food and housing, customary land provides access to substantial non commercial plant resources used as medicines, fuels, fences, weapons, tools, canoes, textiles, string bags, cords, musical instruments, artworks, articles of personal adornment and articles of ritual and magic (Powell 1976). Compared to food, the equivalent value of these resources is much more difficult to calculate.

Estimating subsistence food and rental equivalents

The most obvious and immediate loss to customary land owners, in case of alienation from their land, is loss of food and shelter. These basic needs would have to be replaced in some way, if they are to survive. More importantly, in terms of value assessment, the equivalent value of goods and services forgone by alienation of land should be calculated to indicate the opportunity cost and the ongoing value of traditional lands. In this sense, 'subsistence' food does not mean a bare minimum, or total noncommercial production,

but actual household consumption from food grown in the family farm.

Land use varies quite widely, but there are important common themes to farming in PNG. In this indicative study I have chosen to look at ordinary village production in three provinces, and to calculate the equivalent value of land for subsistence food production, cash crop income and housing value. The equivalent values can be estimated by comparison with existing market prices in fresh produce and rental markets.

This was not a representative study, as my pilot sample was small and there was no attempt to calculate sampling errors. It was an indicative study, which draws attention to the typically neglected features of land use, and suggests a broader perspective and a revised sense of proportion for land valuation. I have chosen what seem to be ordinary farming practices. My preliminary estimates will undervalue land to the extent that I omit the value of the full range of ancillary goods and services mentioned above (Powell 1976). More detailed localised studies would also have to adjust values to allow for these considerations:

- 1 complete versus partial alienation or leasing of land;
- 2 differential pricing in distinct regional fruit and vegetable markets (eg Port Moresby's Gordons Market v Goroka or Madang markets);
- 3 distinct regional rental markets;
- 4 the additional costs of urban lifestyles and processed food consumption (omissions here also make my calculations underestimate); and
- 5 adjustment for future value, in relation to the variously configured 20 to 99 year leases.

These provisos need to be born in mind when looking at the following calculations.

As wider land alienation (through registration and commercialisation) would restrict supply and increase demand in fresh produce markets, acting to increase food prices, I have used a dual calculation of these prices. The assumption here is that widespread regional alienation of land would push food prices in regional markets like Goroka and Madang, to Port Moresby market levels. On an unweighted price average for the twelve highest traded volume sales of fruit and vegetables (see Appendix Table One), Port Moresby prices (Gordons Market) are about double those of Goroka and Madang.

My approach to estimating the value of subsistence production - as opposed to the aggregate FPDC figures quoted by Bourke et al (2004) - was to begin with household consumption. I surveyed small groups of villagers from Madang coastal, Madang inland and the Eastern and Western Highlands, to generate a preliminary idea of a household's ordinary daily diet, and from this a value equivalence in local markets. (Some items do not have simple market equivalence, but most staple foods do.)

Diet in PNG can vary considerably. Madang coastal diet includes occasional fish, while island diet could have daily fish. Some additional marginal items were occasionally hunted, grown, baked and bought (Paol 2004); but for the purpose of this analysis, the diet has been simplified to items that are produced for consumption. I interviewed people from three different villages, to get a preliminary idea of the range and richness of diets, and for detailed descriptions of typical daily meals (Paol 2004, Sindana 2004; Sinemila 2004). I relied on the FPDC (2002) for most fruit and vegetable prices, and on 2004

market prices for chicken, pork and fish prices, as estimated by some of my interviewees (Paol 2004; Sindana 2004)

This notional 'ordinary' household comprised two adults and 4-5 children, which is roughly the national average. Daily consumption figures were then multiplied into an annual figure, which could be set alongside annual cash income and annual rents in regional towns. The annual cost of purchasing the food consumed by such families ranged from 3,431 to 6,169 Kina (in regional markets) and 7,260 to 11,388 (in Port Moresby) (see Appendix Table Two). I have rounded this to create a value range of 3,400 to 11,400 Kina per year.

