



Pacific
Community
Communauté
du Pacifique

KIRIBATI CENSUS ATLAS

Makin • Butaritari • **GILBERT ISLANDS**
Abaiang • Marakei
Maiana • Tarawa
Kuria • Abemama
Aranuka
Nonouti
Banaba • Beru • Nikunau
Tabiteuea • Onotoa
Tamana • Arorae

• Howland (US) (É.-U.)
• Baker (US) (É.-U.)

PHOENIX ISLANDS

McKean • Kanton • Enderbury
Birnie • Rawaki
Nikumaroro • Orona • Manra

• Palmyra (US) (É.-U.)

• Teraina
• Tabuaeran

NORTHERN LINE ISLANDS

• Kiritimati

• Jarvis (US) (É.-U.)

CENTRAL LINE ISLANDS

Malden •

Starbuck •

• Vostok • Caroline
SOUTHERN LINE ISLANDS • Flint



KIRIBATI
NATIONAL
STATISTICS
OFFICE



SDD
Statistics for
Development
Division

KIRIBATI CENSUS ATLAS

Pacific Community



DESIGN: JACQUES BOUQUET



Pacific
Community
Communauté
du Pacifique

Noumea, New Caledonia

July 2022

All rights for commercial/for profit reproduction or translation, in any form, reserved. SPC and KINSO authorise the partial reproduction or translation of this material for scientific, educational or research purposes, provided that SPC and KINSO, and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial/for profit or non-profit purposes, must be requested in writing. Original SPC and KINSO artwork may not be altered or separately published without permission.

Disclaimer: While efforts have been made to ensure the accuracy and reliability of the material contained in this report, SPC and KINSO cannot guarantee that the information is free from errors and omissions, and does not accept any liability, contractual or otherwise, for the content of this report or any consequences arising from its use.

Original text: English

Pacific Community Cataloguing-in-publication data

Kiribati Census Atlas / Pacific Community

1. Census — Kiribati.
2. Demography — Kiribati.
3. Kiribati — Population — Statistics.
4. Population — Kiribati.
5. Population geography — Kiribati.

I. Title II. Pacific Community III. Kiribati National Statistics Office

319.681

AACR2

ISBN: 978-982-00-1440-4

Citation: SPC (2022) Kiribati Census Atlas. Noumea, New Caledonia. Pacific Community.

For further information please contact the Statistics for Development Division (SDD) – SPC at: contact-sdd@spc.int; <https://sdd.spc.int/>

Layout and design: Gaëlle Le Gall-Queguineur

Prepared for publication at SPC's Headquarters,
B. P. D5, 98 848, Noumea Cedex, New Caledonia

CONTENTS

ACRONYMS	VIII
DATA REPRESENTATION	IX
CHOROPLETH MAPS	IX
PROPORTIONAL SYMBOLS MAPS	X
PIE CHARTS AND BAR CHARTS	X
CARTOGRAPHIC REPRESENTATION AND THE USE OF BUFFERS	XI
ACKNOWLEDGEMENTS	XII
PREFACE	XIII
GLOSSARY OF POPULATION MEASURES	XIV
ABSOLUTE	XIV
RELATIVE	XIV
1. INTRODUCTION	1
WHY POPULATION MATTERS	1
DISCOVERING THE RELEVANCE OF INDICATORS	2
Map 1: Total population by village (Onotoa island)	3
2. POPULATION CHARACTERISTICS	4
POPULATION SIZE AND GROWTH	4
POPULATION STRUCTURE AND DISTRIBUTION	5
Map 2: Total population by island, Kiribati 2020	7
Map 3: Total population by village (Abaiang, North and South Tarawa)	8
Map 4: Total population by village (Nonouti, North and South Tabiteuea)	9
Map 5: Total population by village (Kiritimati island)	10
POPULATION SETTLEMENT	10
ENUMERATION AREAS (EAs)	12
Map 6: Total population by enumeration areas (Betio), South Tarawa	12
Map 7: Total population enumeration areas (Makin and Butaritari islands)	13
3. AVERAGE HOUSEHOLD SIZE	13
Map 8: Average household size by island	15
Map 9: Average household size by village (Abaiang, North and South Tarawa)	16
4. POPULATION DENSITY	17
Map 10: Population density by island	19
Map 11: Population density, by village (Abaiang, North and South Tarawa)	20
5. INTERNAL MIGRATION AND URBANISATION	21
Map 12: Population increase by island, 2010–20	23
Map 13: Internal migration to South Tarawa, 2015–20	24
6. DEPENDENCY RATIOS	24
Map 14: Dependency ratio by island	26
Map 15: Dependency ratio by village (Abaiang, North and South Tarawa)	27
7. SEX RATIO	28
WHY DOES THE SEX RATIO MATTER?	28
Map 16: Sex ratio by island	30
Map 17: Sex ratio by village (Abaiang, North and South Tarawa)	31
8. RELIGION	32
Map 18: Religious affiliation by island	34

9. EDUCATION	35
LITERACY	35
Map 19: Indirect adult literacy by sex and Division	36
Map 20: Gross Attendance Rate (GAR) in Primary education by island	37
10. DISABILITY	38
Map 21: Disability by domain and Division	39
11. LABOUR FORCE	40
UNEMPLOYMENT	40
Map 22: Labour force participation rate by island	41
Map 23: Labour force participation rate by village (Abaiang, North and South Tarawa)	42
Map 24: Labour force participation rate by village (Kiritimati)	43
Map 25: Unemployment rate by island	44
12. INDUSTRY AND OCCUPATION	45
INDUSTRY	45
OCCUPATION	45
Map 26: Main occupation by Division	46
13. IT AND COMMUNICATIONS	47
Map 27: Internet access by island	49
14. HOUSING STRUCTURES	50
Map 28: Household roof materials by island	52
Map 29: Household wall materials by island	53
15. HOUSEHOLD ENERGY	54
LIGHTING AND ELECTRICITY	54
Map 30: Household solar electricity by island	55
FUEL FOR COOKING	55
Map 31: Household cooking fuel by island	57
16. WATER AND SANITATION	58
Map 32: Households access to improved drinking water by island	59
WATER	60
SANITATION	61
17. FOOD AND NUTRITION SECURITY	62
Map 33: Households growing food crops only for home consumption by island	63
Map 34: Households fishing and seafood gathering only for home consumption by island	64
Map 35: Households raising livestock only for home consumption by island	65
HOUSEHOLD FOOD STOCK	66
18. HOUSEHOLD WASTE	67
Map 36: Households waste disposal by island	69
19. HEALTH FACILITIES	70
Map 37: Health facilities by island	72
REFERENCES	73
ANNEX	81
KIRIBATI CENSUS GEOGRAPHY	81
KIRIBATI 2020 POPULATION AND HOUSING CENSUS NOTES	82
KIRIBATI 2020 POPULATION PYRAMIDS	83

