

## **Are the people of Manda in Middle Fly poor? A development assessment using the Oxford Multidimensional Poverty Index**

John Burton

### **Abstract**

The village of Manda in the Middle Fly District of Papua New Guinea lies in the floodplain of the Fly River among the riverine villages in the downstream impact zone of the Ok Tedi mine. As part of Ok Tedi Mining Limited's social and environmental monitoring and livelihood restorations programmes, visits for the purpose of development assessment were made to the village in 1994 and in 2014. Estimates of child mortality, income poverty and Manda's score on UNDP's Multidimensional Poverty Index are used to decide whether the people of Manda are experiencing poverty. The conclusion is that they are in fact extremely poor by world standards.

**Key words:** Poverty, MPI, Multidimensional Poverty Index, Ok Tedi, Fly River, mining impacts, environment, livelihoods.

### **Introduction**

Early in the life of the Ok Tedi mine, located in the Western Province of Papua New Guinea (PNG), experts from the University of Papua New Guinea (UPNG) and the South Pacific Regional Environmental Programme (SPREP) met in Guam and predicted significant environmental impacts in the floodplain of the Fly River, downstream of the mine (Pernetta, 1988), recommending a programme of vigilant monitoring by independent scientists. Unfortunately, funds never became available for this. In 1994, I visited the village of Manda (Figure 1), situated in the centre of the floodplain in the Middle Fly District as part of a research consultancy run by UPNG aimed at providing an audit of social and development issues among the river communities downstream of the Ok Tedi copper mine (Burton, 1995). The project came about as the result of a request to UPNG by Mr Murray Eagle, then the Environment Manager for Ok Tedi Mining Limited (OTML) and resulted in a team some ten researchers and assistants doing fieldwork in the Ok Tedi and Fly River catchments in 1991, 1992 and 1994, as a research consultancy for OTML called the Ok-Fly Social Monitoring Project (e.g. Filer, 1991; Burton, 1991; Kirsch, 1993; Lawrence, 1995; Burton, 1995; Tapari, 1995).

In 2014, I was invited to return to Manda as part of a OTML-organised Riverine Social Impact Assessment (RSIA), being brought onto the project at the suggestion again of Mr Eagle, then employed by Klohn Crippen Berger, a consultancy firm working on

various social and environment planning work for OTML. This gave me the rare opportunity to revisit a remote community 20 years after my initial visit and to do a new development assessment (Burton, Wiyawa & Foneng, 2014).

The part of the work reported here concerns a single question: are the Manda people experiencing poverty?



**Figure 1. Manda village in 2014.**

Background: lagoon country in the floodplain of the Fly River.

## Poverty

*How can we tell whether people are poor or not?*

The word ‘poverty’ is not particularly liked in PNG. After attending a presentation at the PNG University of Technology on the findings of more than a decade of collaborative research between Australian researchers and agricultural research institutions in PNG,<sup>1</sup> a letter writer to *The National* complained:

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<sup>1</sup> The ANU and CSIRO on the Australian side and the Department of Agriculture and Livestock, NARI, the Institute of Medical Research, the National Mapping Bureau, the National Statistics Office and the Department of Environment and Conservation on the PNG side.

I am unhappy with the findings of visiting research fellow, Dr X who says 5.5 million people are living in ... poverty ... How do you describe poverty when many of our village folk have food, shelter and water to drink?

To feed one's family in a village, a typical villager may have several bunches of harvested bananas hanging over his veranda, he would have stored yams that would last for months and have access to smoked fish and meat hanging in his fire place, while the bush has an abundance of fruits and nuts for many of our villagers ('Please define poverty in PNG', 2008).

Unfortunately, the newspaper had earlier misreported the AusAID-funded Mapping of Agricultural Systems Project (MASP), omitting points such the collaborative nature of the project and giving the impression that the data were 15 years old, instead of 'collected over the past 15 years'.<sup>2</sup> While still critical, the letter writer did not reject research in itself and went on to ask for updated information to determine whether people were really poor or not.