Rental equivalent values are difficult to apply, as town housing is limited and expensive, while village housing is constructed cooperatively, mostly from local materials, and is rent free. School teacher rentals in villages in Madang and the Highlands seems to range from zero (where housing is simply provided for the teacher) to 20 Kina per fortnight (Sinemila 2004; Paol 2004). But teachers' accommodation is a special case. A more likely alternative housing option for landless families is settlement housing, on the fringes of the towns. However as squatting in this way neither offers neither the security of tenure nor the relative comfort of village housing, I have chosen 'basic' town rental housing as the most reasonable equivalent. The annual cost of housing in Madang town, can be as much as 1,500 to 2,000 per month for a 'decent' house; however a 'basic' house in town would rent for 500 Kina per month, or 6,000 Kina per year (Chitoo 2004). This seems the closest substitute for secure, village housing.

Cash income from small farm produce

From a parallel and broader series of interviews, I collected data on villager cash income from small farm produce. Adults from four villages in the Highlands (Eastern and Western) and several villages in Madang Province were interviewed (see Appendix Tables 3 and 4). Cash income ranged widely. It could be more than 10,000 Kina per year, but was also often less than 1,000 Kina per year per family. From the twenty families surveyed, the mean was about 3,000 Kina. From the food and rental calculations above, I note that this cash income ranges from a tiny fraction to nearly the equivalent value of food and housing in many of these same villages. Median cash income was less than one quarter of the equivalent food and housing values gained from the customary lands.

For some time coffee (an imported crop) has been the major cash crop in PNG, though global price collapses in recent years (the price decline has been more marked at the producer end) triggered a move away from, or neglect of, this crop. Many Highland families rely on coffee, for their cash income. Coffee trees are mostly grown in family lands, but in one EHP village there was a collective extension, for coffee production (Buno 2004; Oruga 2004). However collective farmland is uncommon.

Villagers in the Eastern Highlands showed me coffee tree seedlings that had been cultured, but not planted, as their land had been turned over to other crops, for the time being. Most PNG coffee is grown in the highlands, as the tree prefers well drained slopes,

and the crop forms the major part of highland villagers' incomes. Even in the Jimi Valley coffee was estimated at 60% of the valley's income, in the 1990s (Van Helden 1998: 194). Healey (1986: 23) estimated household income from coffee in this area, in the early 1980s, as only 50 to 100 Kina per year. Several highland villagers told me that annual family income from coffee, despite the fall in prices, would range from 50 to 2000 Kina, and that coffee would comprise from 50% to 80% of family cash income (Buno 2004; Oruga 2004, Thomas 2004, Gunn 2004).

Between 1996-2000, coffee still outperformed palm oil (mainly a plantation crop, with some village inputs) and other agricultural cash crops (cocoa, copra, tea and rubber) as an export earner (DTI 2001: 30). The benefits of coffee are also spread far wider than those of oil palm. However much of the value of coffee produced has been strongly captured by middlemen, engaged in transport, processing and export. Highland village sources told me that while coffee was still the major cash crop of their area, it was supplemented by other crops such as sweet potato, broccoli, peanuts, and watermelons (Buno 2004; Oruga 2004, Thomas 2004, Gunn 2004). Vegetable prices are low in the Highlands, where there is an abundance; but vegetables are also sent to market in Madang and Lae and (despite the considerable transport difficulties) even to Port Moresby.

In Madang province, where there is much less coffee and no oil palm, betel nut (Buai) seems to have been the single biggest cash crop, at 13% of total trade (Kasas 2003). Some growers have made even more from peanut sales. With both buai and peanut, production is entirely for local markets, and the trade is often run by women who sell directly and so are not 'taxed' by middlemen. Van Helden (1998: 199-202) noted that betel nut sales in Madang province were supplemented by sale of birds, artifacts, marijuana, and animal byproducts. From my interviews it seemed that, on the coast, there is greater diversity of significant cash crops (eg. cocoa, coconut, vanilla, peanut, buai), and often greater income earned. Highlanders did not seem to be doing so well from a reliance on coffee.

Sources of farm income other than coffee, fruit and vegetables and the other cash crops (buai, peanut, cocoa, coconut, vanilla) varied considerably. One village, close to the town of Goroka, gained income from handicrafts and cultural shows (Thomas 2004). In one Madang village, extra income came from small industries such as baking bread.