TABLES

2. POPULATION CHARACTERISTICS	4
Table 1: Total Fertility Rate, 1992–2020	5
Table 2: Key population statistics	6
Table 3: Historical Census population by Division and island, 1947–2020	11
3. AVERAGE HOUSEHOLD SIZE	13
Table 4: Average household size by island	14
4. POPULATION DENSITY	17
Table 5: Population density by island	18
5. INTERNAL MIGRATION AND URBANISATION	21
Table 6: Internal migration to Kiritimati and South Tarawa, 2015–20	22
6. DEPENDENCY RATIOS	24
Table 7: Youth dependency ratio by island	25
7. SEX RATIO	28
Table 8: Sex ratio by island	28
8. RELIGION	32
Table 9: Religious affiliation by denomination 1990–2020	32
9. EDUCATION	35
Table 10: Key education indicators	35
Table 11: Literacy skills (reading and writing) by urban-rural and sex	36
10. DISABILITY	38
11. LABOUR FORCE	40
Table 12: Key labour force statistics	40
13. IT AND COMMUNICATIONS	47
Table 13: Household ownership of ITC related goods by island	48
15. HOUSEHOLD ENERGY	54
Table 14: Household cooking fuels by island	56
16. WATER AND SANITATION	58
Table 15: Household sources of drinking water	58
Table 16: Key water and sanitation indicators	60
Table 17: Household sanitation facilities by island (% of private HHs)	61
17. FOOD AND NUTRITION SECURITY	62
Table 18: Household food activity for home consumption by island (% of private HHs)	62
18. HOUSEHOLD WASTE	67
Table 19: Household disposal of rubbish by island (% of private HHs)	68
19. HEALTH FACILITIES	70
Table 20: Household access and use of health facilities by island (% of private HHs)	71

FIGURES

2. POPULATION CHARACTERISTICS	4
Figure 1: Historical Census population, 1947–2020.....	5
Figure 2: Age-sex population pyramid, Kiribati 2020.....	6
Figure 3: Village population by size	6
Figure 4: Island population by size	10
5. INTERNAL MIGRATION AND URBANISATION	21
Figure 5: Urbanisation, 1990–2020 (Proportion of total population)	21
Figure 6: Urbanisation trend, 1990–2020.....	21
8. RELIGION	32
Figure 7: Religious affiliation by denomination	33
Figure 8: Religious affiliation by age group	33
10. DISABILITY	38
Figure 9: Disability by domain, degree of difficulty and sex.....	38
12. INDUSTRY AND OCCUPATION	45
Figure 10: Main industry of employment by sex	45
Figure 11: Occupation employed Males (15+ years).....	46
Figure 12: Occupation employed Females (15+ years).....	46
13. IT AND COMMUNICATIONS	47
Figure 13: Main location of internet access	47
14. HOUSING STRUCTURES	50
Figure 14: Roof material	50
Figure 15: Wall material	50
Figure 16: Floor material	50
15. HOUSEHOLD ENERGY	54
Figure 17: Household main source of lighting by Division	54
Figure 18: Household main type of cooking fuel.....	56
18. HOUSEHOLD WASTE	67
Figure 19: Household main type of waste disposal	68
Figure 20: Waste problem reason	68

ACRONYMS

AHS	average household size
CAPI	Computer Assisted Personal Interview
CRPD	Convention on the Rights of Persons with Disabilities
ECCE	Early Childhood Education & Care
GAR	Gross Attendance Ratio
GoK	Government of Kiribati
HH	household
ICT	Information and Communications Technology
KINSO	Kiribati National Statistics Office
KNDP	Kiribati National Disability Policy
KPC	Kiribati Protestant Church
KSCCSN	Kiribati School and Centre for Children with Special Needs
KUC	Kiribati Uniting Church
LFPR	Labour Force Participation Rate
MELAD	Ministry of Environment, Lands and Agriculture Developments
MICT	Ministry of Information, Communications and Transport
MoE	Kiribati Ministry of Education
MWYSSA	Ministry of Women, Youth, Sport and Social Affairs
NCDs	Non-communicable Disease
PDH	Pacific Data Hub
PHC	Population and Housing Census
PUB	Public Utilities Board
SDD	Statistics for Development Division
SDG	Sustainable Development Goal
SPC	Pacific Community
The Church of LDS	The Church of Latter-day Saints
TVET	Technical and Vocation Education and Training
WGDS 2022	Washington Group Short Set of Questions on Disability

DATA REPRESENTATION

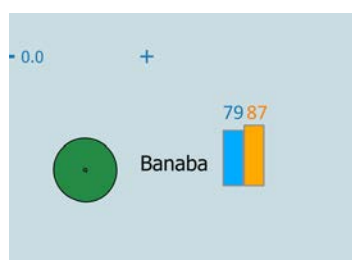
CHOROPLETH MAPS

This type of map representation has been used for most of the maps in this atlas. Choropleth maps use colours over census boundary polygons, or areas, to represent differences or similarities between them with regards to a specific indicator. Choropleths have been used to visualise relative data such as ratios, rates and percentages.