#### *Assessment using the Rural Development Handbook*

The research being referred to had earlier formed the basis of the *Papua New Guinea Rural Development Handbook* (Hanson et al., 2001). A summary of what it had to say about the Middle Fly is as follows. A set of five measures was used to rank PNG's 85 rural districts, based on statistical data and field evaluations.

Measure	MF's Score (1-5)
Land potential	3 = 'moderate'
Agricultural pressure	5 = 'none'
Access to services	3 = 'moderate'
Child malnutrition	3 = 'poor child nutrition'
Income from agriculture	1 = 'very low'
<b>Disadvantage index (sums the above)</b>	<b>15 = 'seriously disadvantaged' (MF 21<sup>st</sup> out of 85 rural districts)</b>

**Table 1. Middle Fly: measures of disadvantage from the Rural Development Handbook.**

Source: Hanson et al. (2001: Tables 4-9).

<sup>2</sup> It should be added that Dr X was given the opportunity to correct the record ('Errors in report on poverty in PNG', 2008) and, in case, received PNG's Order of the Logohu for his work over many years on MASP and similar projects.

The district that Manda is located in, Middle Fly, fared well on only one measure – it has no agricultural pressure. On the other measures, it did moderately or poorly. Overall it was classed as ‘seriously disadvantaged’ (Table 1).

Child malnutrition, rated here as ‘poor’, was derived from weight-for-height (wasting) and height-for-age (stunting) tables using a standard method and can be compared with Flew’s 1998 findings. Flew found that in respect of wasting, Fly River children were ‘somewhat’ below the Harvard standard weight-for-age graph and that some 27% of children aged 0-4 years were ‘moderately’ or ‘severely’ malnourished using the Mid-Upper Arm Circumference (MUAC) method (Flew 1998: 28-29). There is no reason to believe that child malnutrition would have changed much for the worse or for the better between the 1990s when of Flew and Hanson et al. made their assessments and the time of fieldwork in 2014.

### *Income poverty*

In the Middle Fly, the *Rural Development Handbook* says that approximately two thirds of people had incomes of less than K20/year in 2001. In a comparison of Districts across the whole of Papua New Guinea, Middle Fly was classed as 1, ‘very low’ for income from agriculture, where the maximum was 5 (Gazelle, Kokopo, Markham, Rabaul).

K20/year was the equivalent of about US\$6.00 (Bank of PNG 2001). Converted to a per capita per day rate this was 1.6 US cents a day.

Year	CMCA cash distribution	Population* CMCA villages	CMCA cash per capita	CMCA cash per capita/day
2011	USD 22,700,000	120,000	USD 189.17	USD 0.52
2012	USD 31,079,532	110,000	USD 282.54	USD 0.77
2013	USD 28,403,524	114,000	USD 249.15	USD 0.68
2014	USD 22,870,000	134,500	USD 170.04	USD 0.47
2015	USD 14,920,000	134,500	USD 110.93	USD 0.30
2016	USD 22,620,000	134,500	USD 168.18	USD 0.46
<b>Mean:</b>	USD 23,765,509		<b>USD 195.00</b>	<b>USD 0.53</b>

**Table 2. Distributions of cash to Community Mine Continuation Agreement (CMCA) villages, 2011-2016.**

Data: OTML (2012, 2013, 2014, 2015, 2017), OTDF (2012, 2013, 2014, 2015, 2017a, 2017b). Note that OTML reports the value of the cash distribution in both PGK and USD.

\* Population figures vary between years due to counting uncertainties and errors.

