Poverty in the Pacific Island Countries using Consensual Approach measurement giving examples from Tonga

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Poverty and Social Justice in a Post-COVID World
Bristol Poverty Institute
6th June 2024

Presentation Outline

- Background – Poverty studies in the Pacific
- Reporting Requirements (SDGs) on Poverty for Pacific Islands
- Application of Consensual Approach in Tonga

Hardship and Poverty in the Pacific

By David Abbott and Steve Pollard

- Pacific society has long been seen as a traditional culture of caring for sharing with family and clan.
- Images of hunger and destitution and of absolute poverty frequently seen in other parts of the developing world have been largely absent in the Pacific.

In the last decade, however:

- the relatively poor economic performance of most of the PDMCs,
- the political instability and
- ethnic tensions that have surfaced in some countries,
- the increasing levels of youth unemployment,
- and emerging social problems have raised questions about the extent of poverty and hardship.

Poverty studies in the Pacific Islands

- 2003 – Child poverty in the Developing World by Prof. David Gordon an et.

Vanuatu from the Pacific joined.

- MDGs – most countries in the Pacific used BNPL by UNDP and WB.
- Other bilateral works between donors and some countries uses Gini coefficients and others.
- 2004 - Participatory Assessments of Hardships (PAH) by ADB

Poverty and hardship in PDMCs are defined as: inadequate levels of sustainable human development through access to essential public goods and services and access to income opportunities.

- Consensual Approach – introduces in 2012 in Tonga (PhD thesis – *'Child and Adult Poverty in a Small Island Developing State: A Case Study of Tonga'*) and later to other countries including – Tonga, Solomon Is, Fiji, Tuvalu, Kiribati, SPC communities.
- SDGs – other multi-dimensional approach such as MPI and now MPM

Poverty reporting requirements for Pacific Island Countries - SGDs

Sustainable Development Goals (SDGs) 2015 to 2030

17 Goals, 169 targets, ??? Indicators

Poverty Measurement for the Sustainable Development Goals

The SDGs require at least two and possible three separate poverty measures:

1) The World Bank's **international poverty line** – set at $1.25 PPP (purchasing power parity) dollars per person per day at the time of the SDGs and revised in October 2015 to $1.90 PPP dollars, using 2011 prices.

2) A **national poverty line**.

3) A **multidimensional poverty line** – which could either be the same as the national poverty line or it could be different.

SDG 1.1.1 – International Poverty Line

- The World Bank's International Poverty Line is designed primarily to measure extreme poverty for the purposes of international comparison.
- It is not designed to provide accurate or reliable measurement of the extent and nature of poverty in PICTs and should not be used for this purpose.
- It is the approximate average value of the national poverty lines of 15 countries (twelve from Sub-Sharan Africa and two from Asia – Chad, Ethiopia, Gambia, Ghana, Guinea-Bissau, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Tanzania, Uganda, Nepal and Tajikistan).
- It is important to note that none of the countries used to set the international poverty line are from the Pacific or Oceania, nor are any Small Island Developing States (SIDS) included.
- The World Bank's poverty measurement methodology has been extensively criticised (Deaton 2010, Reddy and Pogge 2008, Klasen et al. 2016, Atkinson, 2017) and therefore its results should be used with considerable caution.

SDG 1.2.1 – National Poverty Line

- The World Bank has also developed a *Cost of Basic Needs* poverty methodology which it proposes could be used to produce national poverty lines in PICTs and other countries.
- However, poverty is not measured by calculating a comprehensive budget standard which includes the cost of non-food needs such as housing, clothing, health, education or meeting social obligations.
- Instead, the absolute poverty line is calculated using the Orshansky multiplier method (developed in the USA over 50 years ago) which is based on Engel's law, dating from 1857.
- Even in the 1960s this methodology was criticised as being out-dated and unscientific (Fisher, 1992).
- Several reviews of the methodology by leading experts have supported these criticisms, for example, in 1992, the USA National Academy of Sciences (NAS) Panel on Poverty and Family Assistance concluded that the Orshansky multiplier methodology should be abandoned and a budget standard developed which included food, clothing, shelter (including utilities) and other needs (Citro and Michael, 1995).
- More recently, a 2004 review by USA Committee on National Statistics concluded "*that the current measure needs to be revised: it no longer provides an accurate picture of the differences in the extent of economic poverty among population groups or geographic areas of the country, nor an accurate picture of trends over time.*" (Iceland, 2005).

