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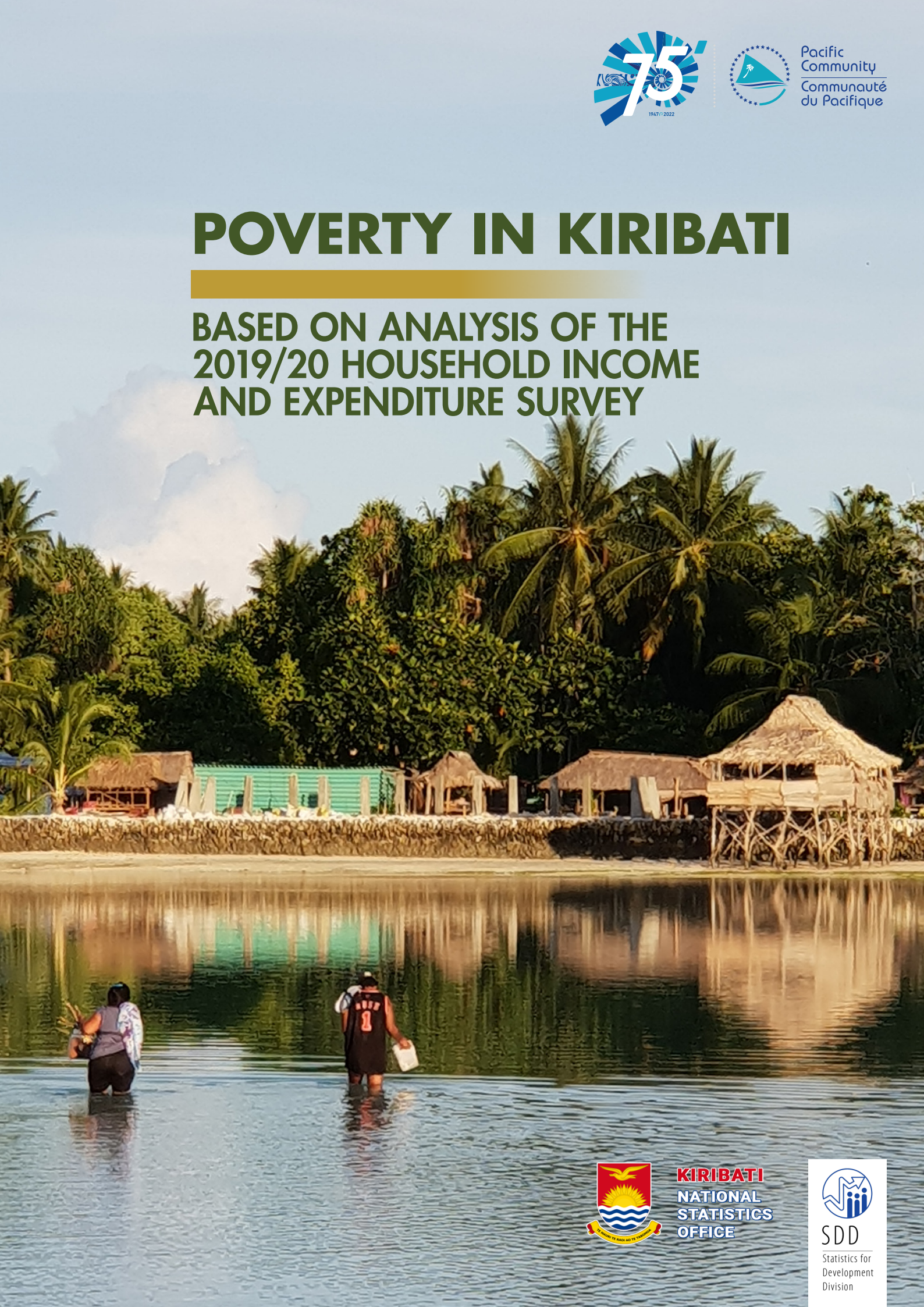
POVERTY IN KIRIBATI

BASED ON ANALYSIS OF THE 2019/20 HOUSEHOLD INCOME AND EXPENDITURE SURVEY



KIRIBATI NATIONAL STATISTICS OFFICE

SDD
Statistics for Development Division

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Pacific Community
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Noumea, New Caledonia

July 2022

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Acronyms and abbreviations

AE	adult equivalent
AUD	Australian dollar
BNPL	basic needs poverty line
SPC	Pacific Community
EAP	East Asia and Pacific
FPL	food poverty line
GNI	Gross national income
HH	household
HIES	Household Income and Expenditure Survey
KINSO	Kiribati National Statistics Office
LMICs	Lower Middle-Income Countries
NFPL	non-food poverty line
PPP	Purchasing power parity
PSMB	Pacific Statistics Methods Board
USD	american dollar

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This report describes the status of i-Kiribati in terms of poverty, which is when people's consumption of food and non-food good and services is relatively low when compared to the consumption of other i-Kiribati. The report identifies populations living in poverty and those who are vulnerable to falling into poverty, with the objective of ending poverty in Kiribati.

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Executive Summary

The cost of basic needs poverty headcount ratio for Kiribati is estimated to be 21.9%. This poverty line is constructed using the 2019/20 Household Income and Expenditure Survey (HIES) and is based on an annual per adult equivalent (AE)[1] consumption of AUD1,705[2] (USD4.32 2011 PPP per day). Inequality in Kiribati is quite low compared to other Lower Middle-Income Countries (LMICs) and East Asia and Pacific (EAP) countries, with the Gini Index estimated at 27.8% based on per capita consumption.

Table 1. Key Monetary Measures of Living Standards in Kiribati

Annual GNI per capita (2018, USD Atlas Method)	AUD3,190
Mean (median) Annual Adult Equivalent Consumption (AUD)	AUD2,914 (AUD2,506)
Basic Needs Poverty Rate (BNPR)	21.9%
Gini Index	27.8%

Poverty varies by the geographic location, education level, and labor market characteristics of the household (HH). The highest rates of poverty are in the Southern Divisions (32%) and Northern Divisions (26%); however as these regions have relatively low populations, they collectively only account for around 40% of Kiribati's poor. Even though the poverty rate on the most populous island, South Tarawa, is relatively low (19%), the high overall population means that almost half of Kiribati's poor live on this island. Households whose head of HH had higher levels of education have lower poverty rates: this relationship was much stronger in South Tarawa than elsewhere. Poverty rates were lowest among HHs whose heads were wage employees.

Two distinct groups of the poor exist in Kiribati, which presents a strategic challenge for the Government of Kiribati. The first group, in South Tarawa, have better access to services, higher levels of human capital, and greater opportunities for formal employment than poor HHs elsewhere in Kiribati. Despite the apparent economic advantages of the residents of South Tarawa, they are still unable to meet their basic needs. The second group live in the Southern and Northern Divisions and are the most deprived in terms of both monetary and non-monetary measures. The lack of access to services in these Divisions means that even most non-poor HHs do not have access to reliable sources of electricity, safe drinking water, and basic sanitation. The different characteristics of these two groups of the poor means that a variety of policies are likely required to reduce poverty across Kiribati.

1 Adult equivalency measures are used to reflect the differing consumption needs for members of the HH, depending on their age. Pacific countries use an adult equivalency scale, where children aged 0–14 are considered to have one-half the consumption needs of an adult.

2 In 2019 the average AUD/USD exchange rate was 0.7.

1. Introduction

1.1. Country context

Kiribati is one of the smallest and most remote countries in the world. Kiribati is categorized as a Fragile and Conflict-affected Situations country due to high institutional fragility. It consists of 21 inhabited islands split into five Divisions (Northern, South Tarawa, Central, Southern and Line Is.) with a total land area of only 810 square kilometers, spread over a vast ocean area of some 3.5 million square kilometers (see Fig.s 1 and 2). Half of the population lives on the densely populated main island (South Tarawa), while the rest of the population resides in rural villages across the other islands. Kiribati consists of more than 4000 kilometers from the nearest major economies of Australia and New Zealand, and these countries' temporary labor schemes still represent some of the best employment opportunities available to workers. Severe infrastructure deficits in utilities, transport, and communications compound the constraints imposed by distance and dispersion. Fishing license revenues from foreign tuna fishing fleets are the main source of public revenue and national income, and the economy is dominated by the public sector, small-scale fishing, and coconut farming. The country's low-lying atolls rise little more than 1.8 meters above sea level on average and, as such, are at risk from climate change.