Following two years of negotiations in 2006-2007, Community Mine Continuation Agreements (CMCA) were signed with 156 villages to extend the life of the Ok Tedi

mine. Subsequently, all villages in the Middle Fly have been receiving annual cash payments, calculated per head of population and distributed to family heads. The payments are calculated by Ok Tedi Mining Ltd (OTML) on the basis of sales data and distributed by the Ok Tedi Development Foundation (OTDF), a non-for-profit organisation. Data on the disbursements are given in OTML *Annual Reviews* and OTDF *Annual Reports* as shown in Table 2.

These data show that the cash disbursements have fluctuated over a run of years, and that the per capita value changes depending on the volume of production. Notably, 2015 was an El Nino year when low water levels in the Fly River limited copper exports and the mine was shut down for part of the year. The census figures for the 156 villages involved were returned by a mixture of self-enumeration and field census by Ok Tedi's Community Affairs Department: the erratic trend is due to errors introduced by using different methods. The uncertainties in the population data do not detract from the overall conclusion that average per capita receipts for the six years was barely over 50 US cents a day.

In 2011, OTDF said that the average household income from agricultural production for the 'model farmers' it was assisting with livelihood programs in ten Middle Fly villages – of which Manda was one – was K60/month or K720/year (OTDF, 2012, p. 17). Given that the average household size in Lake Murray Rural LLG, where Manda is located, at the 2011 census was 7.0 (NSO, 2014), this represents K720/365/7 = K0.28 or just 8.4 US cents per capita per day. Another of looking at it is that OTDF was promoting a scheme which returned less than the then minimum wage of K3.20/day.

The assistance provided to the model farmers is in the form of encouragement to relocate to new village sites, advice on soil improvement techniques like sweet potato mounding, which is not a customary gardening method in this area, training visits outside the province, and help with nurseries for selected crops like African yams. OTDF says with optimism: 'With OTDF support, in 2011 alone, one farmer sold over one tonne of yams for K1,600 in Kiunga' (OTDF, 2012, p. 17). If the form of the support was transport – and a photograph shows African yams from Mipan, a neighbouring village to Manda, on a fully-laden dinghy bound for Kiunga market – the sustainability of such sales is dubious due to the high cost of river travel.

In 2014, OTDF spent K6.9 million to subsidise a passenger vessel, MV *Fly Hope* (Figure 2), and this moved 5,400 passengers and 77 tonnes of freight during the year (OTDF, 2015, p. 51). From Manda, though, the adult return fare to Kiunga was K280, with cargo charged extra. For two adults, therefore, to take K1600 worth of yams to Kiunga, wait while they are sold, and to return to the village, the minimum expenditure after staying with relatives and paying for food and other necessities is likely to exceed 50% of the value of the cash crop. In 2016, questions about the viability of the service appeared to be borne out. *Fly Hope* was now described as 'non-operational' after the failure of OTDF to persuade the Fly River Provincial Government to assist with its subsidy (OTDF, 2017, p. 42). It is undergoing a refit and is scheduled to resume services in 2018 (OTDF, 2018a, p. 43).

What this says is that cash incomes may have risen for the model farmers, but the rise is from nearly zero income to a few cents per head per day. The World Bank updated its income poverty line in 2015, to \$1.90 per capita per day (Cruz et al., 2015), shortly after the second round of fieldwork. The income poverty line is the minimum income deemed adequate to pay for basic necessities.<sup>3</sup>



**Figure 2. MV *Fly Hope* at Manda, 20 May 2014.**

In its publications, OTDF has more recently switching emphasis from the promotion of mixed-crop ‘model farmers’ to a ‘Livelihood Development Program’ based on three cash crops:

In accordance with the new Strategic Direction 2016-2020, OTDF intends to generate a sustainable income for the CMCA people through its Livelihood Development Program (LDP). The LDP focuses on three primary packages, eaglewood, rubber and rice (OTDF, 2017b, p. 4).