- The *Cost of Basic Needs* budget standard food basket is designed by experts to be nutritionally adequate and to reflect the food consumption habits of low income households.
- This food basket is designed to yield an average of about 2,100 to 2,200 kilo calories per person per day and the cost of this food basket is the Food Poverty Line (FPL).
- The Basic Needs Poverty Line (BNPL) is the cost of the FPL plus the cost of the Non-Food Poverty Line (NFPL), which can be calculated in a number of different ways.
- A reference group of households is selected and their food and non-food expenditures are calculated. In the USA, using 1955 data, it was found that the reference households spent about one third on food and the rest on non-food expenditure.
- Thus the poverty line was simply set at the FPL multiplied by 3 (the Orshansky multiplier).
- In some implementations the average non-food expenditure of the reference group of households is considered to represent the Non-Food Poverty Line and is then simply added to the Food Poverty Line to produce the Basic Needs Poverty Line.

- Many low and middle income countries calculate Food Poverty Lines – although this methodology has largely been abandoned by developed countries. Best practice advises (Rio Group, 2006) that the first step should be the estimation of the energy (caloric) requirements for the population under analysis based on internationally agreed recommendations (FAO/WHO/UNU, 1985, 2004).
- The basal metabolic rate is calculated using data on the heights and weights of the population. Then, the required daily kilocalories are computed for different groups of persons defined according to their age, sex and average levels of activity – based on the work/job they do.
- These results can be aggregated to calculate the total requirements for a household or an average caloric requirement per person can be computed from the weighted average of the caloric requirements for the whole population.

- No PICT appears to measure the average caloric requirements of their own populations and instead they make use of estimated values from another country.
- For example, the World Food Programme Emergency Food Security Assessment Handbook (WFP, 2005) uses the threshold value of 2,100 kilo calories per person per day as the acceptable level for meeting energy requirements.
- The figure of "*2,100 kcal/person/day is taken as the average minimum daily energy requirement for a "typical" population in a warm climate undertaking light physical activity*" (UNHCR-UNICEF-WFP-WHO, 2000).
- The WFP emergency food rations have approximately this calorific content; however, the WFP provides no justification for this threshold level (Wiesmann et al, 2009).
- This is a critical question is whether is possible to know what are the minimum calorie requirements in a given society due to the fact that there is a lot of between people variability in activities. SPC are working on this and they are going to produce a refined line for the south pacific considering the specific kind of products people consume (this is more like a hybrid method as it uses a little bit of budget standards). This is a good practice (but not enough see my point below).

- The implicit implication of using a 2,100 kcal/person/day threshold is that the Government of the PICTs believe that it is acceptable for ‘poor’ adults and children, living in their own homes, to live on a diet that has a calorie content that is similar to that provided by the UN to displaced people in emergency situations.
- It seems unlikely that a national poverty line set in this way would conform to the broad relative definition of hardship/poverty proposed by Abbott and Pollard (see above).
- The idea of calculating an income poverty line based on a norm of food consumption is based upon Engel’s law which dates back to 1857 (Engel, 1895). Ernst Engel, a nineteenth century German economist, postulated that as expenditure increases, so the proportion devoted to food will decline i.e. the lower the income of a family the greater the proportion of their income they will spend on food.
- However, research over the past 150 years has shown that Engel’s law is over simplistic and that the relationships between household income, food deprivation and calorie consumption are complex.
- Engel´s Law: At the core of calorie-based poverty lines is the empirical association between income and expenditure on food. The Engel´s law behaves differently in each country (is more an empirical regularity than a law). This can be tested for Tonga. If the plot looks flat... then we are in trouble.

- Calorie intake, food expenditure and poverty: The key point in this discussion is whether there is a relationship between food expenditure and calorie intake. Poor households in some countries, satisfies their calorie requirements rather easily. Therefore, if you use food expenditure you are not tearing apart the poor from the not poor!
- The question we have is what evidence do we have about the relationship between calorie intake and food expenditure? It is the variety and the quality of food what matters for a good splitting between the poor and the not poor. However, measuring variety and quality is an entirely different thing (much more complex).