Investment in capital goods seems modest, involving basic tools (spades, knives, machetes), plastic bags for coffee, and weed sprays and pumps for coffee areas - at least before the notion of organic certification has become more appealing. Every year or two family farms might invest 20 or 40 Kina in tools, 2 or 3 cans of Roundup (30 Kina per can), and occasionally 50 Kina for a pump. Plastic bags for coffee are less than one Kina each. Such investments might amount to between 50 and 200 Kina per year.

Family income is needed for a range of goods purchased in the towns, but the largest consistent stated demand was for secondary school fees. As opposed to subsidised primary school fees, secondary school fees start at about 250 Kina per year (Thomas 2004), and often go much higher than this. It is therefore simply beyond the means of most village families to send more than one of their children (of an average four or five) to secondary school. In PNG, government and aid agency education subsidies only really

apply to primary education.

Supplementary income for customary land owners

In the course of interviewing small farmers it becomes obvious that most people in PNG are small farmers, whether they have a role in the cash economy or not. This has important implications for understanding the income earning options for village people. Often a polemic is suggested between poor subsistence life and a transition into the cash economy, with the commodification of customary land suggested as a necessary part of that transition. However it seems likely that supplementary income earning activities - in addition to the maintenance of traditional land use - have greater potential than either traditional farming or migration to the cities.

The first indication of this comes from observing the farm income of those who are actually employed or self-employed, part-time or full-time. At first glance it appears (and this needs confirmation) that these people earn much the same, and sometimes more, than those who live and work full-time in the village. One Madang man I interviewed (L) worked part-time in a community group, while his wife baked and sold bread; their farm produce income was no less than others in their area. Similarly one Highlands woman (S) held part-time employment while her husband worked full-time in the public service; their farm income was not much less than that of others in their area. One Madang man (H), while holding part-time work, said he earned as much as 11,000 Kina per year on a variety of cash crops (cocoa, peanut, coconut, vanilla, betel nut). Two other Madang farmers earned over 10,000 Kina per year (family equivalent) from peanut sales. This are exceptional incomes for small farmers, and some also faced considerable transport costs and difficulties. The common factor among this higher income group seemed to be their relatively high levels of education - either formal education or well informed participation in markets.

There are two likely implications of this trend, if it is a trend. First, there may be an 'education effect' on the development of income earning options, leading to a more efficient and focussed pursuit of farming and marketing, which compensates for the time 'lost' in other employment or other small business activities. Second, it seems likely that full-time village farmers are not fully 'productive' in the commercial or marketing sense, though not necessarily in the output sense.

Confirmation of the 'education effect' seems to come from the example of a small agricultural college on the outskirts of Goroka, where a experienced educator has taken on small groups of young people who have dropped out of school. A two year course has been provided in farm management, technology and marketing, at the end of which the students have to prepare detailed accounts of returns from their family farm land. The first group of graduates reported an annual income of between 2,000 and 11,000 Kina (Rere 2004). This encompasses above average to exceptional cash returns on family land. The highest income earner in this group was a young man who secured specialised vegetable contracts with a town supermarket. Others did well with more diverse production.

Further study of such 'supplementary' activities amongst small farmers in PNG seems justified, to confirm or refute the potential of 'supplementation' and the presence of an 'education effect'. A comparison with the income gained by those who have turned over their land to oil palm, or other forms of lease, also seems desirable. Such comparisons could provide valuable information to landowners, faced with conflicting arguments about their best way forward.

'Supplementation' has been observed elsewhere, but perhaps not recognised as such. In a paper titled 'subsistence or cash cropping', Allen (2000: 100-111) discusses the improved food security prospects of the community of Malo Island in Vanuatu, who have developed some cash cropping options. Some of this income was used to supplement their homegrown diet with imported foods. However as only 20% of their food was gained from imports, and the subsistence sector is dominant, Allen is really describing this third path. Subsistence has not been replaced, but supplemented. Similarly, Mosco shows that a Central Province community has taken great advantage of the Port Moresby market, with average households making 5,000 to 24,000 cash income per year, mainly by marketing betel nut products (areca nut and pepperfruit). This had a marked impact on living standards in their villages, in terms of consumer durables purchased and the ability to fund secondary education for their children (Mosco 2005: 16-21). Once again, Mosco is describing 'supplementation', rather than a transition from subsistence to the cash economy. These villagers have the best of both worlds, through the effective exploitation of market opportunities, and maintenance of their customary lands. This 'rich peasant' model raises questions about how widespread the phenomenon could become.