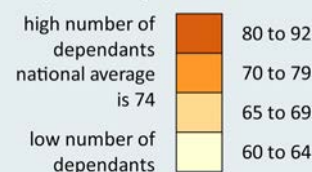
Four colour schemes have been consistently applied in the atlas to facilitate understanding and assist interpretation, to compare different levels of geography (islands versus villages) or look at different indicators for the same island. Whenever data are mapped around a national average, the colour scheme representing different value categories is presented in such a way that darker colours describe values higher than the national average, while lighter colours, represent values below the national average.

In maps where data value ranges pivot around a specific threshold that needs to be highlighted, a diverging colour scheme has been used. In the example below, the yellow to red colours represent areas where the population is increasing while the yellow to green direction, represents the regions where population is decreasing.

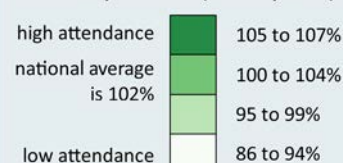
In maps where data have also been disaggregated by gender, the values are represented in small bar charts corresponding to each of the villages or islands. Blue represents males, and orange represents females. Both bars for each chart are labelled with the exact value (rounded to a whole number), for males and females in a particular category.



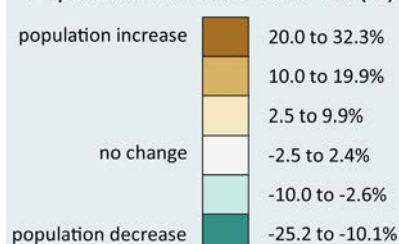
Dependency ratio



Gross Attendance Rate Primary school (6–11 years)

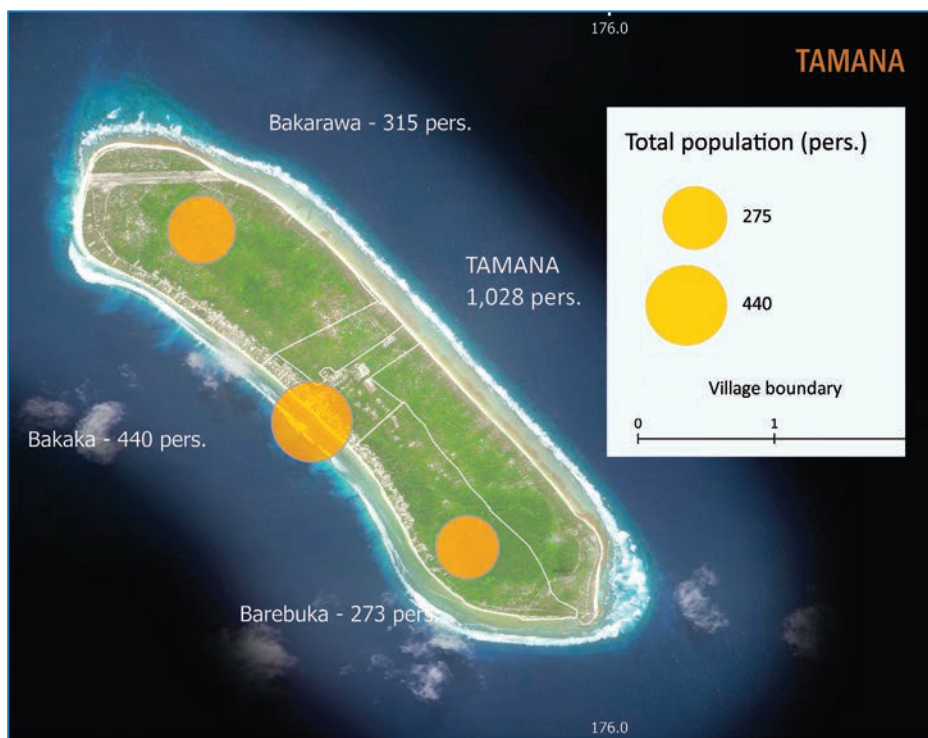


Population increase 2010–20 (%)



PROPORTIONAL SYMBOLS MAPS

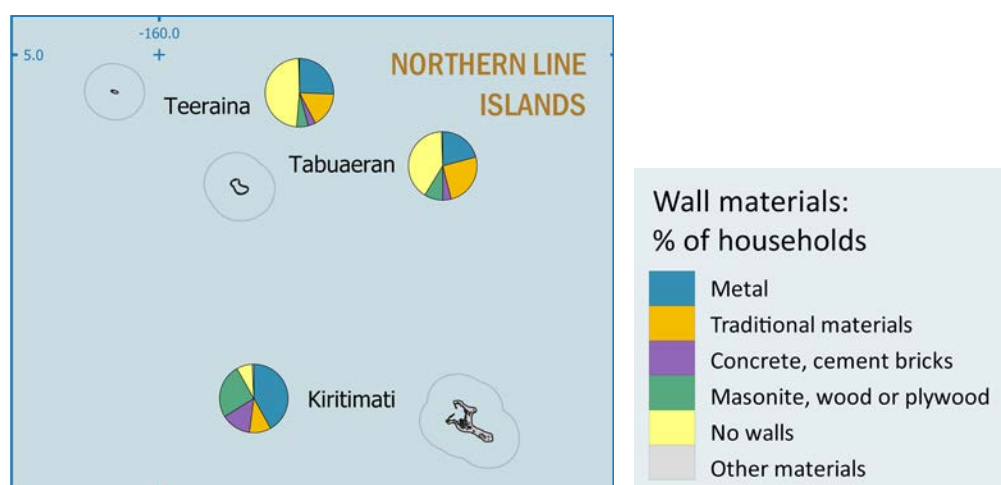
Proportional round symbols have been used in maps where population counts are illustrated. The rounds' size change accordingly to the value that is being represented. This visualisation is more appropriate to represent totals and counts where choropleths can tend to introduce bias given their tendency to emphasise the bigger polygons over the small ones.



PIE CHARTS AND BAR CHARTS

Some of the maps in this atlas also contain pie charts and bar charts which have been used to show data where multiple variables are being presented.

In the case of the pie chart maps, a full pie adds up to 100%, and each segment represents the proportional representation of a particular feature.