OTDF’s figures show that incomes from rubber, the only one of these in a production phase, are equally low. Rubber is not an industry new to Western Province; the 2600 ha government rubber scheme at Nakaku near Suki was developed in the mid-1970s (Tapari 1988:27). However, support for the industry has been inconsistent and OTDF

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<sup>3</sup> In PPP, or ‘purchasing power parity’, dollars. Currently, there is disagreement on the PPP conversion rate for the PNG Kina because Pacific Island states are not current participating in the World Bank’s International Comparison Program, see <http://www.worldbank.org/en/programs/icp/brief/pas-program>. In default of an exact rate, PPP dollars have to be assumed to be US dollars.

has taken over as the principal buyer, with a new entity, Fly Rubber Limited, incorporated in 2016 to help advance the industry. OTDF said that K221,638 was paid to 745 growers in 2017 – K297.50 each over the year, or just K1.14/day per grower assuming 260 working days in the year (OTDF, 2018, p. 57). Further plans include opening a rubber processing plant at Aimbak by the end of 2018 to put ‘more money in farmers’ pockets for the same volume of harvested rubber’ (OTDF, 2018, p. 58).

The ambition to help farmers in Middle Fly is laudable, but there is a reason for the disappointing history of rubber in Western Province, namely that the costs of investing in farmer training, nurseries, transport and marketing are steep and the return on investment – whether in capital on the part of organisations or land and labour on the part of the village growers – is not great. Rubber would have to undergo an expansion in the province far greater than anything seen to date to lift villagers out of poverty.

In conclusion, Madang Kukurai might well say that village folk have ‘food, shelter and water’, but without money it is impossible to pay for services like health and education – even when subsidised – or to travel anywhere or make modest purchases of household goods. Given that OTDF has said that the CMCA cash payments represent ‘a significant proportion of ... total cash income’ in the Middle Fly (OTDF 2013: 36), the obvious conclusion is that *everyone* in the Middle Fly CMCA region is income poor.

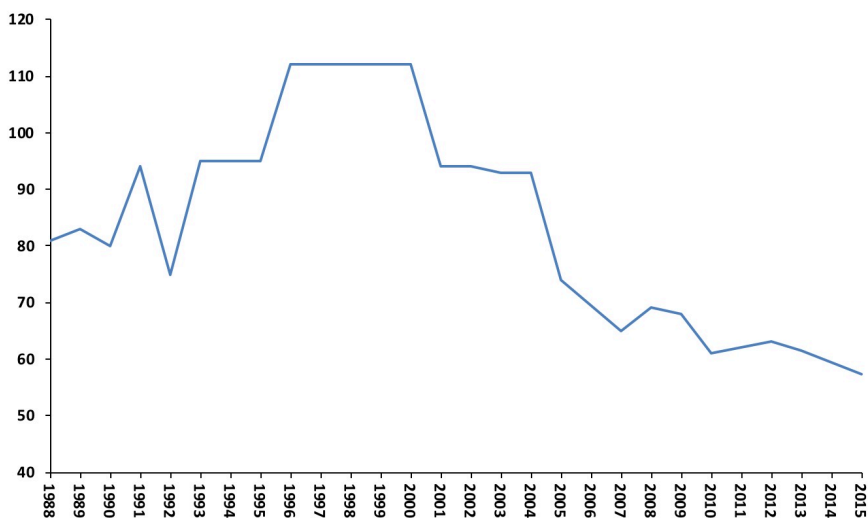
### *Child mortality*

With no vital registration in rural PNG, the conventional measures of neonatal (within 28 days of a live birth), infant (0-0.99 years) and child (0-4.99 years or ‘under-fives’) mortality cannot be reported in Middle Fly or anywhere else. PNG’s infant and child mortality as reported in Human Development Reports, the latest figures being 44.5 and 57.3 per 1000 live births respectively (UNDP, 2017, p. 230), is in reality largely based on guesswork (for under-fives mortality, see Figure 3). Whatever the true figures, the Department of National Planning and Monitoring said that PNG did not achieve the fourth Millennium Development Goal, MDG4 ‘Reduce Childhood Mortality’, between 2000 and 2015 (DNPM, 2015, p. 26).