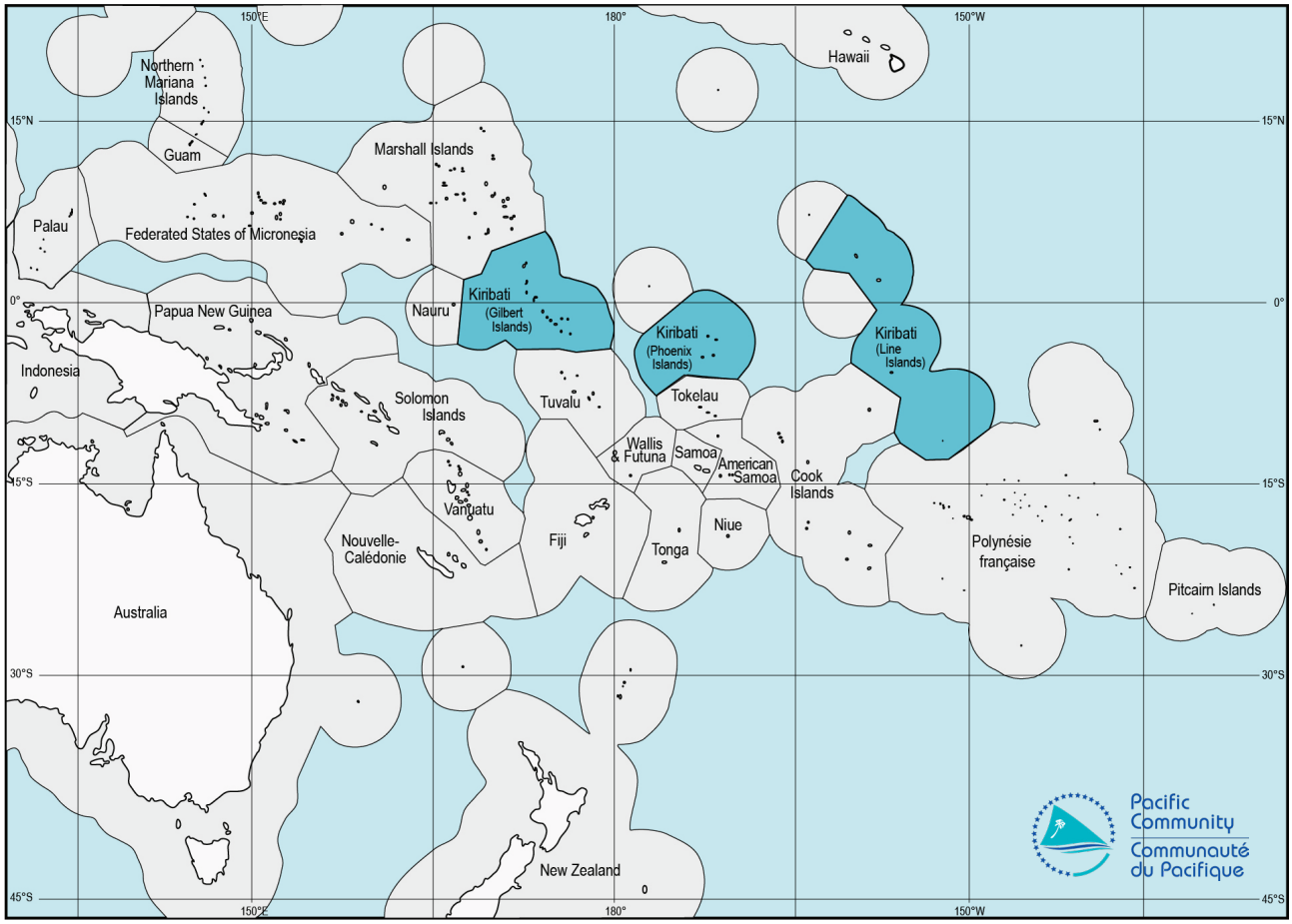

Figure 1. Location of Kiribati in the South Pacific

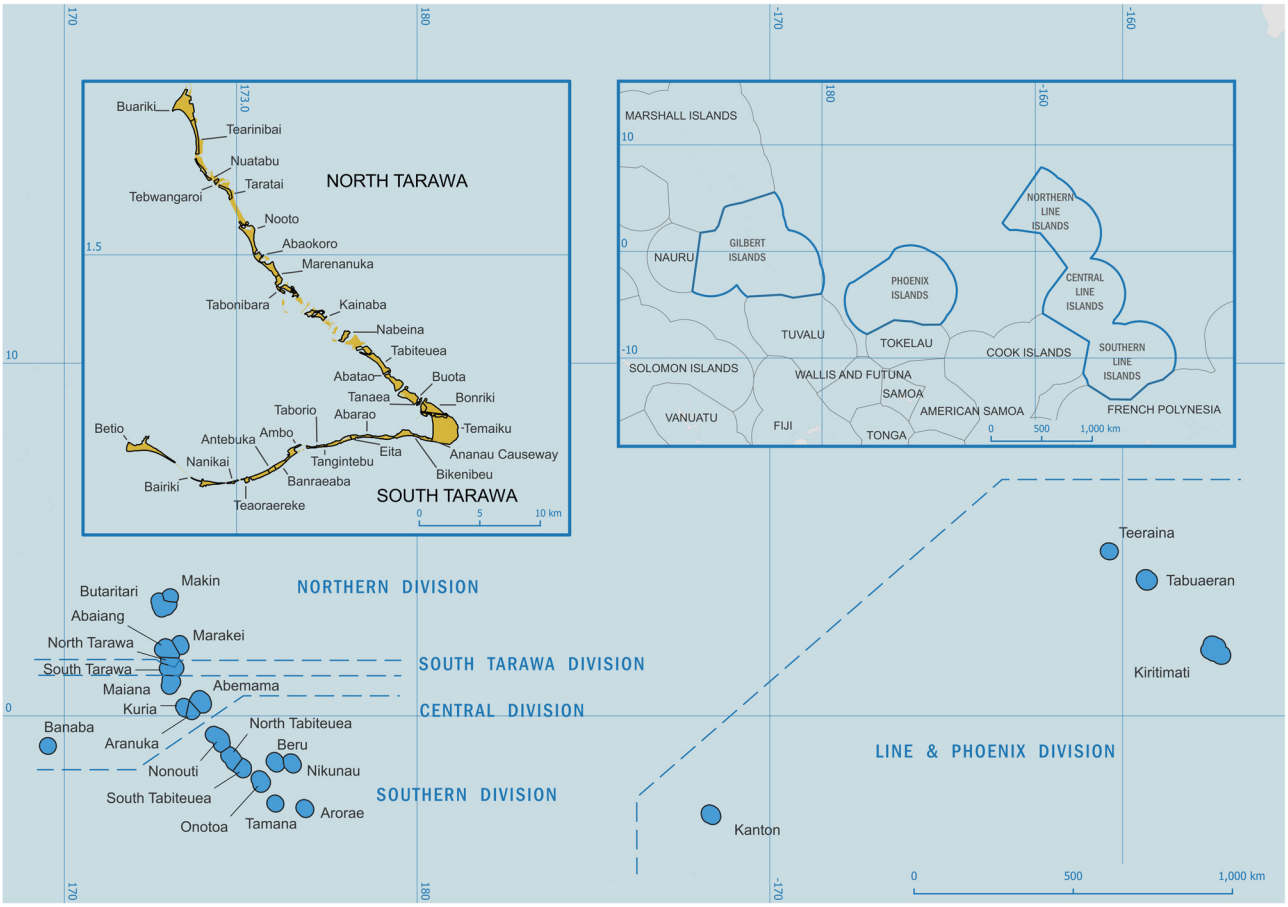

Figure 2. The five administrative Divisions in Kiribati

Despite strong growth in Gross national income (GNI) per capita in recent years, human development indicators remain low. GNI per capita has experienced a level shift since 2013, due to a dramatic increase in government revenue from fishing licenses. 2018 GDP per capita was estimated at USD1,630, while GNI per capita sat at USD3,190, indicating that Kiribati will soon graduate from United Nations Least Developed Country status. Human development outcomes are relatively low, however: Kiribati was ranked 132nd out of 189 countries in the 2019 Human Development Index and has a Human Capital Index[3] score of 0.48 (which is similar to other Pacific Island countries (PICs)). Learning-adjusted years of schooling stands at only 7.1, highlighting the significant challenges Kiribati faces in lifting education outcomes so that young people are equipped to fully exploit employment opportunities at home and abroad.

1.2. The 2019/20 HIES

The latest HIES was conducted in 2019/20, representing the first new data on HH welfare in the last 14 years. The survey was conducted between May 2019 and March 2020 and had a total sample size of 2,182 HHs (12,481 individuals). The survey was designed to produce data that provides representative income, expenditure, and consumption aggregates for each Division (South Tarawa, Northern, Central, Southern, and Line Is.). This HIES is the third conducted in Kiribati, with the previous surveys occurring in 2006 and 1996.

The 2019/20 HIES includes a shift in how the HIES is conducted. The 2019/20 HIES was the first time that Kiribati conducted the survey using computer-assisted personal interviewing (CAPI) technology.

3 The index measures the amount of human capital that a child born at the time of the analysis can expect to attain by age 18, given the risks of poor health and poor education that prevail in the country where she lives.

1.3. Structure of the Kiribati country

This report '*Poverty in Kiribati based on analysis of the 2019/20 HIES*' presents the results of the Kiribati 2019/20 HIES on key dimensions related to poverty and HH welfare. Section 2 presents the headline numbers on monetary poverty and inequality, as well as non-monetary dimensions of poverty. Section 3 is a "profile of the poor", which compares poverty rates across several socio-demographic groups and compares the performance of poor and non-poor HHs across key non-monetary outcomes. Section 4 examines the income decompositions of HHs in Kiribati to investigate the sources of HH welfare and possible causes of different poverty rates by group. Section 5 concludes the analysis by synthesizing the findings of previous sections to construct typologies of the poor, in order to better inform stakeholders of the key decisions that would most affect poverty and inequality in Kiribati.

2. Poverty and inequality snapshot

2.1. Monetary poverty – "cost of basic needs" method

This chapter reports a snapshot of poverty and HH welfare in Kiribati for 2019/20. Methodological changes, in both the HIES survey and the subsequent poverty analysis, prevent the direct comparison of trends over time between the 2019/20 rounds and all previous HIES rounds. These changes are explained further in Annex 1. As such, the analysis in this chapter will not include poverty trends over time, but will rather focus on a snapshot of poverty in Kiribati during the 2019–2020 period.

More than one in five people in Kiribati are living in poverty. The poverty rate in Kiribati for 2019/20, based on the national "cost of basic needs" poverty line (see Box 1) was 21.9%. This measure is based on an annual per AE[4] poverty line of AUD1,705 (USD4.32 2011 PPP a day).

There are major geographic differences in the extent of poverty across Kiribati. Almost one-third of people in the Southern Division of Kiribati live in poverty, while only 10% of the population of the Central Division are poor (Fig. 3). The largest number of poor people live in South Tarawa, followed by the Northern and Southern Divisions. The "poverty gap" measure adds more nuance to these regional differences, as it captures the depth of poverty in addition to the incidence of poverty. For example, although the poverty rate is only slightly lower in South Tarawa compared to the Northern and Line Is. Divisions, there is a substantially lower poverty gap. This means that on average the poor in South Tarawa have a level of consumption much closer to the poverty line than the poor in the Northern and Line Is. Divisions.

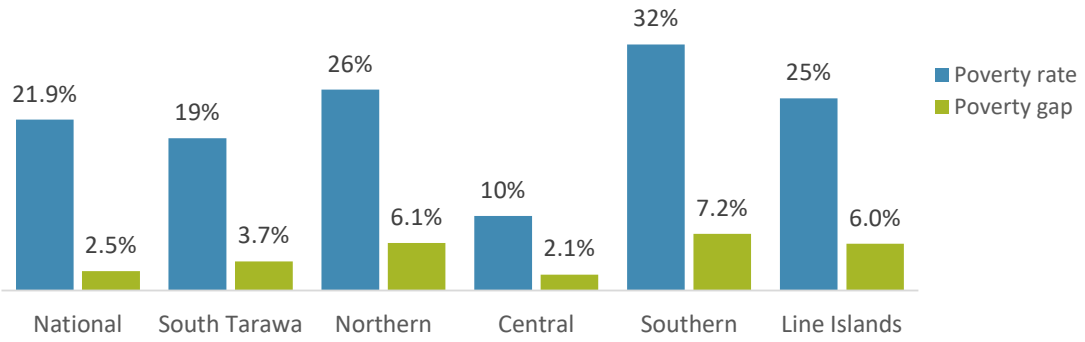

Figure 3. Basic needs poverty rate

4 Adult equivalency measures are used to reflect the differing consumption needs for members of the HH, depending on their age. Pacific countries use an adult equivalency scale, where children aged 0–14 are considered to have one-half the consumption needs of an adult.