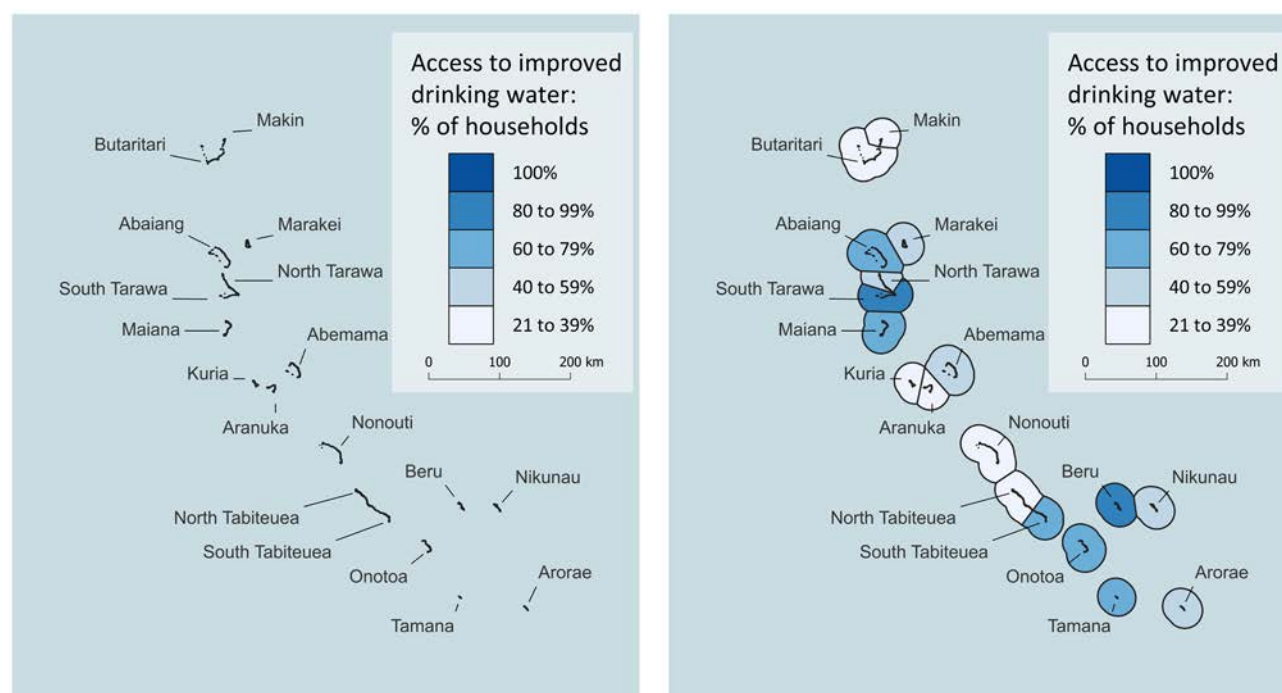


In maps where bar charts are used, the height of each of the bars corresponds to the value of each category being displayed for that area. For these maps, the bar chart x-axis categories correspond to the map legend to provide a better understanding of the data.



CARTOGRAPHIC REPRESENTATION AND THE USE OF BUFFERS.

One of the major visualisation challenges faced when mapping small islands such as Kiribati, is to effectively represent each atoll, spread over 3.5 million km² of the Pacific Ocean. The solution adopted was to generate buffers around the island and village boundaries which increases their size and improves visualisation of the data therefore allowing choropleth style maps to be used.



For more information on mapping and presenting statistical data, refer to: De la Rúa et al (2020), Brewer (2015), Pacific Community (2015), Nussbaumer-Knaflig, C. (2015), UNECE (2009).

ACKNOWLEDGEMENTS

The Pacific Community Statistics for Development Division (SPC/SDD) sincerely thanks the Kiribati National Statistics Office (KINSO) for the work undertaken on the PHC 2020. Special thanks to the Kiribati Republic Statistician and Census Commissioner, Aritita Takaieti, for leadership and guidance of the entire PHC 2020 process.

This Census Atlas was written by Frank Siciliano with data analysis and mapping undertaken by Luis de la Rua. Layout and design by Gaëlle Le Gall-Queguineur.

A number of SPC/SDD staff provided support for data verification, reviews and comments including Scott Pontifex, Michael Sharp, Toga Raikoti, Kaobari Matikarai and Alison Culpin. Jake Ward and Amini Loco from SPC GEM Division provided valuable insights into water security issues and projects.

The Census Atlas was produced under the 'Pacific Community and UNFPA Pacific regional project for the availability, analysis and utilization of ICPD/SDG related data'.

The UNFPA's financial support for the compilation of the report is also gratefully acknowledged.

Publication and distribution financed by the Australian Government through ACIAR project FIS/2018/155.

PREFACE

This Census Atlas is aimed at promoting evidence-based decision making for policy and planning by presenting maps, tables and graphs to better understand population patterns and trends at both the national and sub-national level in Kiribati.

The atlas uses data sourced from the Kiribati National Statistics Office *2020 Census Report* (KINSO 2021a) and customised census data tables together with SPCs PopGIS tool and the Pacific Data Hub resource, PDH.Stat. These resources and the *2020 Census Analytical Report* provide a wealth of information for a wide range of users including Kiribati Government agencies, Development Partners, Non-Government Organisations, researchers, schools and the general public.

Presenting information using maps is recognised as a valuable supplement to the many reports, documents, research papers and websites currently in the public domain. This atlas summarises information on the population and socio-economic characteristics of all the Islands in Kiribati, together with key Sustainable Development Goals (SDG) indicators at the national level. It can be utilised to inform national development frameworks such as the *Kiribati 20-Year Vision* or “KV20” (GoK 2018) and assist to better understand the current and future challenges in Kiribati related to population growth, socio-economic development and environmental issues including the predicted impacts of a changing climate.