In the CMCA villages, the Village Planning Committees have been updating their village censuses in recent years, but in 2007 OTML collected the data using a standard family record book. In that year, women in 41% of households at Manda were recorded as having lost at least one child in their reproductive life. This cannot readily be converted into a standard measure, but it is consistent with the ‘not achieved’ findings for the national targets in respect of MDG4.

It would be ideal if an effort was made to monitor child deaths and this may be happening under the Middle and South Fly CMCA Area Health Development Program. Bosset Health SubCentre is the institution best suited to host a project aimed at tracking childhood health outcomes in its catchment. It is unlikely to have accurate data at the present time, because not all births to mothers living in the villages surrounding Bosset take place in the Health SubCentre. It is true that most newborns

will be picked up within a few months of birth and issued with clinic books, but the reporting of any subsequent deaths is likely to have many gaps.



**Figure 3. Under-fives mortality in PNG from UNDP Human Development Reports.**

Source: <http://hdr.undp.org>, noting that neither the apparent rise in mortality in the 1990s nor the fall in the 2000s can be relied on.

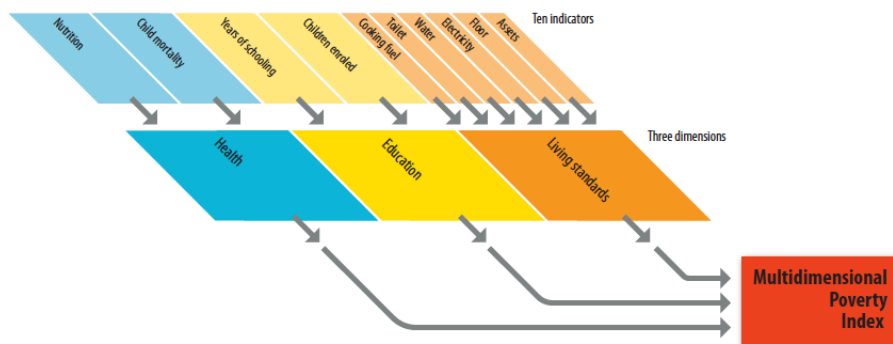
#### *Oxford Multidimensional Poverty Index*

The shortcomings of traditional measures of ‘standard of living’ are readily apparent in countries with poor statistical reporting. PNG’s top-level national plan, PNG Vision 2050, has the basic flaw that one of its key national objectives is to ‘improve Papua New Guinea’s Human Development Index (HDI) ranking to 50 from 148 amongst the United Nations member countries’ (NSPT, 2009, p. 5). Unfortunately, this requires the combination of three separate indicators – life expectancy at birth, the adult literacy rate, and real GDP (gross national product) per capita – for which there are no reliable annual calculations.

First, life expectancy has only been measured nationally on two occasions – at the time of the 1980 and 2000 censuses – and it is believed that there is no staff member at present employed at the National Statistical Office able to calculate it even if the appropriate data were available from the most recent census. Second, there is no agreement on what adult literacy is in PNG and no attempts have been made to measure on a national scale. Third, the reporting of GDP is rendered meaningless as a measure of rural well-being in PNG because it is inflated by the country’s large extractive industry sector.



Because of the shortcomings of the HDI, UNDP began reporting a new measure in 2010, the Oxford Multidimensional Poverty Index (MPI). Calculations are done by household, and result in an overall score for a community, or a larger area like a district or a country. Only ten MPI indicators are needed as shown in Table 4. It was possible to obtain nine of them for Manda by re-coding the CMCA Village Census Household Questionnaire for 83 households present at Manda in 2007, from the original data sheets kept in the OTML Community Relations office ('Manda 2007' in Figure 5).



**Figure 4. The MPI: Ten indicators in three dimensions.**

Source: UNDP 2010: Figure 5.7.