Box 1. Cost of Basic Needs Poverty Line

A "cost of basic needs" poverty line is a way of measuring poverty by calculating the threshold of consumption required to meet the minimum food and non-food needs. The main steps of the "cost of basic needs" method are:

1. Calculate the total value of goods and services consumed by each HH, based on HIES data.
2. Estimate the minimum required consumption to meet food needs ("food poverty line" / FPL).
3. Estimate the minimum required consumption to meet non-food needs ("non-food poverty line" / NFPL).
4. Add the FPL and NFPL to produce the "basic needs poverty line" (BNPL).
5. Compare the value of HH consumption (the consumption aggregate) to the BNPL; individuals in HHs with consumption below the BNPL are considered poor.

Detailed notes about methodological decisions in calculating the consumption aggregates and poverty lines are presented in Annex 1.

Food poverty in Kiribati is rare in national terms, but still prevalent in some areas. The food poverty rate, which is estimated based on the food poverty line of AUD1,140 per AE per year (USD2.89 2011 PPP per day) was 5.1% for 2019–2020. The geographic distribution of food poverty was similar to that of basic needs poverty, as the Southern Division had the highest levels and the Central Division had the lowest levels (Fig. 4).

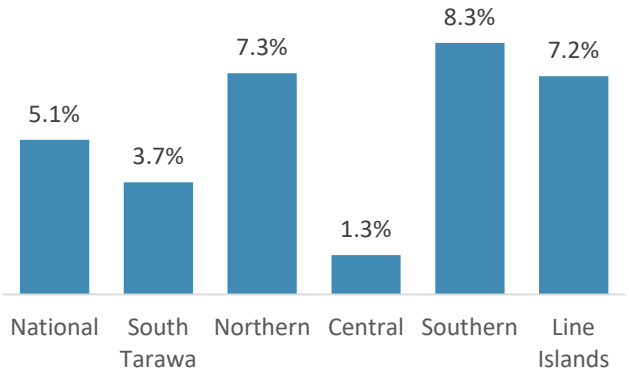

Figure 4. Food poverty rate

2.2. Consumption inequality

Inequality in Kiribati is quite low compared to other EAP countries. The Gini Index, a measure of inequality that scales from 0 (perfectly equal distribution of consumption across the population) to 100 (one person in the population holds all the consumption), was estimated at only 27.8 for Kiribati in 2019–2020 based on consumption per capita. This level of inequality compares favorably to other PICs as well as other LMICs in the (EAP region, Fig. 5).

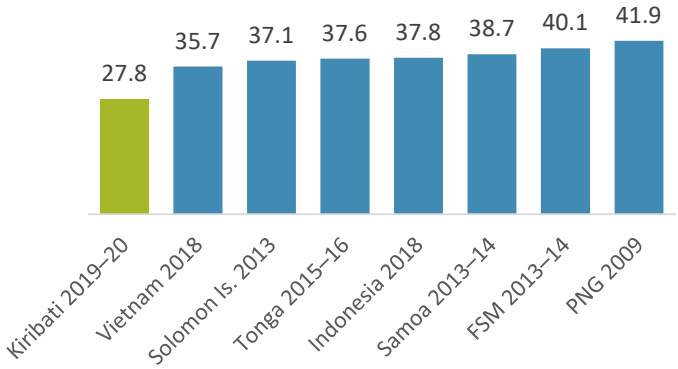

Figure 5. Gini Index (consumption based)

Other measures also demonstrate a low level of inequality. When examining the shares of consumption held by the different parts of the distribution, the wealthiest 10% of individuals consume 5.4 times as much as the poorest 10% does (Table 2). Across all measures of inequality, there are only minor differences between Divisions, except for the Central Division, which has slightly lower levels of inequality than the rest of the country.

Table 2. National and sub-national measures of inequality

	Gini	Top 10 share of consumption	Bottom 10 share of consumption	D10/D1 ratio	Bottom 40 share of consumption	Palma Index (D10 / Bottom 40)
National	27.8	22.30%	4.13%	5.40	31.70%	0.70
South Tarawa	28.4	20.11%	4.18%	4.82	33.08%	0.61
Northern	26.5	23.27%	4.29%	5.43	31.33%	0.74
Central	24.0	19.72%	4.17%	4.73	34.70%	0.57
Southern	25.3	20.08%	4.38%	4.59	33.10%	0.61
Line Is.	28.8	22.26%	3.63%	6.13	30.80%	0.72

2.3. Non-monetary dimensions of poverty

Analysis on non-monetary deprivations is important to complement the monetary dimensions of poverty and to present the full breadth of challenges faced by HHs. Though HH consumption is an important welfare metric, it does not provide a complete picture of HH well-being. There are several ways to present non-monetary deprivations, and several dimensions to choose from. This section presents indicators that are included in the World Bank's Multidimensional Poverty Measure, which comprises the monitoring of deprivations in infrastructure (consisting of drinking water, sanitation, and electricity) and education (consisting of educational enrollment and educational attainment).

The poorest HHs by monetary measures in Kiribati also tend to be the most likely to be deprived in terms of non-monetary dimensions (Table 3). However, many non-poor HHs, especially those outside of South Tarawa, tend to be deprived in one or more non-monetary dimensions. For example, 63% of the poorest 40% of the population (i.e., the "Bottom 40") are deprived of safely managed sanitation, but so are 50% of the rest of the population (the "Top 60").

Table 3. Non-monetary deprivations

Type of Deprivation	National	Bottom 40
Population deprived of safely managed water	17.1%	20.3%
Population deprived of safely managed sanitation	55.1%	63.3%
Population without access to electricity	18.6%	25.1%
Population in HHs where at least one child aged 7–14 is out of school	5.8%	9.2%
Population in HHs where no adults (aged 15+) completed primary education	7.6%	8.9%

Note: definitions of "safely managed water" and "safely managed sanitation" follow SDG indicators 6.1.1. and 6.2.1. respectively.

3. Poverty profile

3.1. Geographic distribution

Over half of Kiribati's total population in 2019–2020 lived in South Tarawa. South Tarawa is the only urban area in the country. The next most populous regions are the Northern and Southern Divisions that make up 18% and 14% of the population respectively (Table 4).

Table 4. Population spread of Kiribati

	Share of total population
South Tarawa	53.3%
Northern	18.0%
Central	7.4%
Southern	13.8%
Line Is.	7.5%

Most of Kiribati's poor are concentrated in South Tarawa, the Northern and Southern Divisions. The highest rates of poverty are in the Southern Division at 32%, and Northern Division at 26%, followed by the Line Is. Division at 25%, while the lowest rates of poverty are in the South Tarawa at 19%, and the Central Division at 10%. The regional poverty rate in South Tarawa is relatively low; however the high population means that almost half of Kiribati's poor live on this island (Table 5). Though there are higher poverty rates in the Southern Division and Northern Division the populations are lower, indicating each of these regions only account for around 20% of Kiribati's poor.

Table 5. Regional poverty rates and distribution of the poor

	Poverty rate	Distribution of the poor
South Tarawa	19.5%	47%
Northern	25.8%	21%
Central	9.6%	3%
Southern	31.5%	20%
Line Is.	24.6%	8%

3.2. Age Groups

Kiribati has a relatively young population (Table 6). Kiribati's population distribution is pyramid-shaped, as around 30% of Kiribati's population in 2019–2020 are under the age of 15. Less than 4% of its population are aged 65+ (Fig. 6). There is a moderate dependency ratio in Kiribati, as only two-thirds of the population is of working age (15–65 years old).

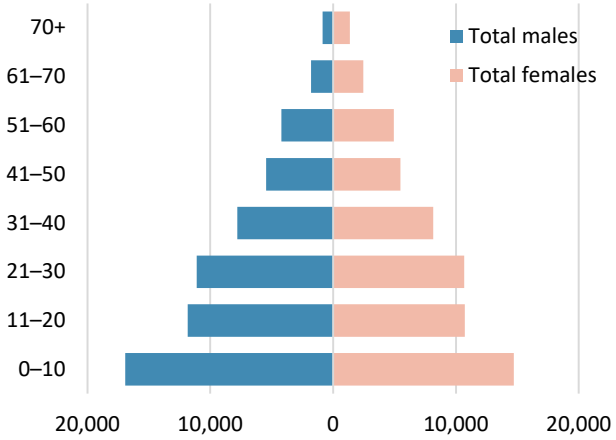

Figure 6. Kiribati population distribution, 2019/20

Table 6. Dependency ratio[5]

Child dependency ratio	0.48
Elderly dependency ratio	0.06
Total dependency ratio	0.54

Most of Kiribati's poor are young as the population of Kiribati is disproportionately young. More than 10 times the number of children aged 0–10 years live in poverty compared to the elderly aged 70+ living in poverty. This is explained by the pyramid-shaped population distribution. Poverty rates are somewhat similar for younger and older segments of the population and are lowest among the working age population (Fig. 7).

3.3. Gender

The rate of poverty is similar for men and women and similar for people living in male-headed and female-headed HHs. Around one third of people in Kiribati live in female-headed HHs. Of people living in female headed HHs, 23% live in poverty compared to 21% of people in male-headed HHs, a difference which is not statistically significant (Fig. 8). Only in the case of the Line Is. is there are statistically significant difference in poverty rates by sex of head of HH, where the poverty is 26% for people living in male-headed HHs compared to 12% for people living in female-headed HHs. However, in the Line Is., women are much less likely to be head of their HH with only 11% of the population of Line Is. living in female-headed HHs.

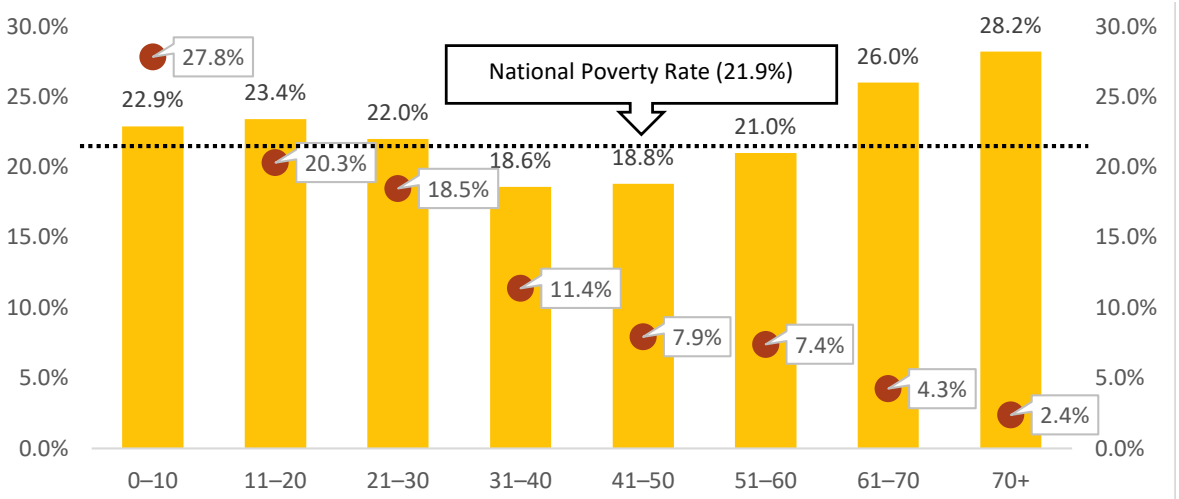

Figure 7. Poverty rates (yellow column; LHS) and distribution of the poor (red dot; RHS), by age group

5 The dependency ratio is the ratio of the population of those aged 0–14 and 65+ over the population of those aged 15–64.