Supplementation could occur through combining traditional farming with full or part-time employment (public, private or community sectors) or small business activities (production of food, trading, and various services including tourism services). Preliminary figures (combined in Table 1 below) show that it probably represents a superior development path for customary land owners. Income and equivalent income from farming seem to be considerably greater than that gained by low paid employment in PNG's cities. The cash income possibilities may also be greater, particularly because there seems to be no great opportunity cost for a family holding onto its traditional lands. Neither poor subsistence farming nor simple pursuit of the cash economy seem to offer the same possibilities - even on the basis of the limited economic assumptions spelt out above, which exclude many of the social, cultural and ancillary benefits of customary land ownership.

Discussion

With the above provisos, preliminary studies in Madang and the Eastern Highlands (in December 2004) suggest that - while cash income from family land production varied widely and was often very low, often less than 1000 Kina per year - the income required to replace the total value of production on an 'ordinary' hectare of farmland could be well over 10,000 Kina per year, when taking into account only the equivalent market value of subsistence food and housing. Other important values of customary land were not included in this model. There were also some assumptions (set out above) which make

these figures conservative and likely underestimates. But even this equivalent income is a stark contrast to low valued rural leases, and may help explain widespread dissatisfaction with and conflict over leases, including the conflict over church lease renewals (eg. Rynkiewich 2001, 2004).

Table 1: economic options for customary land owners				
per family, per annum, typical Kina or Kina equivalent				
	cash income	subsistence value	employment income	total av. gross income equivalent
subsistence	100-16,000 (median 3,100)	9,400 to 17,400 (av 13,400)	nil	17,600
land alienation	50 plus ? (royalties)	nil	2,000 to 10,000	6,050+
supplementation	100-16,000 (median 3,100)	9,400 to 17,400 (av. 13,400)	2,000 to 10,000 (av 6,000)	23,600
<p>assumptions: 1. average nuclear family of seven with one hectare of good farmland; 2. employment income for 'supplemented' group = one f/t job equivalent per family, at low to middle wage rates; 3. land alienation means 100% alienation source: see Appendix Tables 1-4 observation*: cash income from CL may be <i>higher</i> for those with other employment</p>				

The attacks on customary land tenure seem to have little to do with the economic options for customary land owners. As Lakau has pointed out,

"customary land tenure can be unfairly denounced for not being responsive to increased productivity and economic utilisation of land when the problem lies elsewhere. For cash cropping and agricultural development to be boosted, support services and incentives like agricultural inputs, favourable price policies, market outlets and credit provisions, amongst others, will have to be readily available." (Lakau 1994: 82)

Support services, infrastructure that supports small farmers (and not just big corporations), access to finance (which is not guaranteed by the dangerous process of land mortgage) are all important. However equally important, and deserving of further study, is an 'education factor'. Greater access to education - including farm, market and service management education - could be a better investment in widespread economic development than subsidies to the latest plantation cash crop. This deserves further study.

The proper valuing of land should be a greater debate in PNG, and not just one driven by the special interest groups (miners, banks and large domestic and foreign companies) that want access to customary land. Customary land seems greatly undervalued, when it is transacted, which can be a tragedy for those families in the 'front line' of this commercialisation. Customary land owners are deeply concerned about means by which they can improve their families prospects, to raise incomes and access education and health care for their children. To do this, they would best look at supplementing (rather than abolishing) their subsistence practices and maintaining (rather than alienating) their customary lands.

References

- ADB (2004) *Swimming Against the Tide? An Assessment of the Private Sector in the Pacific Islands*, Asian Development Bank, Manila
- Allen, Matthew G. (2000) 'Subsistence or cash cropping? Food Security on Malo Island, Vanuatu' in R.M.