Individual household scores, or 'c-scores', are obtained through summing the noughts and ones for the ten indicators (Table 3), weighting the three dimension so that they contribute 1/3 each to the c-score. The method is explained by Alkire and Santos (2010) and in the 2010 HDR (UNDP, 2010, pp. 221-222).

The indicator that could not be scored at Manda was H4 'Deprived if any adult or child for whom there is nutritional information is malnourished'. Tabubil Hospital provided a MUAC measuring tape – the standard means of quickly rating nutritional status – but it did not prove feasible to examine children with it at Manda.

To Flew's earlier cited study (Flew, 1998), can be added the last official figure of 48.5% for stunting in children in children under five in PNG (NSO, 2012, Table 5.14), and the more recent claim that a third of hospital deaths of children under five may be attributed either directly or indirectly to malnutrition (Hurney, 2017). In short, malnutrition in children is highly likely at Manda. H4 in fact applies to adults as well as children, the elderly being particularly at risk of malnutrition. In the absence of data, though, H4 was scored as 'not deprived' (H4 = 0) for all families.

Visiting the village in 2014, it was also possible to add the MPI questions to eight family interviews ('Manda 2014' in Figure 5). The eight families were probably not representative of the whole village.

Calculations (UNDP, 2010, pp. 221-222) may be performed in a spreadsheet and a village MPI score, a number between 0.0 and ('not MPI poor') and 0.50 or more ('MPI-poor') is obtained as soon as row of data is entered for each household.

Dimension	Indicator (recorded by household)
Education	E1 – Deprived if no household member has completed five years of schooling.
	E2 – Deprived if any school-aged child is not attending school in years 1 to 8.
Health	H3 – Deprived if any child has died in the family.
	H4 – Deprived if any adult or child for whom there is nutritional information is malnourished.
Assets	A5 – Deprived if the household has no electricity.
	A6 – Deprived if the household does not have access to clean drinking water, or clean water is more than 30 minutes walk from home.
	A7 – Deprived if they do not have an improved toilet or if their toilet is shared.
	A8 – [International: Deprived if the household has dirt, sand or dung floor] PNG: Deprived if the household does not sleep in an insect vector-proof house.
	A9 – Deprived if they cook with wood, charcoal or dung.
	A10 – [International: Deprived if the household does not own more than one of: radio, TV, telephone, bike, or motorbike, and do not own a car or tractor] PNG: Deprived if house does not own a car or truck, motorbike, or canoe/dinghy with outboard.

**Table 3. Ten indicators used to score the Multidimensional Poverty Index, with modifications for rural Papua New Guinea.**

Indicator scores: 'deprived' = 1, 'not deprived' = 0.

Household c-score (weights each dimension as one third of the score) =

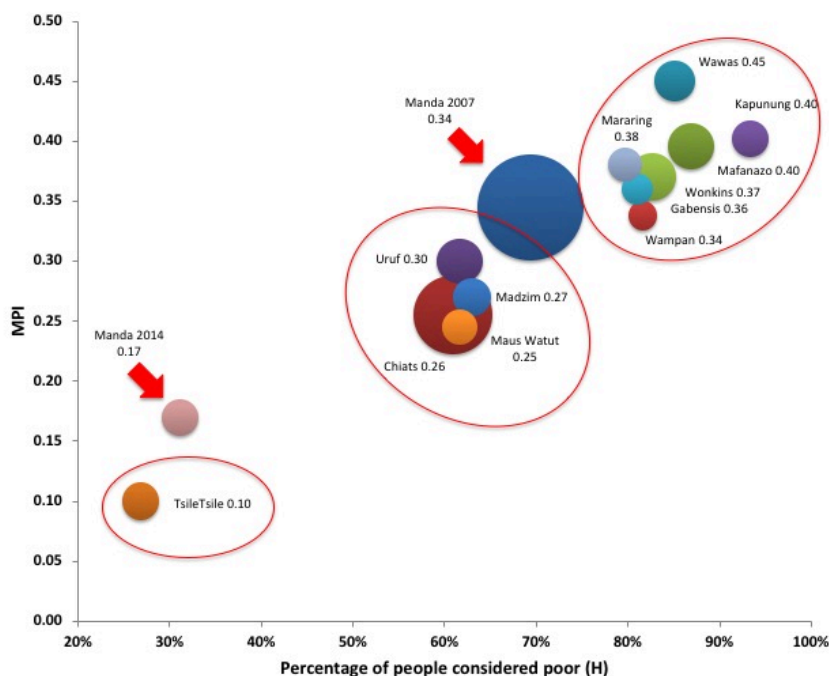
$$1/6 \times (E1 + E2) + 1/6 \times (H1 + H2) + 1/18 \times (A5 + A6 + A7 + A8 + A9 + A10).$$