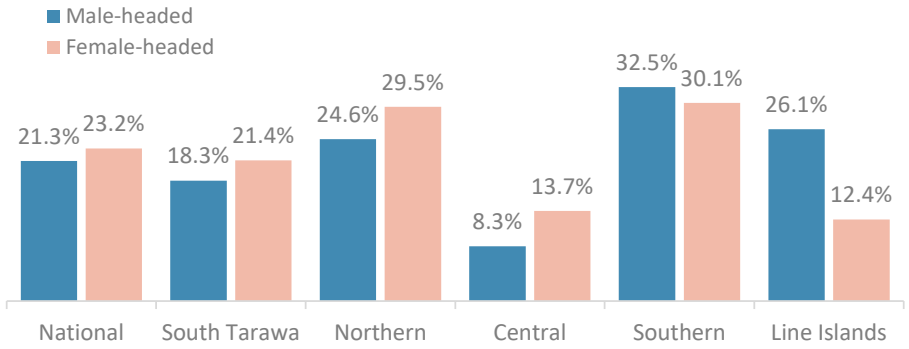

Figure 8. Poverty rates by sex of household head and Division

3.4. Education

Over 60% of HHs in Kiribati are headed by people who never attended secondary school (Fig. 9). However, these HHs usually have other members with higher levels of education as only 16% of HHs do not have any members that attended secondary school. Only 5% of HHs are headed by people who have completed post-secondary education, but 12% of HHs have at least one member with tertiary or post-graduate education. Across the population aged 25+, only 3% have completed post-secondary education.

Poverty rates correlate more strongly with the education of the HH head than other HH members. Poverty rates decline as the education level of the HH head increases. However, the relationship between poverty and the highest level of education completed by any adult (aged 25+ years) is weaker the relationship of poverty to education of the HH head (Fig. 10). This suggests that the education of the HH head matters more than the presence of other HH members with higher education.

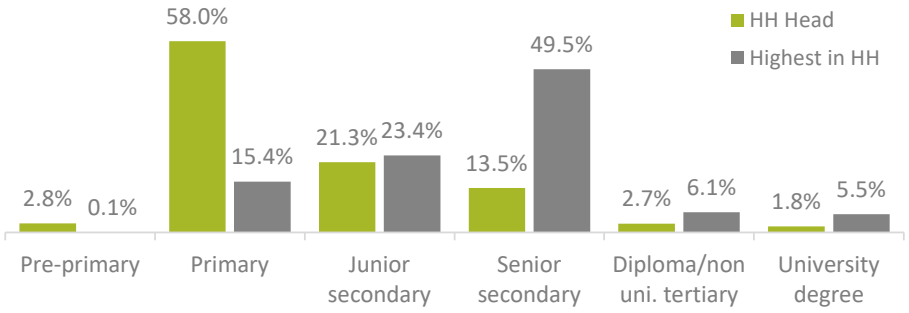

Figure 9. Highest level of education in household vs highest education of head of household

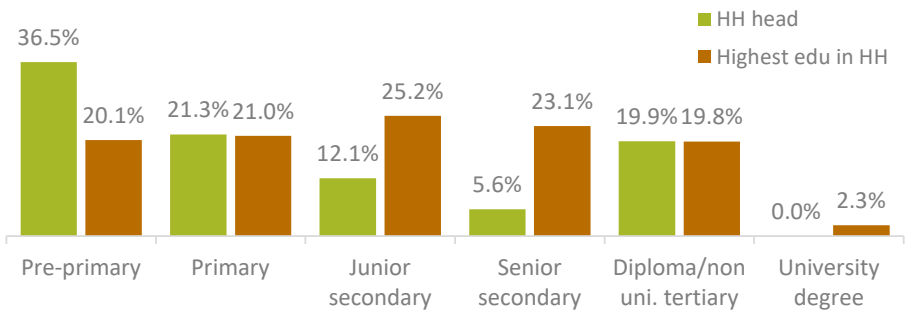

Figure 10. Poverty by education completion of household head and of highest educated adult (aged 25+)

Poverty rates among adults decline greatly after completing at the minimum primary school. When looking at adults aged 25+ years, poverty rates decline greatly with higher levels of education (Fig. 11). This effect, however, is weaker in Divisions outside South Tarawa, where higher levels of education do not significantly reduce the poverty rate, which could indicate a lack of productive jobs for skilled and educated workers.

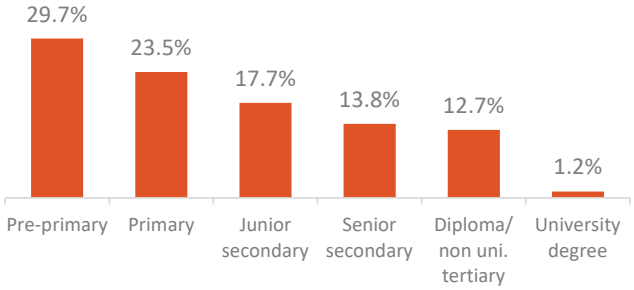

Figure 11. Poverty rates for adults (aged 25+), by education completion

Enrollment for primary school-aged children is very high, but not close to 100%. The rate of enrollment in school for children aged 6–11 is at 85% nationally and remains consistent geographically as well as throughout the consumption distribution (see Fig.s 12 and 13). The enrollment pyramid in Figure 14 shows that more than 10% of children complete primary school after they have reached secondary school age (ages 12–18).

Poorer children start to drop out of the education system between ages 12–18. The national rate of school enrollment for children aged 12–18 is lower than primary enrollment at 75% (Fig. 12). The enrolment rate is higher for children in richer HHs: 91% for the top decile compared to 62% for the bottom decile (Fig. 13). The enrollment rate is also higher for children aged 12–18 in urban areas: 77% compared to 72% in rural areas (Fig. 12).

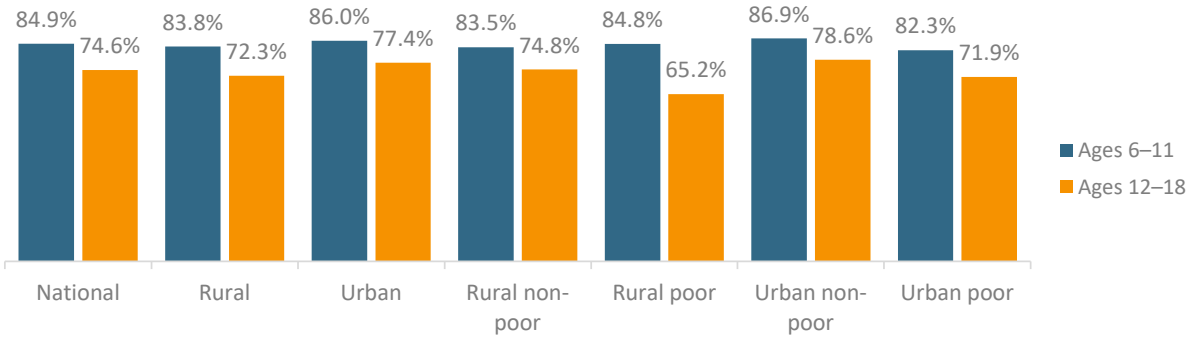

Figure 12. Enrollment in School, by age group

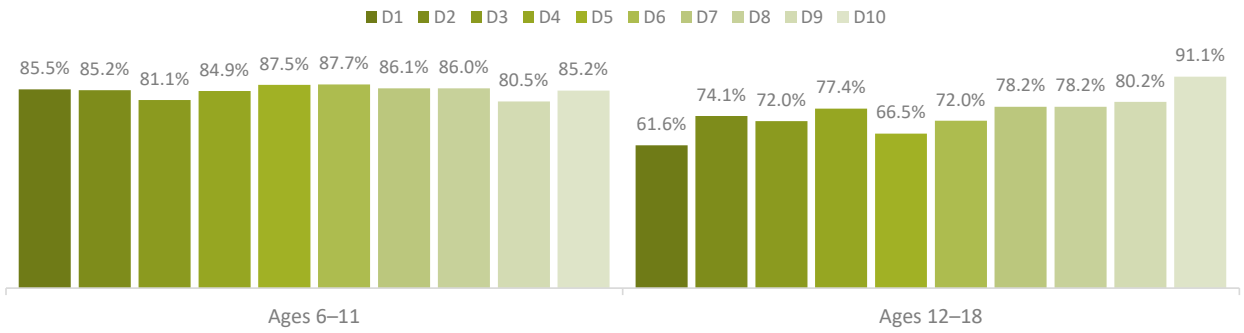

Figure 13. Enrollment in School, by age group and consumption decile

The rate of enrollment in secondary and tertiary education levels is higher for girls than boys. At age 18, around the age when students complete their final year of secondary school, 62% of girls are still enrolled in school, compared to 42% of boys (Fig. 14). This gap persists as students continue into post-secondary education. This could indicate that boys from poorer HHs drop out of school to earn an income for the HH.