The 2020 Kiribati PHC was undertaken during November 2020 and for the first time used Computer Assisted Personal Interview (CAPI) tools. The enumeration is regarded as very successful and reflects the fine work of the Census Commissioner, Census Steering Committee, the staff of the Kiribati National Statistics Office as well as contract Trainers, Supervisors and Enumerators.

SPC-SDD continues to provide ongoing technical assistance and support to the Kiribati National Statistics Office for all phases of the 2020 PHC – from initial planning and logistics to enumeration, analysis, reporting and dissemination.



GLOSSARY OF POPULATION MEASURES

The most commonly used measures in demographic and social statistics – absolute and relative numbers – have been used in this profile:

ABSOLUTE

Count – The absolute number of a population or any demographic event occurring in a specified area in a specified time period. For example, there were 5,122 people whose ethnicity is not i-Kiribati as at the 2020 census. The raw quantities of demographic events are the basis of all other statistical refinements and analyses.

RELATIVE

Rate – The frequency of demographic events (such as births and deaths) in a population during a specified time period (usually a year), divided by the population “at risk” of the event occurring during that time period. For example, in 2013 in Kiribati there were 16.6 mobile phone subscriptions per 100 people.

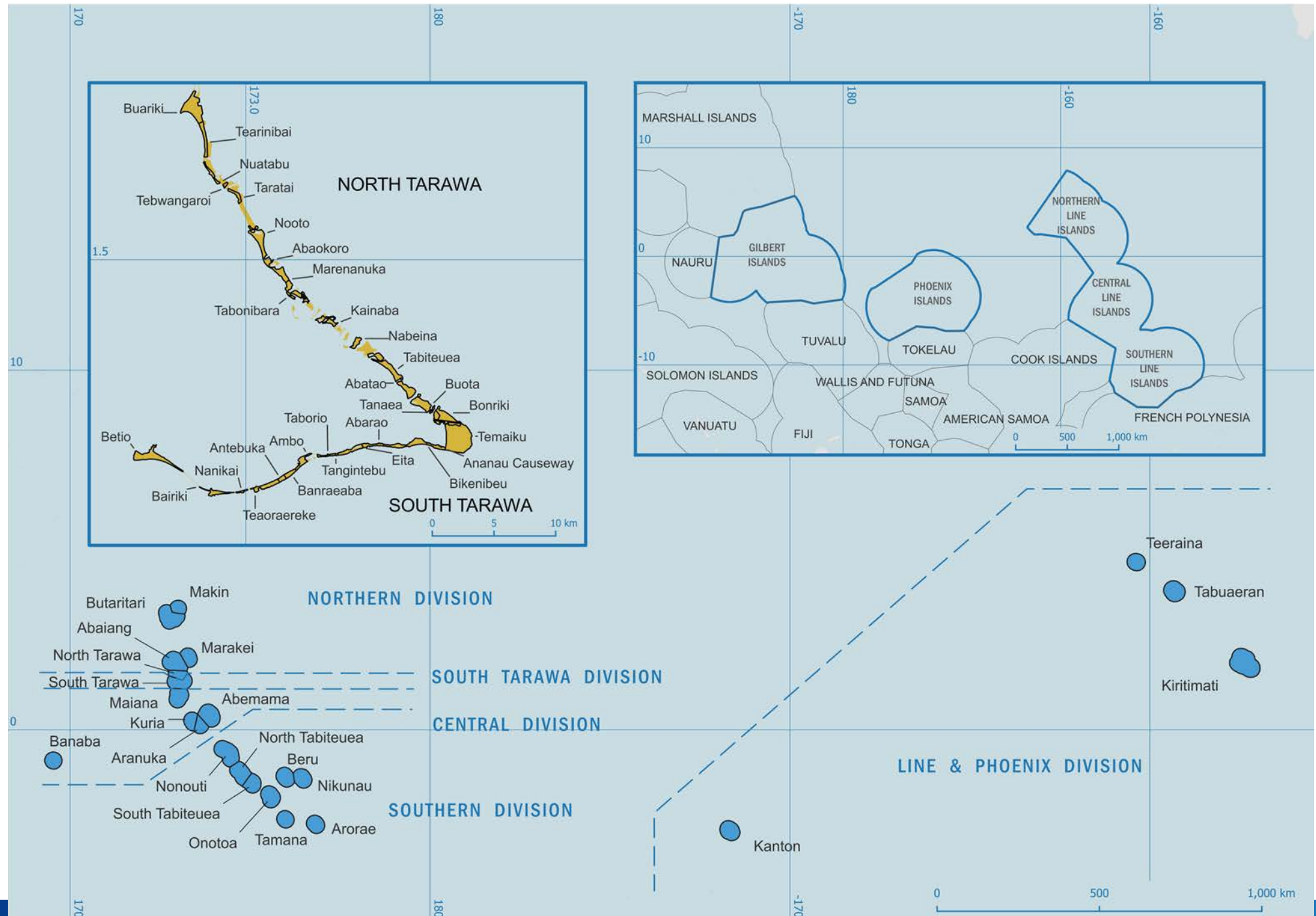
The frequency of a demographic event, such as birth, death or marriage, is measured by what is called a vital rate. Vital events change the size, structure and distribution of a population over time. The extent of change needs to be measured in relation to a specific period of time. For demographic events, this period is one year. In other words, a pure vital rate, such as the crude birth rate (CBR), indicates how many births occurred per unit of a certain population in any given year. Rates enable us to make comparisons of the occurrence of a particular event over space and in time.

Ratio – The relation of one population subgroup to the total population or to another subgroup; that is, one subgroup divided by another. For example, the sex ratio in Kiribati in 2020 was 97 males per 100 females.

Proportion – The relation of a population subgroup to the entire population; that is, a population subgroup divided by the entire population. For example, the proportion of the Kiribati population classified as urban in 2020 was 0.59 or 59%.

For more demographic terms and definitions, refer to: Population Reference Bureau Glossary of Population Terms (<https://www.prb.org/resources/glossary/>).