SDG 1.2.2 – Multidimensional Poverty

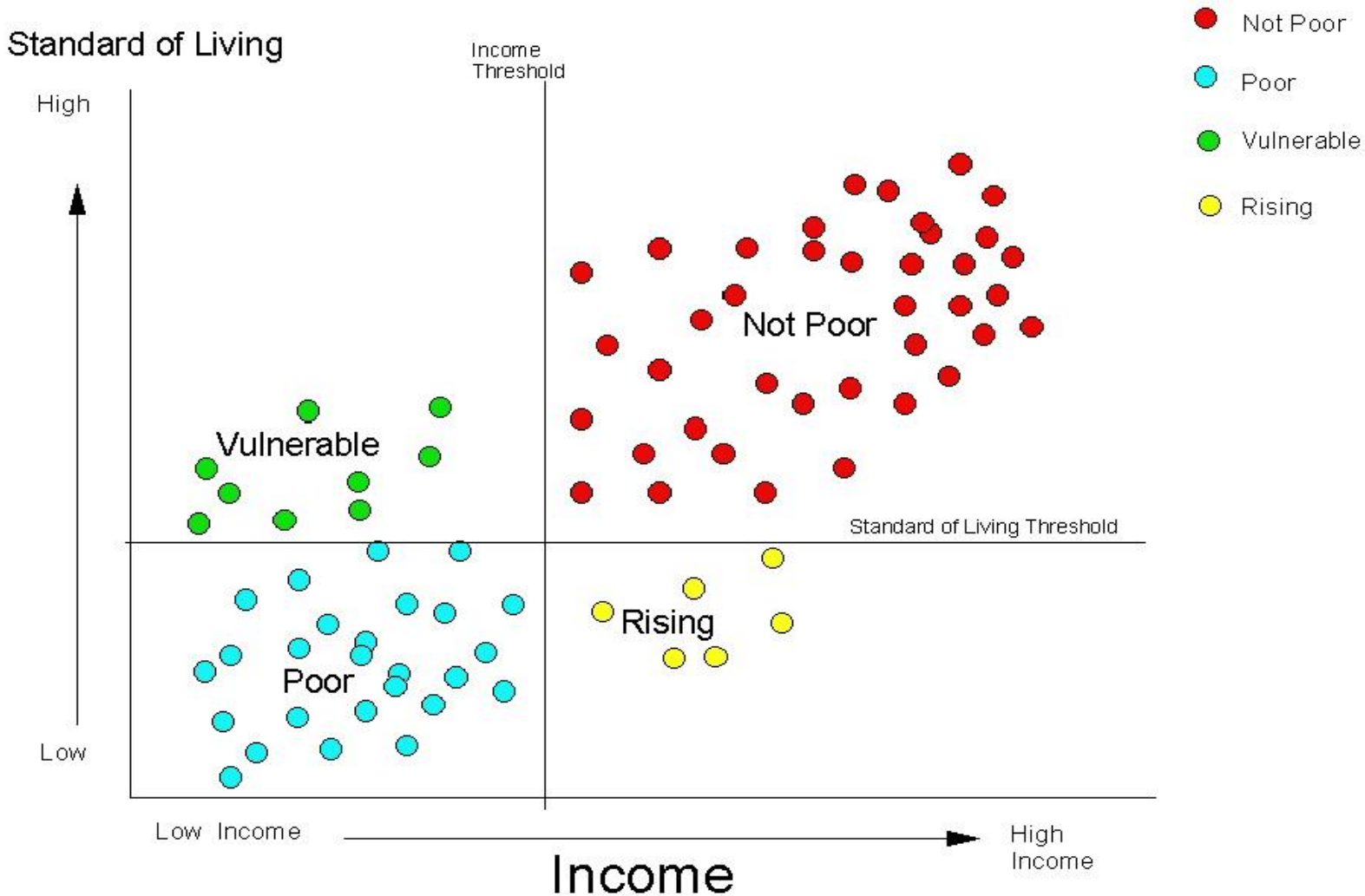
- The *Cost of Basic Needs* expenditure/income poverty method is not multidimensional and thus cannot be used to report SDG 1.2.2 – it is also effectively impossible to meaningfully disaggregate this measure to provide estimates of intra-household poverty for men, women and children. The PICTs lacks its own equivalence scales. Any income-based method will be very sensitive to the use of inadequate assumptions about intra-household distribution of income.
- There is currently limited experience of multidimensional poverty measures in the Pacific region. UNICEF (2012) produced estimates of severe multidimensional child poverty using the Global Study of Child Poverty and Disparities methodology (sometimes called the 'Bristol' method) and data from the 2007 MICS. Fifita (2017) provides similar estimates for Tonga using 2012 DHS data. These estimates are based on an operationalisation for children of the 1995 World Social Summit definition of absolute poverty which was agreed by the governments of 117 countries (Gordon et al, 2003).