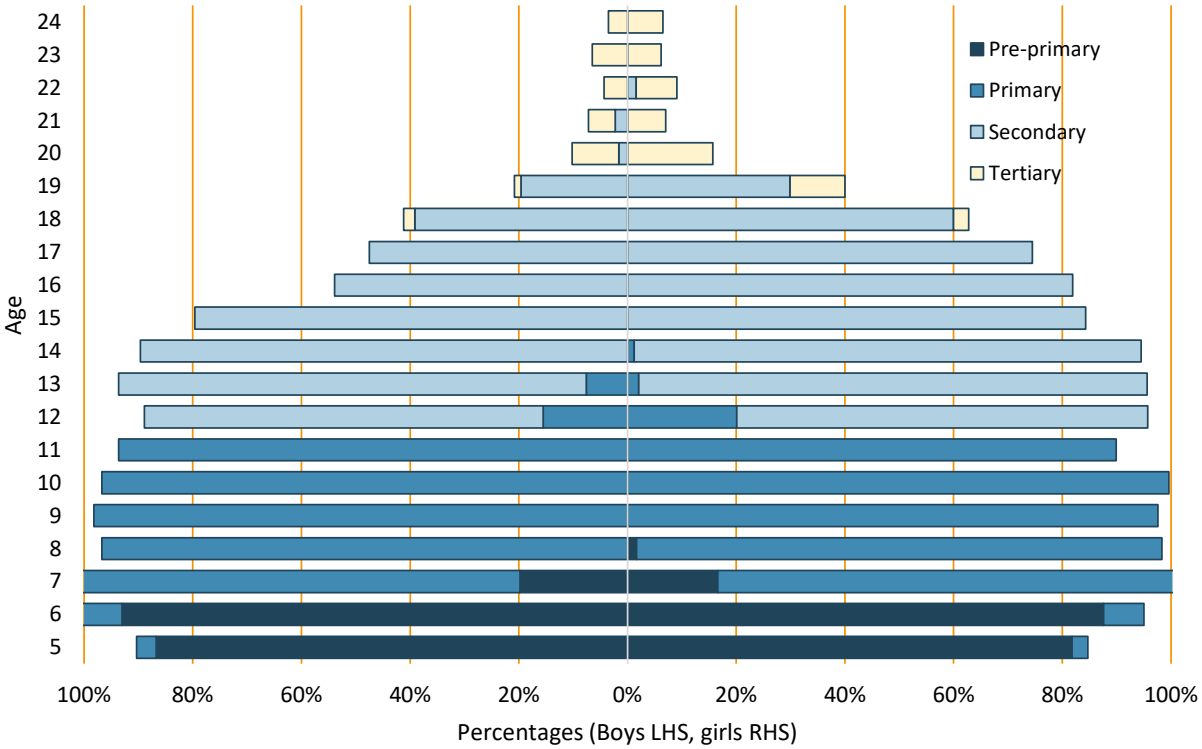

Figure 14. Enrollment pyramid, children aged 5–24, by sex

3.5. Employment

Around 40% of adults aged 15–64 participate in the labor force[6] in Kiribati (Table 7). Overall, women are less likely to be active labor force participants with only 28.0% of women and 41.5% of men stating they are currently working. The rate of unemployment (people not working but who are looking for jobs) is slightly higher for men than for women. These findings suggest that low levels of employment and significant rates of unemployment are a problem for most HHs in Kiribati.

Most working adults aged 15–64 are employees, with the next largest group being self-employed. The distribution of employment types is somewhat similar for men and women. Women are more likely to report being self-employed than men, while men are slightly more likely to report being employees (Table 8). Working as an employee is more prevalent in South Tarawa (74%) than elsewhere in Kiribati (53%). Workers in Divisions outside of South Tarawa are more likely to be self-employed or subsistence farmers (Table 9).

Table 7. Labor force statistics, pop. aged 15–64

Statistic	All	Men	Women
Labor force participation rate (employed + unemployed / total 15–64)	42.8%	51.0%	34.6%
Unemployment rate (unemployed / employed + unemployed)	8.0%	9.5%	6.6%
Employment rate (employed / total 15–64 population)	34.8%	41.5%	28.0%

Table 8. Status of employment, pop. aged 15–64, by sex

Employment status (ages 15–64, working)	All	Men	Women
In his/her own business activity	20.3%	16.1%	26.6%
In a business operated by a HH or family member	6.8%	6.8%	6.9%
As an employee	66.6%	69.1%	62.9%
As an apprentice	1.2%	1.8%	0.4%
Other	5.0%	6.2%	3.1%

6 The labor force is defined as the total number of people who are working or looking for work divided by the working age population.

Table 9. Status of employment, pop. aged 15–64, by Location

Employment status (ages 15–64, working)	All	South Tawara	Elswhere
In his/her own business activity	20.3%	13.7%	31.8%
In a business operated by a HH or family member	6.8%	6.9%	6.7%
As an employee	66.6%	74.3%	53.3%
As an apprentice	1.2%	1.2%	1.3%
Other	5.0%	3.8%	7.0%

There are substantial differences in poverty rates for adults by employment status. Poverty rates among adults who work as employers and employees are lower than other types of workers (Fig. 15). The highest poverty rates are for women who do not work as an employee or run their own business (e.g. those that are apprentices).

At the population level, poverty would appear to be significantly influenced by the employment status and sector of the HH head. Poverty is highest for individuals living in HHs headed by those working in a business operated by someone from the HH or a family member, which would include subsistence farmers (Fig. 16). Poverty is lowest for individuals living in HHs headed by those who are employees or apprentices.

3.6. Access to Public Services

Around two-thirds of HHs do not have access to piped water, with substantial differences between regions and across the consumption distribution. Nationally, only 34% of people live in HHs that have access to piped water[7]. Piped water is very common in South Tarawa at 59%, uncommon in the Line Is.[8] at 23%, and virtually non-existent in the Southern, Northern and Central Divisions (Fig. 18). Access to piped water increases as people move up the consumption distribution. A HH's source of drinking water is also correlated with poverty. Figure 17 reports that HHs that source drinking water from unprotected sources (such as surface water and wells) have a poverty rate of almost 30%. In contrast, for HHs that have access to piped water, the poverty rate is 17%.

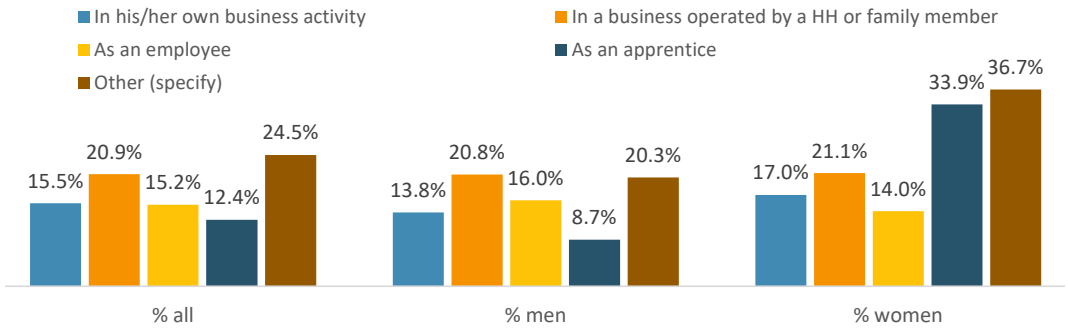

Figure 15. Poverty rate by employment status and sex, pop. aged 15–64

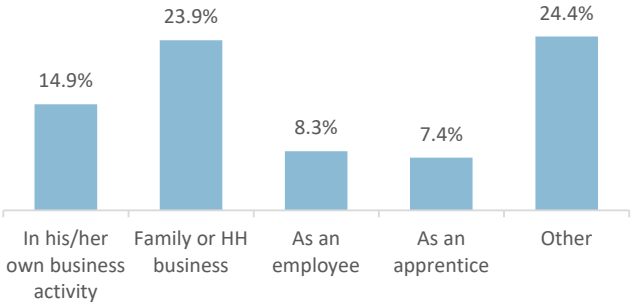

Figure 16. Poverty rates by household head employment status

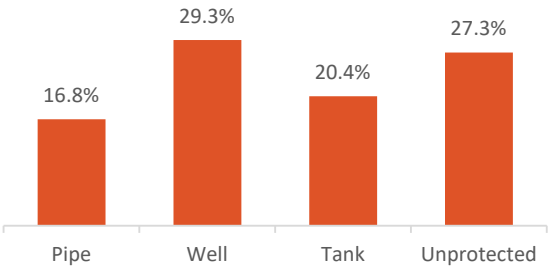

Figure 17. Drinking water source and poverty rate

7 Having access to piped water does not mean that water is always available.
8 In the Line Is. Division, access to a piped water connection and the electricity grid is exclusively on one island, Kiritimati.

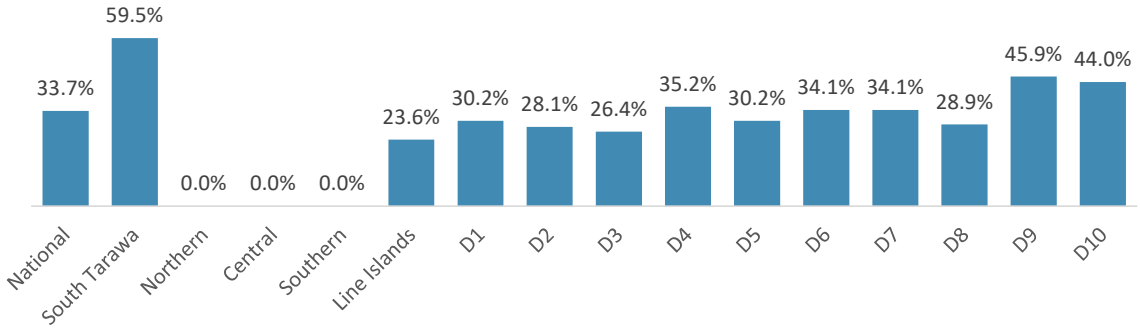

Figure 18. Access to metered water connections

Over half of HHs do not have access to flush toilets, though there are also differences between regions and across the consumption distribution. Nationally, 44% of the population have access to a personal or shared flush toilet. Flush toilets are used by most people (57%) in South Tarawa but are still somewhat uncommon elsewhere in Kiribati (Fig. 19). However, the largest differences are found across consumption groups, with only 28% of the poorest decile of people with access to flush toilets, compared to 70% among the wealthiest decile.

The majority of people (52%) rely on solar electricity sources while 29% are connected to a grid and 19% of people have no access to electricity at all. Nationally, only 29% of the population receive their electricity from the national grid, with large differences between people in South Tarawa at 50%, the Line Is. at 21%, and elsewhere in the country (Fig. 20). Over 50% rely on solar electricity sources and this is more common outside of South Tarawa. Having no access to any source of electricity is a problem across the country. Over one-third of people in the poorest decile do not have access to electricity, compared to 7% among the wealthiest decile. Poverty rates are more than twice as high among people without access to electricity compared to those connected to the electrical grid: 36% compared to 14% (Fig. 21).