- Bourke, R. Michael and V. Vlassak (2004) *Estimates of Food Crop Production in Papua New Guinea*, Australian National University, Canberra
- Bourke, R. Michael (2005) 'Agricultural Production and Customary Land in Papua New Guinea', in Jim Fingeleton (Ed) (2005) *Privatising Land in the Pacific*, Discussion Paper Number 80, The Australian Institute, Canberra, June
- Bourke, R.M.; C. Camarotto; E.J. D'Souza; K. Nema; T.N. Tarepe; and S. Woodhouse (2004) *Production Patterns of 180 Economic Crops in Papua New Guinea*, Coombs Academic Publishing, Australian National University, Canberra
- Buno (2004) interview with this writer, Pikosa Village, Eastern Highlands Province, 7 December
- Callick, Rowan (2005) 'Resource Issues as a Source of Conflict', *Pacific Economic Bulletin*, Vol 20 No 1, May
- CELCOR (2002) *Para-legal Training Manual*, Centre for Environmental Law and Community Rights, Port Moresby
- Chitoo, John (2004) Interview with this writer, Madang, 14 December
- CIS (2005) 'CIS Board of Directors', Centre for Independent Studies, <http://www.cis.org.au/>
- Deininger, Klaus (2003) *Land Policies for Growth and Policy Reduction*, World Bank Policy Research Report, Oxford University Press and the World Bank, Washington
- DTI (2001) *Statistical Digest 2000*, Department of Trade and Industry, Papua New Guinea, July 2001, Port Moresby
- Forum Secretariat (2000) *Forum Regional Security Committee Outcomes*, Apia, Samoa, 10-11 August
- FPDC (2002) *Fresh Produce News*, Edition 162, September/October, 'Urban market prices', Fresh Produce Development Corporation, Goroka
- FPDC (2004) 'Total marketed fruit and vegetable demand 1995', Demand calculation based on 1995 survey and population growth figures, Fresh Produce Development Corporation, Goroka, unpublished table, Table 1c
- Gibson, John (2000) 'The Economic and Nutritional Importance of Household Food Production in PNG', in R.M. Bourke, M.G. Allen and J.G. Salisbury (2000) *Food Security for Papua New Guinea*, Proceedings of the Papua New Guinea Food and Nutrition 2000 Conference, PNG University of Technology, Lae, 26-30 June
- Gou and Higaturu (1999) Agricultural lease between Gou Development Corporation (Oro Province) and Higaturu Oil Palms, September, Port Moresby
- Gunn, Bernard (2004) interview with this writer, Goroka, 9 December [Bernard is Director of the Community Based Health and Development Cooperative, at Kiam in the Western Highlands]
- Hughes, Helen (2004) 'The Pacific is Viable!', Issue Analysis No 53, Centre for Independent Studies, Sydney www.cis.org.au
- Hughes, Helen and J. Warin (2005) 'A New Deal for Aborigines and Torres Strait Islanders in Remote Communities', Issue Analysis No 54, Centre for Independent Studies, Sydney www.cis.org.au
- Kaputin, William (1974) 'Infeasibility and Justice' in Sack (Ed) (1974) *Problems of Choice - Land Law in PNG*, Australian National University, Canberra
- Kasas, Galum (2003) 'Promoting Trade and Investment Opportunities', Advertisement, *The Independent: Madang Supplement*, 27 February, p.3
- Lakau, Andrew A.L. (1994) 'Customary land tenure and economic development in PNG' in Ron Crocombe and Malama Meleisea (Eds) (1994) *Land Issues in the Pacific*, Institute of South Pacific Studies, University of the South Pacific, Suva
- Lea, David (2004) *Customary Land Tenure in Papua New Guinea: what does it really mean?*, National Research Institute, NRI Special Publication Number 35, Port Moresby
- Mara and others (1999) Lease of Land, between Anton Mara, Leo Mautu Bakani, Lucas Becho, Paul Kaumu, Thomas Malala and John Nomu, and the Independent State of Papua New Guinea, 23 November [concerning 777 hectares of land at Garu Village in West New Britain]
- Mazoyer, Marcel (2001) *Protecting Small Farmers and the Rural Poor in the Context of Globalization*, Report for the United Nations Food and Agriculture Organisation, Rome
- Mosco, Mark (2005) 'Customary Land Tenure and Agricultural Success: the Mekeo case', in Jim Fingeleton (Ed) (2005) *Privatising Land in the Pacific*, Discussion Paper Number 80, The Australian Institute, Canberra, June
- Narokobi, Bernard (1988) *Concept of Ownership in Melanesia*, Occasional Paper No 6, The Melanesian Institute, Goroka, 2nd printing 1999
- Oruga, Thomas (2004) interview with this writer, Pikosa Village, Eastern Highlands Province, 7 December