KIRIBATI



1. INTRODUCTION

The information contained in this atlas is one of a number of reports and resources of the 2020 Kiribati PHC undertaken by the **Kiribati National Statistics Office (KINSO)** and supported by SPC-SDD's. It utilises the 2020 PHC General Report and Results (KINSO 2021a), the **online population geographical information system (PopGIS) tool** and other supplementary information available from SPCs **Pacific Data Hub online data resource, PDH.Stat**.

The use and application of the PopGIS tool and PDH.Stat resource to policy analysis and development is encouraged as one way to promote evidence-based decision-making applying data from the Kiribati 2020 PHC and other sources to policy and planning issues.

The purpose of this census atlas is to familiarise readers with the importance of linking population data and indicators to policy and planning decisions and to assist in better understanding the implications of key population and development issues. The atlas presents a series of population and housing themes showcasing patterns and trends at both the national and sub-national levels (islands and villages) using a map-based format supplemented with tables, graphs and photos.

The atlas should lead to increased utilisation of these data and indicators. In addition, it is intended to be used to support advocacy on population and development issues by interested stakeholders targeting leaders, policy makers, administrators, NGOs and communities. The next PHC in Kiribati is scheduled for 2025.

SOME KEY POPULATION AND DEVELOPMENT INDICATORS

DESCRIPTION	INDICATORS
	KIRIBATI
Average annual population growth rate (%) 1990–2020	2.2
Median age (years) 2020	22.9
Population under age 19 years (%) 2020	45
Child-Youth dependency ratio (%) 2020	59.7
Gross attendance ratio - Primary (%)	102
Labour force participation rate (%)	54
Unemployment rate (%)	11.3

WHY POPULATION MATTERS

The following points illustrate the importance of population indicators, and show how key population and development and other socio-demographic measures can drive social and economic development policy development and planning, including activity and progress monitoring:

- Population characteristics and activities are the primary determinants of development. People-driven activities impact on the availability, utilisation and sustainability of resources for current and future generations; their activities can lead to economic prosperity or to environmental, social and economic problems. Hence, planning for sustainable development needs to be more people-centred and people-focused, rather than merely looking at the economic 'bottom line'.
- Without reliable and timely population statistics, including regularly updated population projections or estimates, statisticians and planners cannot calculate population-based development indicators, such as those contained in the SDG framework and used for education and health planning.

- Population indicators can drive locally meaningful development policy, and thus help facilitate informed decision-making.

DISCOVERING THE RELEVANCE OF INDICATORS

The concept of 'indicators', and how they differ from rates and ratios, is discussed below. This discussion will help the reader interpret the indicators presented in this profile.

An indicator is basically a 'pointer'. It can be an objective measurement, such as a number, a specific rate or a ratio; it can, however, also refer to an opinion, or to a perception that points to a specific condition or situation and can be used to measure changes in that condition or situation over time. In other words, indicators provide a close look at the results of initiatives and actions or interventions. For this reason, they are the most important tools for monitoring and evaluating development work and widely used for evidence-based planning and policy making. Indicators are used to assess progress with respect to values and goals. They are fundamental to evaluating the impact of specific programs and policies'.

This explanation is useful because it recognises the normative nature of indicators, in that a change in a particular direction can be interpreted as 'good' or 'bad', 'welcome' or 'unwelcome', 'desirable' or 'undesirable'. For example, some countries with ageing populations, increasing birth rates may be encouraged to stimulate economic development. However, high fertility rates may lead to increased demand for health, education and other services as is the case in a number of Pacific countries (Pacific Community 2020).

Indicators can come from 'all forms of evidence', both quantitative and qualitative, and essentially, indicators need to measure changes over time. Because of their normative nature, care must be taken in defining the norm or benchmark implicit in any indicator against which change is measured. For example, is the rate of migration of women being compared to the situation of men in a particular country, or to women in other countries?

Gender-sensitive indicators have the special function of pointing out gender-related changes in society over time. Their usefulness lies in being able highlight changes in the status and roles of women and men over time, and therefore to measure whether gender equity is being achieved. As the use of indicators and other relevant evaluation techniques will lead to a better understanding of how results can be achieved, using gender-sensitive indicators will also feed into more effective and equitable planning and programme delivery.

Indicators as **tools for measuring social change** and are subject to various forces. Before using indicators, it is important to recognise that they can have limitations, strengths and biases, either introduced at the point of data collection or during processing. This is important to recognise as certain types of indicators are applicable to specific situations, while others are defined differently over a period of time. In addition, indicators may not always cover the same situation, perhaps due to underlying definitions or some other limitations. Explanatory Notes, Technical Guidelines and metadata often provide the detail required to correctly understand and interpret the data and statistical indicators.

INDICATORS AND DEVELOPMENT OBJECTIVES

Since indicators are **tools for monitoring and evaluating (M&E) results**, they are usually tied to clear and concise objectives with which a development initiative begins. This is one of the main reasons for the collection, analysis and presentation of data in reports such as the Kiribati Census Atlas, Analytical Reports and M&E plans.

When using indicators, objectives must be clearly specified and determined in relation to situation analysis or baseline studies, against which results can be measured. These analyses and studies often aim to reveal the population situation in the country or local area before government intervention. Situation analyses are often prepared as the basis for comparison when using indicators through the planning/implementation cycle.

In this atlas, an attempt has been made to present data and indicators that are common and relevant to government policies in Kiribati, and that link to global initiatives such as the SDGs.