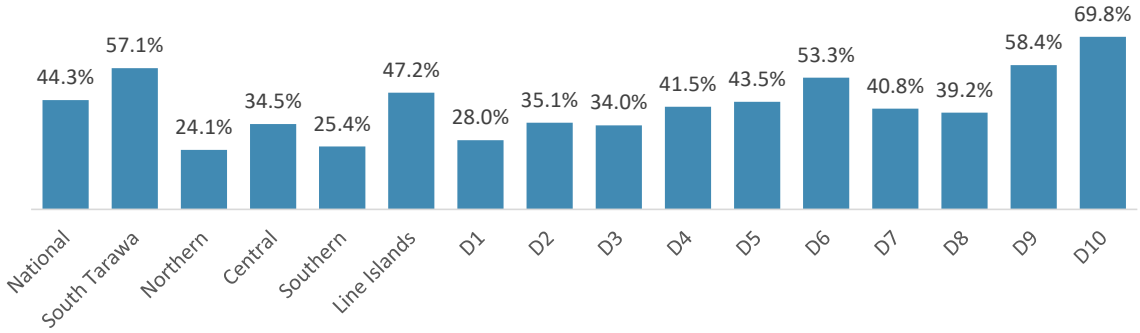

Figure 19. Access to flush toilets

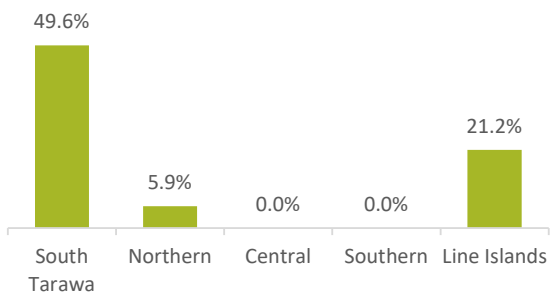

Figure 20. Electrical grid connection prevalence, by Division

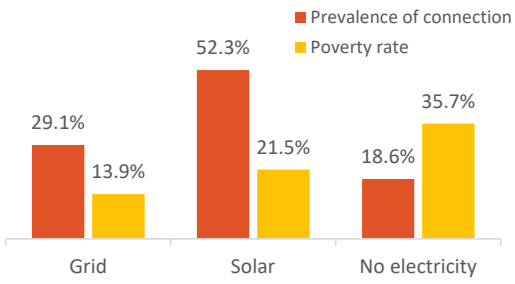

Figure 21. Access to electricity and poverty

Although slightly unequal across geography and consumption, health facilities are reasonably accessible to most HHs. The average reported travel time to reach the nearest health facility was only 14 minutes, with almost half of the population reporting a travel time of under 10 minutes to get to the nearest hospital or clinic. The average travel time for people in South Tarawa and other Divisions is almost identical (14 and 13 minutes respectively). The quality of health facilities are not captured in this survey question and it is likely that health facilities in South Tarawa are substantially higher quality than elsewhere in Kiribati.

3.7. Spending Patterns

There is no clear pattern of food versus non-food consumption across the consumption distribution. Based on Engel's Law, people would be expected to spend an increasing share of consumption on non-food items as their total consumption increases. However, this is not the case in Kiribati, where the share of food consumption remains around 50% in each decile (Table 10).

Table 10. Annual food vs non-food consumption by decile

Decile	Annual per AE total consumption (AUD)	Per AE food consumption (AUD)	Per AE non-food consumption (AUD)	Consumption food share
1	1,109	545	564	49.2%
2	1,508	788	720	52.2%
3	1,766	926	841	52.4%
4	1,959	999	960	51.0%
5	2,187	1,090	1,098	49.8%
6	2,470	1,244	1,226	50.4%
7	2,812	1,356	1,457	48.2%
8	3,251	1,591	1,660	48.9%
9	3,869	1,895	1,974	49.0%
10	6,109	2,765	3,344	45.3%

As HHs get wealthier, the "starchy-staple share" of their food consumption drops. Similar to Engel's Law on food versus non-food consumption patterns, Bennett's Law holds that as HHs get wealthier, people start to eat relatively fewer calorie-dense starchy staple foods and relatively more

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nutrient-dense foods such as meats, fruits, and vegetables. This law holds in the case of Kiribati. The poorest decile spends over 30% of their food consumption budget on starchy staples, which includes rice and tubers, and this share declines considerably as people get wealthier (Fig. 22). In addition, the poorest decile spends 11% of their food consumption on sugar and this falls to 5% for the richest decile. As a result, the poorest decile spends twice as large a share of their food budget as the richest decile on starchy staples and sugars (42% compared to 21%). As people get wealthier, they start spending larger shares of their food budgets on meat products, dairy, and food away from home.

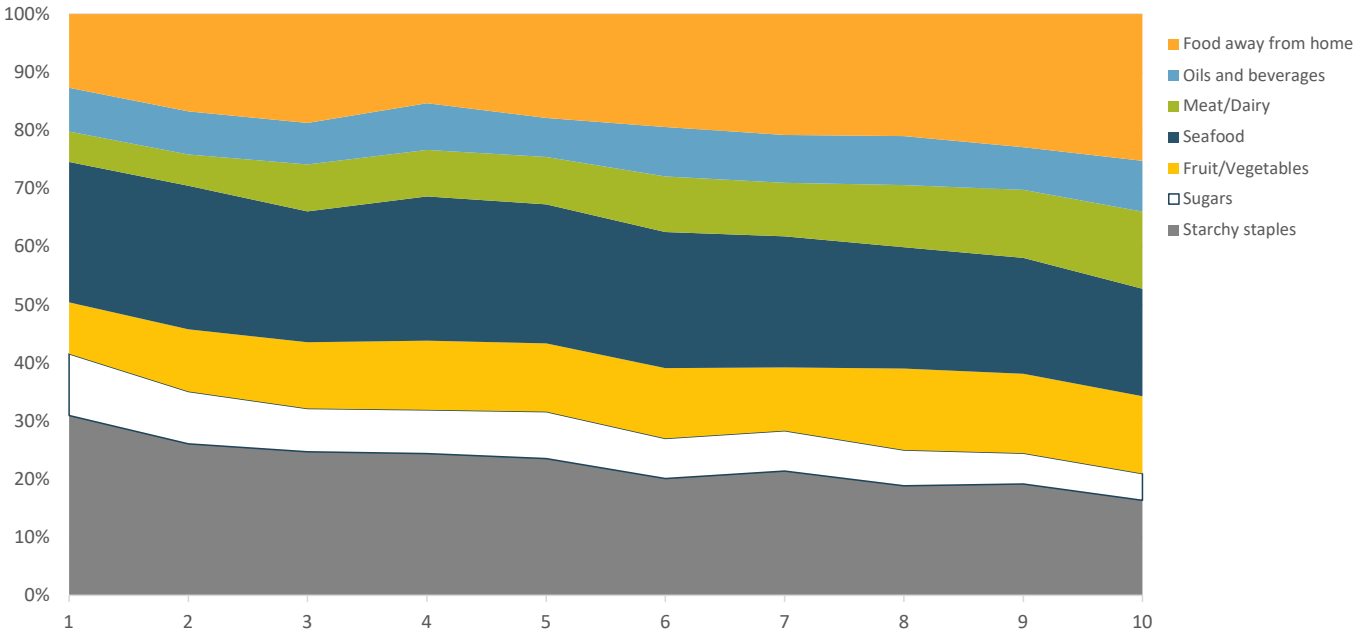

Figure 22. Food budget shares, by consumption decile

4. Income sources and remittances

4.1. Income sources

Income sources vary considerably between South Tarawa and elsewhere in Kiribati. Income from employment comprises a much higher share of income in South Tarawa, while HHs in the other Divisions have a much higher share of income from the sales of agricultural and fishing products (Fig. 23). In South Tarawa, about 51% of income is from employment. While in all other areas, employment income ranges from 17% to 30%. There are also notable differences in the share of income from the sales of agricultural and fishing products. In the Central Division, 28% of income falls into this category, while in South Tarawa only 11%.

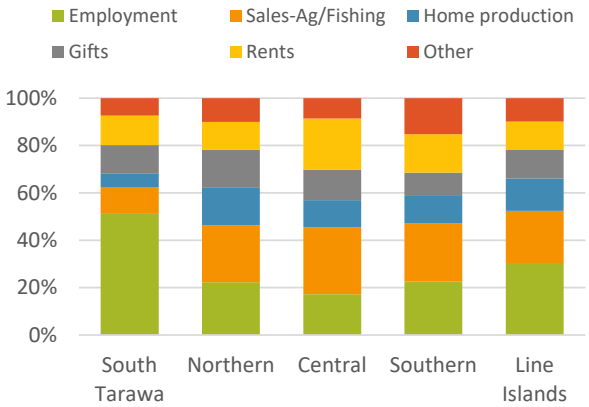

Figure 23. Share of income sources, by Division

Income sources change somewhat as HHs move higher up the consumption distribution. Households in the poorest consumption decile generate 22% of their income from the sales of agricultural and fishing products and only 29%

of their income from employment (Fig. 24). In contrast, HHs in the richest decile generate 14% of their income from the sales of agricultural and fishing products and 44% from employment. The shares of home production and gift income have no strong trend across the consumption distribution, while imputed rent as a share of income falls as consumption increases.

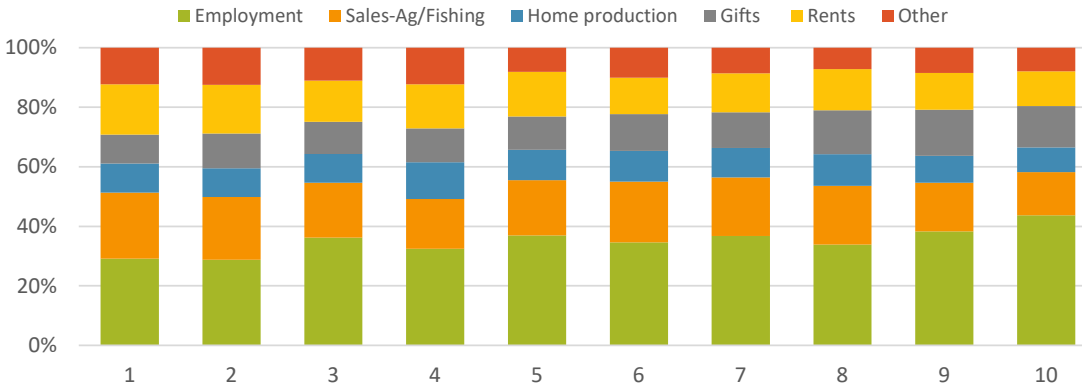

Figure 24. Income breakdowns, by decile

4.2. Remittance Income

Remittances are an important income source for HHs in Kiribati, comprising 9% of total HH income. There are differences across Divisions in the proportions of HHs receiving remittances (Fig. 25). There are also differences across Divisions in the average level of remittances. Almost 40% of HHs receive remittances in South Tarawa and Central Division, while only just over 10% of HHs in the Line Is. receive remittances. In absolute terms, the median annual remittance income is highest in South Tarawa and lowest in the Central Division.