- Paol, Yat (2004) Interview with this writer, Madang, 14 December [Yat was speaking as a community leader of Tokain village, and a community worker with the Madang based Bismarck Ramu Group]
- PIFS (2001) *Land Issues in the Pacific*, Pacific Islands Forum Secretariat, Suva, Fiji, August
- Powell J.M. (1976) 'Ethnobotany', in K. Paijmans (Ed) (1976) *New Guinea Vegetation*, Elsevier Scientific Publishing Company, Amsterdam & ANU Press, Canberra
- Rere, Steve (2004) interview with this writer, Goroka [Steve is an educator, author and former university lecturer in Agriculture]
- Rynkiewich, Michael (Ed) (2001) *Land and Churches in Melanesia: Issues and Contexts*, Melanesian Institute, Goroka (PNG), Point No 25
- Rynkiewich, Michael (Ed) (2004) *Land and Churches in Melanesia: Cases and Procedures*, Melanesian Institute, Goroka (PNG), Point No 27
- Sindana, Howard (2004) interview with this writer, Madang
- Sinemila, Grace (2004) Interview with this writer, Madang, 15 December [Grace was speaking as a member of Noromba village, WHP]
- Thomas (2004) interview with this writer, Gauhuku Zuha Village, Eastern Highlands Province, 8 December
- UNDP (1999) *Papua New Guinea: Human Development Report 1998*, Office of National Planning, Government of Papua New Guinea and the United Nations Development Programme, Port Moresby
- Van Helden, Flip (1998) *Between Cash and Conviction: the social context of the Bismarck-Ramu Integrated Conservation and Conservation Project*, UNDP and National Research Institute, NRI Monograph 33, Port Moresby
- World Bank (1999) *Papua New Guinea: improving governance and performance*, Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region, October 22

	Gordons (Port Moresby)	Goroka	Madang	Prices: POM/ Gor- Mad av.
Sweet potato (Kaukau)	1.24	0.67	0.8	168%
Cabbage	2.87	0.98	0.65	350%
Tomato	2.64	1.2	2.06	162%
Carrot	7.01	2.02	2.21	331%
Broccoli	5.9	3.17	2.69	201%
Capsicum	6.41	4.77	4.63	136%
Aibika (greens)	1.02	1.68	1.38	67%
Banana (ripe)	2.21	0.77	0.82	276%
Pawpaw	1.79	0.47	0.65	320%
Coconut (green)	0.44	0.53	0.33	102%
Lemon/lime	4.54	0.74	2.06	324%
Mango	1.21	2.99	0.77	64%
Unweighted average price ratio for 12 common vegetables/fruits				208%
Source: FPDC 2002, pp.15-18, * October 2002 mean prices, largest volume traded items				

Appendix Table 2: Estimates of the value equivalent of a typical daily family village diet from subsistence production (4-5 children) - regional and capital market prices

Madang coastal			Madang inland ##		
		Value equiv (mad/pom)		Value equiv (mad/pom)	
Morning meal	Cooking bananas, 3kg; Greens, ½kg	2.16+1.44/ 4.29+0.52	Cooking banana + taro (boiled or roasted); fruits (several), sago	2.16+1.60/ 4.29+3.80	Kaukau 1.5kg; local tea+sugar; **fried ½kg
Daytime snacks	Either pawpaw, ripe bananas or pineapple, 2kg; Coconut 3½*	1.60+1.32/ 3.80+1.54	Bananas, various fruits, nuts (galip, okari, peanuts), coconuts, & beetles	1.60+ 1.44+1.32?/ 3.80+2.10+1.54+?	Kaukau ½kg, one banana/pineapple/cane/sugar fruit 1.
Evening meal	Taro ½kg; kaukau 1kg; cooking bananas 1½kg; tomato ¼kg; onion ¼kg; carrots ¼kg ; plus some ginger/chillie/tumeric	0.36+0.80+1.08+ 0.52+0.83+0.55+1/ 1.10+1.24+2.15+ 0.66+0.75+1.75+1	Soup (greens, coconut, banana, taro), mix of banana/ casava/ yam/ kaukau/ tapioca, also tomato, onion, greens, various spices	1.44+0.80+1.08+ 0.36+0.80+0.52+ 0.83+0.55+1/0.52+ 0.92+1.24+2.14+ 1.10+0.66+0.75+ 1.75+1	Kaukau & banana Greens 1kg; tomato onions ¼k; beans
Weekly foods	Either medium fish 1kg, ½ chicken OR ½kg pork (K5-10)	1.1/1.6	nil		Chicken ½, # Pig
Monthly foods	Bandicoot OR Tree Kangaroo (K10-20)	0.5/0.8 (equiv)	fish (4x year), chicken, goat and pig (2x year)	0.80+0.40+0.20/ 1.20+0.60+0.30	Cuscus - three times
Total daily equivalent value (Kina)		13.26 / 31.20		16.9/27.71	