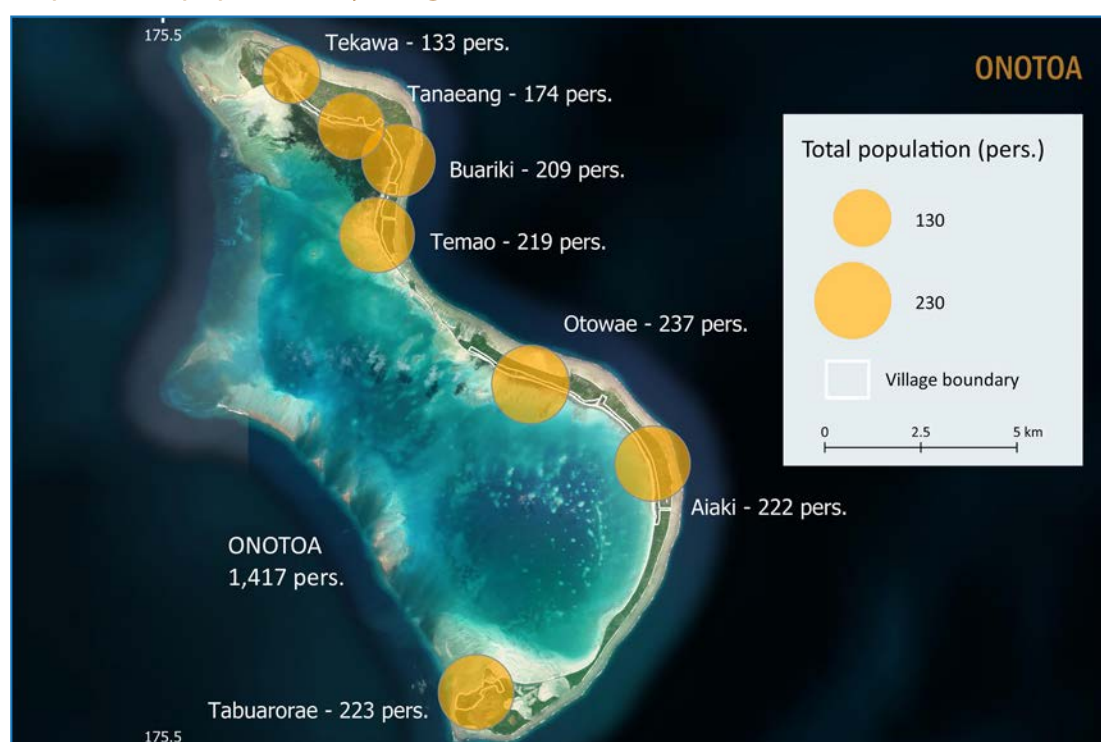
DESCRIBING IMPORTANT POPULATION AND DEVELOPMENT INDICATORS – THE ROLE OF SDGS IN GUIDING NATIONAL AND SECTORAL POLICY DEVELOPMENT AND PLANNING

Translating the global SDG targets to the national level requires a sound operational framework encompassing all sectors and groups in society. This framework should set out a country-owned cross-cutting agenda aimed at sustained, shared growth and public action directed towards achieving the SDGs. National ownership is paramount, and countries have been encouraged to set their own numerical and time-bound targets for meeting the goals and to articulate the policies and programmes needed to attain them.

The SDGs, which include many population-based development indicators, serve as a useful framework for national and sectoral policy development and planning and for monitoring of development activities and achievement of development progress. Though the SDG framework provides a useful guide, it is not meant to direct national development efforts or replace Kiribati's own policy development and planning frameworks, such as the *Kiribati 20-Year Vision* (GoK 2018) and the *Kiribati Development Plan 2020-2023* (GoK 2021) in addition to various sectoral policy statements and plans.

The population information contained in the Kiribati Census Atlas is linked to the above frameworks and is intended to provide national policymakers and planners with a factual basis for informed decision-making, leading to the development of evidence-based policy, and the setting of clear priorities. Of particular significance is assessing where available, the relevance of the SDG target indicator to the 2020 Census data presented in this atlas.

Map 1: Total population by village (Onotoa island)



2. POPULATION CHARACTERISTICS

“Everyone is a member of a population, and population factors have an impact on many facets of life: from where we live to the prices we pay for goods and services. The need for health care preoccupies the political leaders of industrialised countries whose populations are ‘aging,’ while the need for classrooms, employment opportunities and housing preoccupies the leaders of countries that are still growing rapidly. Population conditions influence history. Similarly, historical events can significantly affect populations. Wars can decimate a generation of men, as happens in many countries around the world. The discovery of new medicines often leads to increases in life expectancy, and different causes of death become more prominent. Alternatively, population change may sound a warning of other important changes. Environmental contamination may be detected first by increased reports of illness and rising mortality rates in certain geographic areas. In all these ways and more, population is news everywhere in the world today.” (Population Reference Bureau 2011 p.2)

Understanding how a population develops and changes over time is essential for planning and policymaking. The social and economic development of any country is largely reliant on all members of its population having access to a range of government services and benefiting from private sector investment. As a population grows over time, it is important to comprehend what is happening and where.

- What are the specific trends occurring in fertility and mortality?
- Is there an increasing pattern of movement from rural, or island, locations to urban settlements? What are the implications of increasing urbanisation?
- Is the housing stock and waste management services keeping pace with population?
- Is there significant overseas migration? Who is leaving and why?
- How are the health, education and employment sectors planning to respond to population growth and its changing characteristics?
- Are there sectors of the population in financial hardship? Is this a factor in increasing social problems?
- Do the youth feel disengaged? Is this leading to delinquency and petty crime?
- Has essential infrastructure such as transport, public health and energy provision been established to support the population in different locations over time?
- Is food security an issue? How is this linked to increasing rates of non-communicable diseases?
- How will the population in different locations respond and adapt to natural disasters and predicted impacts of a changing climate?
- Does the Government have the financial capital and human resource capacity to monitor and support population growth and increased service delivery?

In short, to plan for the provision of various services, governments need to know the size and spatial patterns of the current and projected future population.

POPULATION SIZE AND GROWTH

Whether a population grows or declines, at the national level, the changes can be traced to the net effects of the three demographic processes of **fertility**, **mortality**, and **net (international) migration**. Fertility adds members to the population while mortality removes them. Thus, the annual number of deaths in a population can be subtracted from the annual number of births to find the net number of people added through natural increase. The natural increase is added to the net migration numbers to yield overall population growth (Box 1 – balancing equation). Popula-

tions increase through incoming migration and natural increase in most places but may also decline as a result of net out migration. Natural disasters and civil unrest can also lead to the displacement of large numbers of people.