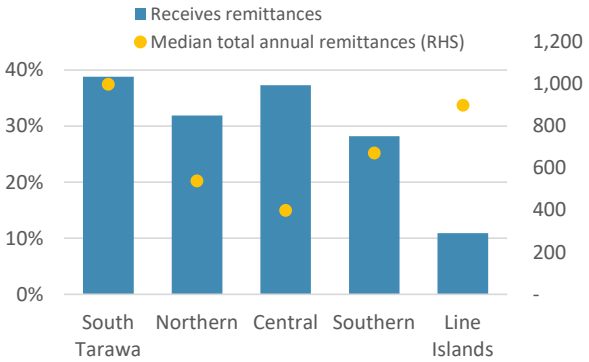

Figure 25. Household remittances and median annual, by Division

5. Typologies of the poor

Based on the previous analysis, two distinct groups of the poor emerge in Kiribati. The first group, making up almost 50% of the poor, are in South Tarawa. Around half of poor HHs in this Division have access to basic services, such as piped water and flush toilets, and more than a third are connected to the electrical grid (Table 11). Around one in five heads of poor HHs work as employees and one in seven completed high school. On average, there are more than two working aged adults earning an income in the HH. Half of HH income is from employment and only 12% is from the sales of agricultural/fishing products. Across all of these measures, poor HHs in South Tarawa have better access to services, higher levels of human capital, and greater opportunities for formal employment than elsewhere in Kiribati. As such it is unsurprising that the depth of poverty in South Tarawa (measured in terms of the poverty gap) is substantially lower than in other Divisions.

Table 11. Characteristics of poor households

	South Tarawa	Southern and Northern Divisions	National
Has water connection	56.1%	1.1%	29.4%
Has flush toilet	42.7%	18.9%	31.8%
Electricity grid connection	36.5%	0.1%	18.4%
HH head complete secondary school	14.1%	2.7%	7.9%
HH head working as an employee	20.7%	13.7%	17.6%
Average number of HH members earning an income	2.12%	0.82%	1.52%
Share of HH income from cash sales of agricultural/fishing products	11.9%	26.1%	19.2%
Share of HH income from employment	50.4%	17.6%	35.1%

The second group, making up around 40% of the poor, live in the Southern and Northern Divisions. Only one in seven HH heads work as an employee in the Southern and Northern Divisions. On average, there are less than one working aged adult earning an income in the HH. Over a quarter of HH income is from the sales of agricultural and fishing products and less than 20% is from employment. Poor HHs in these Divisions do not have access to piped water or an electrical grid and almost all heads of HH did not complete secondary school (Table 11).

The contrast between poverty rates and the distribution of the poor presents a strategic challenge for the Government of Kiribati. Helping the poorest would mean targeting assistance to the Southern and Northern Divisions where there are higher rates of poverty and a larger poverty gap. In order to impact the greatest number of people, support also needs to be provided to poor HHs in South Tarawa. The different characteristics of the poor in these areas (e.g. the degree of access to basic services) means that the types of assistance should be tailored to the needs of each group of the poor. Several policy implications that may apply broadly. 1) Infrastructure investments are necessary to improve accessibility to water, sanitation, and electricity would assist in reducing poverty, especially in the Southern and Northern Divisions. 2) Expanding employment opportunities in the formal sector within Kiribati and abroad would result in higher living standards. 3) Ensuring poorer school aged children complete secondary school would significantly improve human capital.

Annex 1. Methodology Notes

A1.1. Introduction

The analytical methods applied to the Kiribati 2019/20 HIES data are in line with the latest international best practices and regional guidance from the Pacific Statistics Methods Board (PSMB), on consumption aggregate construction and poverty measurement. This annex details the approach to the key analytical choices that need to be made that impact poverty measurement. Prior to the poverty analysis, the consumption aggregate was finalised by the Statistics for Development Division of the Pacific Community, with input from the Food and Agricultural Organization, with guidance provided by the World Bank on non-food consumption, particularly asset use values and the imputation of rent, which were not considered in previous HIES based poverty assessments.

A1.2. Background to poverty measurement

Measuring poverty in monetary terms is best achieved with detailed HH level consumption data, typically from a HIES or similar survey. The estimation of poverty requires three major steps:

1. Constructing a single dimensional, measurable welfare indicator that can be used to rank the population according to well-being (the "welfare aggregate"). Each HH has its own consumption aggregate that is constructed based on a range of food and non-food items consumed. It is typical to exclude some categories of consumption for which there is data, such as lumpy/once-off expenditures (e.g. purchase of expensive durables). In contrast, some consumption such as accommodation (e.g. imputed rent), may not be directly measurable but must be accounted for. The consumption distribution graphs the consumption aggregates of all HHs.
2. Constructing an appropriate threshold of welfare that can be used to classify individuals as poor or non-poor (the "poverty line")
   I. A food poverty line needs to be selected based on a local food basket (identified using the consumption patterns of a reference group of the population) and a minimum caloric intake for the country. There may be only one food basket and poverty line for a country (national poverty line), or there may be subnational poverty lines (e.g. for areas such as provinces).
   II. A non-food component needs to be constructed to calculate a basic needs poverty line (which includes both food and non-food consumption). The basic needs line (or national monetary poverty line) would be inclusive of and always higher than the food poverty line. This poverty line should be contextually appropriate and allows policymakers to understand relative poverty within the country. In contrast, while the international poverty line allows countries to understand their relative level of poverty compared to the rest of the world, it is not based on local patterns of consumption or local needs.
3. Combine the welfare indicator with the poverty line to describe the poverty status of the population (the "poverty rate"). The poverty line crosses the consumption distribution and all those living below the poverty line are considered poor. As such the poverty rate is the population proportion that exists, or lives, below the poverty line. The poverty rate is always relative to the line used, with the national poverty line often being different to the international poverty line. The poverty gap is the ratio by which the mean income of the poor falls below the poverty line.

A1.3. Consumption aggregates

Consumption aggregate construction for the 2019/20 HIES was based on the latest recommendations of the PSMB. This section outlines 1) the construction of the food consumption component of the aggregate, 2) the non-food component, and 3) spatial and temporal deflation applied for the purposes of poverty measurement. The components of the consumption aggregate (food, imputed rent, use values of durables and other non-food consumption) for each decile are shown in Fig. A1.

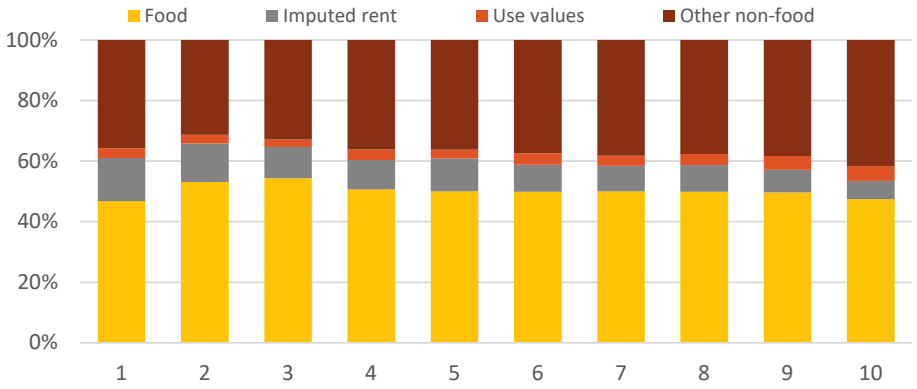

Figure A1. Components of consumption, by decile

1. **Food consumption**

The total monetary value of food consumption was not directly recorded in the survey, only the value of the most recent transaction for each food type, and total quantity consumed over the past 7 days. Therefore, the monetary value of food consumption for each food type needed to be estimated by first converting reported quantities into standard units, and then multiplying these by a price from a market survey. Only food consumed by the HH was included, whether purchased in cash transactions, home-produced, or received as a gift. The consumption aggregate does not include food purchased or produced by the HH but given away as a gift to another HH, in order to prevent double counting of expenditures between HHs.

2. **Non-food consumption**

a. *Non-durables*

Like food consumption, the consumption of non-food non-durable items was calculated as the annualized value of reported transactions for individual and HH expenditures in the CAPI modules, with varying time periods reported for different types of consumption. For example, health expenses were asked to be recalled for the past three months, while expenses on cosmetics for each HH member were asked to be recalled for the past twelve months.

b. *Durables*

Durables[9] are defined as items that are infrequently purchased by the HH and have a lifetime that spans multiple years, e.g., motor vehicles or major HH appliances such as televisions, computers, and refrigerators. The PSMB guidance recommends the calculation of "annualized use values" for durable items owned by the HHs, regardless of whether the items were purchased in the past year. In order to obtain the use value of each individual durable, an estimated current value of the durable needs to be multiplied by an estimated depreciation rate applicable to that type of durable.

c. *Semi-durables*

Semi-durables are a sub-category of durable items that have utility for multiple years, but not as long as durables. Semi-durables tend to be purchased more frequently and are not as expensive as durables. There is no strict guidance on semi-durables in the PSMB recommendations. SPC opted to include semi-durables in the consumption aggregate for Kiribati. The exception being semi-durables such as fishing nets which were counted as intermediate expenditure.

d. Imputed rent

The "imputed rent" component of the income and consumption aggregates was computed

9 Use values for the following items were included in the consumption aggregate: car, van, two wheel vehicle, inboard motor boat, outboard motor boat, other vehicles, mobile phone, tablet, laptop computer, lounge furniture (couch and table), dining table, bed, mattress, cabinet, water tank, refrigerator or freezer, cooking stove (gas, electric, kerosene), microwave oven, washing machine, clothes dryer, air conditioner, generator, solar power unit. water heater, water pump, rice cooker, food processor, toaster, sewing machine, electric fan, television, radio, DVD/Blu-ray, stereo/home cinema, game console, photo equipment, computer desktop, printer scanner, grass cutter/lawn mower, chainsaw, power drill/sander, other assets.

for owner-occupied housing using a predictive "hedonic" model. This is based on a range of variables including tenure, physical dwelling characteristics (number of rooms, building materials for walls, floor, roofing, water connection, flush toilet, electricity grid connection, fuel for cooking and fuel for lighting) and location characteristics (province, urban/rural) characteristics. The model was based on rental expectations from the non-renting HHs in the sample. This was because only 5 of the 2182 HHs were renting, a sample too deemed too small for an imputation model in isolation. The final predictive model had an R-squared score of ~0.45, which is not high, but not far off imputed rent models used in other countries. For consistency across renter and non-renter HHs, the imputed rent from the model was used for all HHs, and actual rents were not used in the consumption aggregate. Deductions were made from the imputed rent for maintenance costs (outlier corrected for 2 standard deviations). The one area of expenses that were categories under "maintenance costs" in the survey, but more accurately described as lumpy expenditure for long term investment in dwelling structures, was for renovations and expansion of the dwelling.