Sources: Diet estimates and meat prices: Madang coastal (Paol 2004); Madang inland (Sindana 2004); Highlands (Sinemila 2004); October 2002 prices in Gordon's (Port Moresby), Goroka and Madang markets (FPDC 2002); *one coconut per person every second perhaps every third day; # Some pig might be shared once every two weeks, ## quantities estimated as for Madang coastal

Appendix Table 3: Average family land and annual income equivalence - select Highland villages		
	Av. family land plots (ha)	Est. family cash crop income (Kina)
Eastern Highlands village 1 (P)	0.5 to 3	av. 1,000 (coffee 50%)
Eastern Highlands village 2 (GZ)	0.5 to 3 ha	av.2,200 (coffee 65%)
Western Highlands village 1 (K)	0.5 to 3 ha	1,200 (coffee 85%)
Western Highlands village 2 (N)	3 to 4 ha	1,200 (coffee 80%)
Sources: interviews with village members: P (Buno 2004; Oruga 2004); GZ (Thomas 2004); K (Gunn 2004); N (Sinemila 2004); T (Paol 2004; Sindana 2004)		

Appendix Table 4: December 2004 farmer survey, Madang

Region	Prov	Gardens				Kina pa					
		L/ha	HMW	HMF	%F	Buai	Cocoa	Cocont	Coffee	Vanilla	Otl
Raicoast	MAD	6	7	15+	75	1000	2000	500	0	1000	V,I
Aiome	MAD	1000	20	20+	100	2000	500	0	3000	not yet	M,
aparamu	MOR	3	5	15+	85	2000	0	1500	0	not yet	P
Amele	MAD	7	9	9+	75	5000	2000	300	0	5000	
Tokain	MAD	3	7	15	75	2000	1400	2400	0	0	
Bogia	MAD	2	8	8+	75+	100	100	0	0	450	
Raikos	MAD	300	30	30	na	500	0	2000	0	0	
southkos	MAD	200	20	30	na	0	500	500	0	0	
Baitabag	MAD	2	7	7	na	480	0	0	0	150	
Baitabag	MAD	1	na	na	65	150	0	0	0	0	
Gumine	SIM	3	2	5	60	0	0	0	90	0	Pi
aa	MAD	65	7	10	75	7300	0	0	0	2400	
Bogia	MAD	12	5	7	75	800	3000	0	0	0	
aparamu	MAD	20	7	15	85	3000	7000	1000	0	5000	I
aparamu	MAD	80	20	30	80	500	3000	100	0	320	
Saidor	MAD	1000	50	50+	90	3000	5000	4000	0	3,000	va
Transgo.	MAD	10	20	20+	75	2000	0	1000	0	not yet	
E	SIM	2	5	50+	75	0	0	0	500	0	'
cc	EHP	20	5+	10+	75+	0	0	0	400	0	
TOTALS						29,830	24,500			17,320	

AVERAGE

V- vegetables	L/ha = land in hectares	DPI=Dept Primary Industr
P=peanut	HMW= how many people work this farm?	WV=World Vision
G=greens	HMF= how many fed by this farm?	DAO=District Agric Office
T= tree crops	%F= what proportion of their food from farm?	BRG=Bismarck Ramu Gro
B=brus/tobacco	P7P= annual income per 7 people (weighted family)	
M=mustard	Supp?= support services	<i>interviews in Madang, D</i>