The result for 2007 was an MPI of 0.34, placing Manda into the 'struggling to achieve development' bracket. The result for our small sample in 2014 was 0.17, placing the eight families into the 'in the process of development' bracket.

To understand what these scores mean, they are displayed in Figure 5 alongside MPI scores from 12 villages in Wampar Rural LLG previously surveyed in 2011. In the diagram the Wampar villages are divided into three groups (circled). Tsile Tsile is a well serviced village with a primary school and a health post; it is situated on good land and a small aid project has been assisting cocoa growers with microfinance and technical advice. The eight Manda families sampled in 2014 resembled the group of

families sampled at Tsile Tsile. Only two of them were MPI-poor (they had both lost children) but otherwise they were well educated – one family was that of the village headmaster – and some had generators which they ran at night. The second group of Wampar villages with intermediate MPI scores had reasonable access to services – Uruf had a school and health post – but they were on poorer land and their development outcomes were not as good.

The third group consisted of isolated villages mostly inhabited by a different ethnic group with much lower educational attainments. The nearest health posts and schools were some distance away. Families had frequently lost children.



**Figure 5. MPI scores for Manda compared with findings from Wampar Rural LLG, Morobe Province.**

The 83 Manda households in the 2007 Household Questionnaire evidently fitted between the second and third groups. The critical indicator was H3 ‘Deprived if any child has died in the family’ and this weighed down the household c-scores because 41% reported the deaths of children.

Because MPI data are available for 105 other countries, international comparisons can be made that include other indicators. It is convenient to group country MPI scores as follows:

- 0.50 or higher – *Extreme Poverty*. Nine countries were in this bracket in 2011. Examples: Somalia, Ethiopia, Mali, Niger.
- 0.40-0.50 – *Severe Poverty*. Six countries were in this bracket in 2011. Examples: Rwanda, Sierre Leone, Liberia.
- 0.30-0.40 – *Struggling to Achieve Development*. Fifteen countries were in this bracket in 2011. Examples: Côte d'Ivoire, Timor Leste and Tanzania.
- 0.10-0.30 – *In the Process of Development*. Twenty-five countries were in this bracket in 2011. Examples: Kenya, India and Bangladesh.
- 0.00-0.10 – *Mostly Developed*. Fifty-four countries were in this bracket in 2011. Examples: Philippines, Jordan, Vietnam.

Manda's MPI score of 0.34 for 2007 places it in the 'struggling to achieve development' category. Countries with a similar MPI score – for whole countries, of course, and processed from existing national household surveys – are shown in Table 4.