3. **Spatial and temporal deflation**

In order to account for regional and seasonal differences in costs of living and enable direct comparisons of HH welfare across regions, a "deflator" was applied to the nominal consumption aggregates. The spatial-temporal deflator is calculated by comparing regional and seasonal differences in the prices of food goods (assuming that these differences are consistent between food and non-food goods), weighted by the importance of those goods to the consumption basket of the reference group. The spatial disaggregation used was survey strata and the temporal disaggregation used was survey sub-rounds (each 6 months long).

The reference population used for the consumption basket is individuals in the 11th to 35th percentiles, which is the same reference population used to estimate the poverty line. In order to capture the "real" reference population rather than the nominal one, the deflators were estimated using an iterative approach, where HHs are re-ranked after deflators are applied, and the deflation is repeated (on the nominal aggregates) using the consumption shares of the "new" 11th to 35th percentile. This iterative process is repeated until the HHs in the reference population stabilize. In the case of Kiribati, due to the relatively small deflator values, only two iterations were required to stabilize the reference population. Tornqvist deflators were used in order to better account for outlier prices and consumption shares, though in the case of Kiribati, the final choice of deflator would not have made a large difference (Table A1 below). The spatially deflated aggregates are rescaled in order to keep the same values for national averages and totals.

Table A1. Spatial deflators

Strata	Round	Lasp. Index	Paas. Index	Torn. Index	Fish. Index
South Tarawa	1	0.976416	0.976416	1	0.9764165
South Tarawa	2	1.036196	1.004147	1.03914	1.020046
Northern	1	0.889397	0.883783	0.8616107	0.8865854
Northern	2	0.955058	0.944458	0.9293705	0.9497436
Central	1	1.068062	0.910209	0.8677203	0.985981
Central	2	1.015506	0.815239	0.8391007	0.9098793
Southern	1	1.098654	0.959164	0.9223695	1.026542
Southern	2	0.995998	0.890112	0.8627197	0.9415676
Line Is.	1	1.241572	1.074893	1.012991	1.15523
Line Is.	2	1.196712	1.047853	0.9907413	1.119812

A1.4. Poverty line methodology

A new BNPL was constructed for the 2019/20 HIES data. This new BNPL will be used for future rounds of poverty analysis, with the application of appropriate inflation adjustments. This section outlines, 1) the use of adult equivalency scales, 2) issues with the construction of the food poverty line and 3) Issues in non-food poverty line selection and 4) sensitivity analysis.

1. **Adult equivalency scales**

   In order to compare welfare measures, which are often recorded at the HH level, it is necessary to account for differences in HH composition. Two alternative ways to do this are: 1) per capita measures, which divide the household-level welfare aggregate by the number of HH members, and 2) AE measures, which assign different weights to the HH members depending on their age or sex. In the Pacific, countries that apply AE measures typically utilize a simple scale, where HH members aged 0–14 (children) are given a weight of 0.5, with all other HH members given a weight of 1, with no differentiation by sex. The welfare aggregates and poverty lines in the Kiribati 2019/20 poverty analysis use this simple adult equivalency scale.

2. **Issues in food poverty line construction**

   A single national food poverty line is constructed by computing the amount of monetary expenditure required to consume a daily calorie target using the real consumption patterns of a reference population. An expanded basket of 40 goods[10] was used which covers over 95% of food expenditure. The calorie target was set at 2,100 calories per day per person. This is in line with the recommendation of the PSMB that for countries that do not have the data available on the weight and height distribution of the population, as well as solid evidence on the level of activity of the poor and vulnerable, 2,100 calories per day can be considered the default. The cost per calorie of food items was computed using nutritional values (calories per 100g) from the FAO food composition tables for the Pacific and unit values (AUD per 100g) for each food item calculated based on the price/ unit value assumed in the consumption aggregate. The reference population chosen is HHs in the 11th to 35th percentile based on real (deflated) per AE consumption.

3. **Issues in non-food poverty line construction**

   The non-food poverty line is computed as a multiplier of the food poverty line. For comparison both a regression method and the non-parametric Ravallion lower bound and Ravallion upper bound lines were used to calculate the multiplier based on the food vs. non-food consumption patterns of the population as they move up and down from the food poverty line. The Ravallion lower bound method has the advantages of yielding robust results that are similar to those of other methods while being straightforward to explain to policymakers and other non-technical audiences. This is the method used, based on the advice of the PSMB.

4. **Sensitivity analysis: comparing reference populations and BNPLs**

   For sensitivity analysis, 5 reference populations were checked with each of the three non-food poverty line methods (regression, Ravallion upper and Ravallion lower). Table A2 reports the poverty lines by method and reference population, followed by Table A3 which reports the poverty rates with each combination of reference population and NFPL method. The poverty rates are very stable across reference groups, with the regression method yielding a poverty rate consistently about one percentage point lower than the Ravallion lower line. As expected, the poverty rate with the Ravallion upper line are much higher and yield a poverty rate consistently more than double that of the Ravallion lower line. In line with the PSMB

10 Rice, Maize, Wheat, Barley, Oats, Rye And Other Cereals In The Form Of Grain, Flour Or Meal, Bread, Buns, Biscuits, Other Bakery Products, Mixes And Doughs For The Preparation Of Bakery Products, Pasta Products, Cereal Preparations Eg Cornflakes, Oatflakes And Other Cereal Products Eg Tapioca, Sago And Other Starches, Fresh, Chilled Or Frozen Meat Of Swine, Fresh, Chilled Or Frozen Meat Of Chicken, Canned meat, Fresh, Chilled Or Frozen Fish, Fresh, Chilled Or Frozen Seafood, Canned fish/seafood, Condensed Milk, Powdered Milk, Cream, Eggs, Butter, Peanut butter, Oil, Fresh, Chilled Or Frozen Fruit, Fresh, Chilled Or Frozen Vegetables, Fresh, Chilled Or Frozen Tubers, Sugar, Toffees, Pastilles And Other Confectionery Products, Icecream, Salt, Sauces, Other food products, Coffee, Tea, Other non-alcoholic beverages, Soft drinks, Fruit/Coconut Juice, Syrups And Concentrates For The Preparation Of Beverages, Catering Services (Meals, Snacks, Drinks And Refreshment) Provided By Restaurants, Cafés, Buffets, Bars, Tearooms, Restaurant and take away food – travel, Catering Services Of Work Canteens, Office Canteens And Canteens In Schools, Universities And Other Educational Establishments.

recommendations, the Ravallion lower bound method is recommended for Kiribati. Given that the reference population does not seem to alter the rates much, using the 11th percentile to the 35th percentile, seems most appropriate as for that reference population a considerable share of the poor are included regardless of NFPL method.

Table A2. Annual food poverty line and basic needs poverty lines by ref. population and method (AUD)

	FPL	BNPL	NFPL	BNPL	NFPL	BNPL	NFPL
Ref. pop.		Reg	Reg	Rav-Up	Rav-Up	Rav-Low	Rav-Low
p6–25	1,078	1,594	516	2,335	1,257	1,622	544
p6–30	1,087	1,608	520	2,353	1,265	1,634	546
p6–35	1,111	1,642	531	2,394	1,283	1,665	554
p11–30	1,119	1,654	535	2,407	1,288	1,675	556
p11–35	1,140	1,685	545	2,437	1,297	1,705	565

Table A3. Poverty rate, by method and ref. population

NFPL Method	Ref. Pop.	Mean	[95% Conf. Int.]	
Rav. upper	p6–25	51.3%	48.4%	54.1%
Rav. lower	p6–25	19.2%	16.8%	21.6%
Reg. method	p6–25	18.0%	15.6%	20.4%
Rav. upper	p6–30	51.8%	48.9%	54.7%
Rav. lower	p6–30	19.6%	17.2%	22.1%
Reg. method	p6–30	18.5%	16.1%	20.9%
Rav. upper	p6–35	52.6%	49.8%	55.5%
Rav. lower	p6–35	20.5%	18.0%	23.0%
Reg. method	p6–35	19.8%	17.4%	22.3%
Rav. upper	p11–30	53.0%	50.1%	55.8%
Rav. lower	p11–30	21.0%	18.6%	23.5%
Reg. method	p11–30	20.3%	17.8%	22.7%
Rav. upper	p11–35	53.6%	50.8%	56.5%
Rav. lower	p11–35	21.9%	19.4%	24.4%
Reg. method	p11–35	21.1%	18.7%	23.6%

Annex 2. Regressions to estimate the determinants of consumption and poverty

Variables	Model 1 (log of per AE exp.)	Model 2 (poor)
Northern Division	-0.125***	0.0717*
	(0.0438)	(0.0430)
Central Division	0.165***	-0.0941**
	(0.0588)	(0.0404)
Southern Division	-0.176***	0.124***
	(0.0461)	(0.0436)
Line Is. Division	-0.00881	0.0402
	(0.0712)	(0.0620)
HH size	-0.0596***	0.0334***
	(0.00762)	(0.00690)
Proportion of adults (15–30 years old)	-0.339***	0.163**
	(0.0848)	(0.0723)
Proportion of adults (30–64 years old)	-0.0736	0.0397
	(0.0968)	(0.0827)
Proportion of adults (65 years old and over)	-0.329***	0.281**
	(0.114)	(0.119)
Male head of HH	0.00287	-0.0125
	(0.0260)	(0.0317)
Proportion of HH that is male	0.167	-0.0827
	(0.113)	(0.101)
Maximum education - class 3–5	0.0185	0.0694
	(0.144)	(0.188)
Maximum education - class 6, primary	0.0533	0.170
	(0.152)	(0.201)
Maximum education - class 7–9, primary	0.141	0.0190
	(0.131)	(0.152)
Maximum education - class 10–12, junior. sec.	0.186	0.0509
	(0.132)	(0.157)
Maximum education - class 13–14, senior sec.	0.266**	-0.00447
	(0.133)	(0.156)
Maximum education - diploma/non university tertiary	0.375**	-0.0147
	(0.148)	(0.165)
Maximum education - university degree	0.662***	-0.209
	(0.150)	(0.162)
Number of HH members earning an income	0.0907***	-0.0495**
	(0.0222)	(0.0208)
Number of HH members working in a business operated by a HH or family member	-0.0650	0.0626
	(0.0448)	(0.0459)
Number of HH members working as an employee	-0.0266	0.00524
	(0.0245)	(0.0224)
Number of HH members working as an apprentice	0.0611	-0.0465
	(0.0869)	(0.0698)
Number of HH members working as "other"	-0.0758*	0.0479
	(0.0395)	(0.0469)
Constant	8.004***	-0.0420
	(0.156)	(0.163)
Observations	2,178	2,178
R-squared	0.259	0.109

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