- Absolute poverty was defined in multidimensional terms as *"a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services."* (UN, 1995)
- There are a number of alternative multidimensional poverty measurement methods which draw upon the 'Bristol' method and use similar sets of deprivation measures collected by DHS, MICS or related surveys. The most widely known alternatives are UNICEF's MODA (Multiple Overlapping Deprivation Analysis) and the UNDP and University of Oxford's MPI (Multidimensional Poverty Index).
- It is important to note that the 'Bristol' method was specifically designed to produce global estimates of the extent and nature of very severe levels of multidimensional child poverty such as those found in the lowest income countries in Africa and Asia. This methodology was designed to produce a severe child poverty rate of zero in high income countries and low poverty rates in middle income countries.
- The deprivation indicators available in the MICS and DHS surveys are not designed for use as poverty measures and therefore unsurprisingly do not produce highly reliable multidimensional poverty measures, particularly in Middle Income countries – such as many PICTS.

- Monte Carlo simulations have shown that Bristol/MPI/MODA style multidimensional poverty measures typically have low reliabilities (Chronbach's Alpha > 0.6) in Middle Income countries and thus typically have a 15% - 20% estimated error, which is too high an error for these measures to be useful for monitoring changes in multidimensional poverty over time or between groups – as required by SDG 1.2.2
- Therefore several PICTs have recently adopted a short Consensual Deprivation question module specifically designed to measure the multidimensional poverty of men, women and children in the Pacific. Following the research of Fifita (2017) multidimensional poverty estimates are now available for Solomon Islands, Tonga and Tuvalu, Fiji, Kiribati. The FSM and other PICTs are also considering using the Consensual Deprivation methodology.
- The Consensual Deprivation methodology has been developed over 50 years (see Townsend 1979, Mack and Lansley 1983) and has been reviewed by the United Nations Expert Group on Poverty Statistics (Rio Group) and considered to be an example of '*best practice*' (Rio Group, 2006). It has also been reviewed and adopted by the European Statistical Office (EUROSTAT) which considers it to represent the '*academic gold standard*' for deprivation measurement (see Guio et al 2012, 2017). Very similar methods are also used in Australia and New Zealand (Saunders, 2011; Perry, 2017).

- The consensual deprivation question module has been shown to produce valid and reliable deprivation indices for both adults and children, in the Solomon Islands, Tonga and Tuvalu. Both material and social deprivation is measured using age appropriate indicators to reflect the changing needs of children as they grow older and become adults.
- The deprivation measures can be combined with an expenditure or income poverty line to produce a robust multidimensional measure of poverty which corrects for some of the inaccuracies in measurement of expenditure/income poverty in the PICTs (e.g. incomplete reporting of remittances, short, two week expenditure diaries, ambiguities in pricing the value of home production, differential inflation in urban and rural areas and on remoter islands, etc.)

Poverty Groups



Scientific measurement

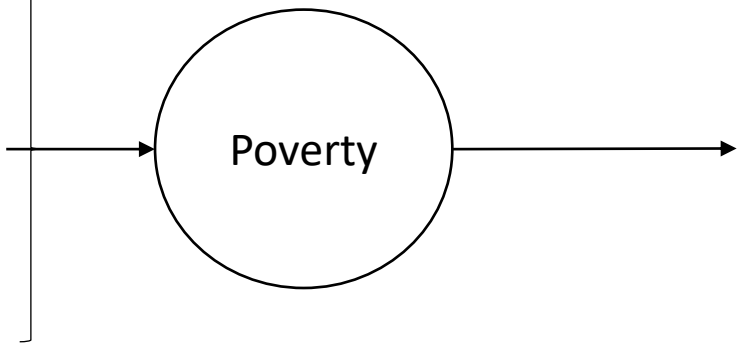
- Scientific measurement of poverty requires a methodology that allows ‘best’ set of deprivation indicators to be selected and for rejection of inadequate indicators.
- Scientific method requires that both deprivation indicators and the dimensions of a multidimensional poverty index need to be tested to demonstrated they are reliable, valid and additive.
- The consensual approach method is the only approach that follows the standard scientific protocol. It checks if the indicators measure poverty (validity) and its aggregation results in the consistent ordering of the population give the deprivation score (reliability). The poverty line is used using both theory and statistical methods.
- The consensual deprivation method is the only approach, that explicitly collects data on poverty with a clear definition and theory in mind. It is scientific.

Policy making: Causes and effects of poverty

Causes

Low levels of resources:

Income, employment, Social policy, etc.