Country	MPI	GNI per person*	Pop under \$1.25 per day*	Pop vulnerable to poverty	Pop in severe poverty	Life expectancy
Zambia	0.33	\$1,358	68.5%	17.2%	34.8%	49.4 years
Tanzania	0.33	\$1,383	67.9%	21%	33.4%	58.9 years
Malawi	0.33	\$774	73.9%	23.4%	31.4%	54.8 years
Chad	0.34	\$1,258	61.9%	28.2%	44.1%	49.9 years
<b>Manda 2007</b>	<b>0.34</b>	-	-	<b>69.3%</b>	<b>30.3%</b>	-
Rwanda	0.35	\$1,147	63.2%	19.4%	34.7%	55.7 years
Mauritania	0.35	\$13,300	23.4%	15.1%	40.7%	73.5 years
Côte d'Ivoire	0.35	\$1,593	23.8%	15.3%	39.3%	56.0 years
Madagascar	0.36	\$828	81.3%	17.9%	35.4%	66.9 years
Timor Leste	0.36	\$5,446	37.4%	18.2%	38.7%	62.9 years
<b>Mean†</b>		<b>\$3,010</b>	<b>55.7%</b>	<b>19.5%</b>	<b>36.9%</b>	<b>58.7 years</b>

**Table 4. Multidimensional Poverty Index: comparison countries and other measures of well-being.**

Source: UNDP (2013: Tables 1 & 5) and 2007 CMCA Village Census Household Questionnaire for Manda. \*Dollar figures are in 2005 PPP \$ or 'purchasing power parity' dollars as calculated by the World Bank; † omitting Manda.

As can be seen, the countries vary greatly in GNI per head of population, which is in turn skewed by high incomes in some industry sectors. UNDP reported PNG's GNI per head as US\$2,386 in 2012, which is K38,450/family at the mean Manda family size of 7.78 persons as extracted from the 2007 Village Census Household Questionnaire. This does not bear on Manda because, as is well-known, the high-cost

structure of the mining and petroleum industries has inflated average per capita incomes for many decades. In the case of Manda, it is a gross exaggeration as the previous section on incomes will have made clear.

What does have relevance to Manda are the other columns in Table 4. The mean life expectancy at birth for this group of countries was 58.7 years. No national figure for PNG has been calculated recently, but the government taskforce stated it as 58 years in 2009 when drawing up PNG Vision 2050 (NSPT (2009, Table 2.2). Accordingly, PNG fits the average for this group on life expectancy.

The data for ‘population vulnerable to poverty’ and ‘population in severe poverty’ come from MPI calculations. They are the percentage of the population living in households with c-scores of 2.0-3.33 and greater than 5.0, respectively.

The percentage who live in households at Manda that are ‘vulnerable to poverty’ is much higher – nearly 70% – than the mean for the nine countries while the percentage in ‘severe poverty’ is somewhat less. Taken together, Manda people could not be described as having escaped poverty yet.

Finally, bearing in mind the earlier discussion of income data, the percentage of the population who have less than \$1.90 to live on per day is not available for Manda. It would arguably be possible to arrive at this with very detailed household interviewing, but there is a poor record of recording plausible income data in PNG household surveys. A believable exercise would involve many weeks, not hours, of income monitoring at Manda and would require highly skilled researchers. It is doubtful that this is feasible or desirable.

On the other hand, the average of 56% of the population in the nine countries that have less than \$1.25 a day to live on suggests that a similar figure would be plausible at Manda. Again, it is unlikely that Manda people have escaped poverty on this indicator.

### *Summary*

All of the development indicators point in the same direction. The measures in the *Rural Development Handbook* flag major difficulties for the area and classify it as ‘seriously disadvantaged’. Incomes are not well measured, but all the evidence points towards very low amounts of money circulating in the area, CMCA payments notwithstanding. It is highly probable that per capita income is far less than the new international income poverty line of US\$1.90 a day in most households. The story with child mortality is much the same; it is poorly measured but known to be unacceptably high. On the bright side, the raw MPI data do show that Manda children are generally high. On the bright side, the raw MPI data do show that Manda children are generally all in school and that adults have quite good levels of education for a remote area.

The overall conclusion is that the Manda people are objectively poor by world standards, whether measured by income or by life’s outcomes, and independently of the fact that they are also mine impacted.

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