Consequences:

Material and social deprivation

(Items we use to identify the poor)

Effective poverty reduction strategies require tackling the main causes and not necessarily the observed consequences (items of an index)

Application of Consensual Approach in Tonga

Ideals in poverty measurement

- A measure of poverty:
  - Based on a clear and scientific definition of poverty
  - With contents (indicators and dimensions) that represent the needs of the population in the 21st Century
  - That identifies deprivation attributable to poverty and not to a different underlying phenomena
  - With low measurement and classification error
  - That has the expected correlations, i.e. if a pandemic happens and there is an economic meltdown, the measure should reflect it

Needs of the population and survey data

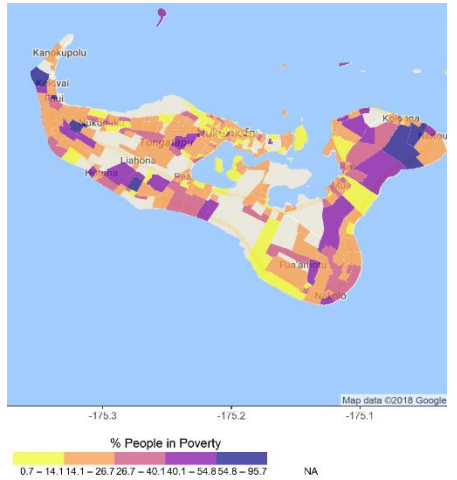
- The majority of household surveys, were not designed to measure poverty
- An important set of the needs of the population in the 21st Century are intractable
- Although some surveys have some useful Unsatisfied Basic Needs indicators, these are hardly useful to characterise milder forms of poverty
- UBN indicators are only sensitive to infrastructure policies as a consequence, UBN-based measures hardly reflect the effects of the pandemic. In some countries, poverty decreased under UBN measures. (Invalid measurement)
- These results in high measurement (not confound with sampling) error that in the end affect inferences about poverty: changes over time, comparison between groups and development of further work (See next slides)

Measurement error and modelling

- A measure with low error leads to better distinctions between the poor and the not poor
- A measure with low error leads to a better statistical model of the profile of the poor
- The CA has permitted:

  - More accurate small-area estimates of poverty
  - Develop and monitoring a targeted intervention toward the poor

Small-area estimation



Objective: Estimating the potential proportion of beneficiaries of a social programme by island

Bayesian hierarchical modelling with the Census and the HIES

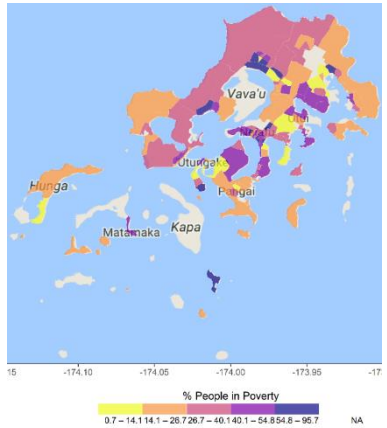
Estimated proportions for each of the five major islands

Qualitative validation of the estimates

Vital for prevention and mitigation after GITA hit Tonga

The reliability of the CA index in Tonga is Omega>8.

This is associated with a classification error of less than 5%



With high measurement error the SAE estimates are highly unreliable no matter the method

Small-Area Multidimensional Poverty Estimates for Tonga 2016: Drawn from a Hierarchical Bayesian Estimator

- https://link.springer.com/article/10.1007/s12061-019-09304-8#Sec2

- With a high measurement error, the SAE are highly likely to be unreliable no matter what method used

School and Employment for Tongans (SET): Targeted interventions for the poor

Objective: Identifying reliably the poor using a cost-effective data collection process

Low false negative and positive rates

Cost-effective identification

The reliability of the CA index in Tonga is Omega>8.

This is associated with a classification error of less than 5%

Identifying an optimal subset of questions for a cost effective instrument:

Five CA questions had more predictive power than the 10 UBN questions and are cheaper to implement

Producing a score based on subset to identify the poor with the lowest error

Collect data on the potential recipients

Matching the score with the decision rule

Cross validation with qualitative data (low error rates)

Perspective:

The reliability of the MPI <.7 in most countries

The reliability of the MPI asset index is <.8 in most countries

Classification error >.15%

Conclusions

- We (Pacific Islands) would like to work with poverty measures that:

  - Are tractable to a clear scientific definition of poverty
  - represent the needs of the people in the 21st Century (Face validity)
  - Give confidence about the different levels of inference (trends, group comparison, profile of the poor, modelling)
  - With indicators that when aggregated result in reliable scores, people with the same score should have similar living standards and vice versa
  - Are flexible and easy to accommodate for other purposes.