Box 1 – Balancing equation:

Population growth = CBR minus CDR plus Net migration rate

Therefore, the net migration rate can be estimated:

Net migration rate = Population growth minus CBR plus CDR

Note: CBR = crude birth rate
CDR = crude death rate

Historical census data from 1947–2020 clearly show the increasing population at the national and sub-national levels (Table 3). As shown in Figure 1 the national population surpassed 50,000 at the 1973 census and recorded over 100,000 people at the 2010 census. At the 2020 census, 119,438 people were enumerated. At the national level, this indicates a relatively moderate to high average annual population growth rate of 2.2% over the 30 year period from 1990–2020. At this rate, with other demographic factors constant, the total population could be expected to double by around 2050.

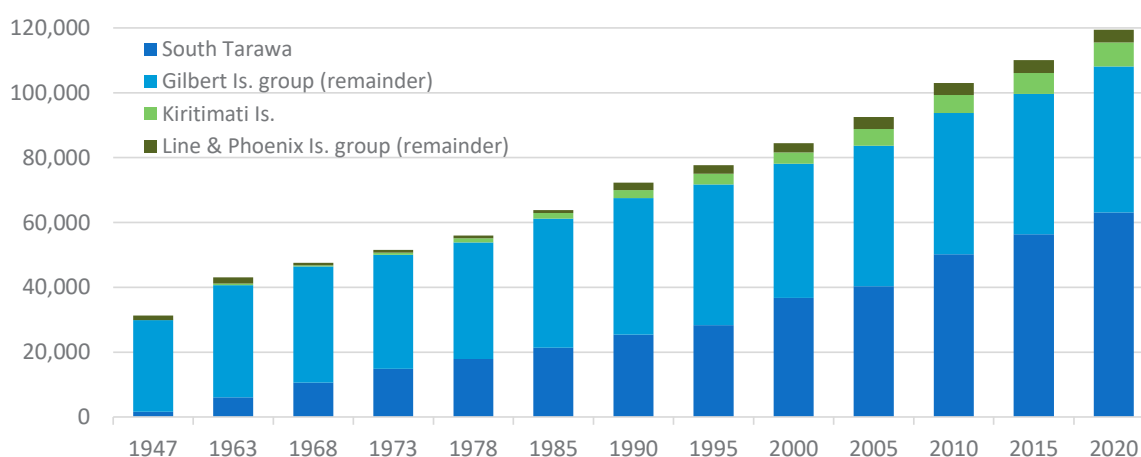


Figure 1: Historical Census population, 1947–2020

However, it is well known that the most significant growth has occurred in the villages of South Tarawa where continuing rural Islands to urban internal migration has seen the population grow from 10,616 people at the 1968 Census (22% of the total population) to 63,072 people as at 2020 (53% of the total population) as shown in Table 3. Over the 30-year period from 1990–2020 this is a very high average annual growth rate of 5% (Figures 5 and 6). The implications of this growth in South Tarawa will be highlighted in this atlas.

POPULATION STRUCTURE AND DISTRIBUTION

“A population pyramid graphically displays a population’s age and sex composition” (PRB 2011 p.5). They are very useful graphs to understand a country’s demographic situation in the context of socio-economic development circumstances. Figure 2 presents the population pyramid for Kiribati at 2020. With a typical pyramid shape, this indicates a young population with both high (albeit declining) fertility rates, (Table 1), together with relatively high mortality - the latter of which is reflected in the age specific death rates and life expectancy data (Vollset et al 2020; IHME 2022). There are slightly more females at 50.7% of the total population.

Table 1: Total Fertility Rate, 1992–2020

YEAR	TFR
1992	4.5
1995	4.5
2005	3.4
2010	3.9
2015	3.7
2020	3.4 ^p

^p = Preliminary
Source: SPC–SDD (2022)

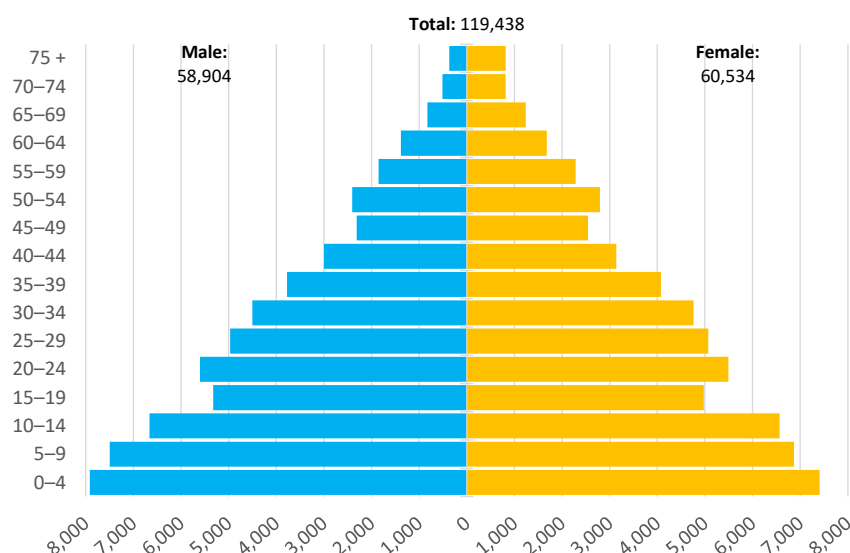


Figure 2: Age-sex population pyramid, Kiribati 2020

Source: Table A-5a, KINSO 2021

Permanent migration to other countries does not currently appear to be a significant factor in the population dynamics Kiribati. The history of the Banaban population's movement to Rabi Is. in Fiji is unique (Edwards 2014).

Kiribati comprises 32 atolls and reef islands and one raised coral island, Banaba, spread across 3,700 kms (3.5 million square kilometres) of the Central Pacific Ocean. The official total land area of all islands is 811 sq.km of which 37% is under customary land ownership (GoK 2018). Across the three island groups, Gilbert, Line and Phoenix, there is an uneven distribution of population as shown in Table 3 and Map 2.

In 2020, North and South Tarawa Is. (Tarawa atoll) in the Gilbert Is. group recorded 70,090 people (59% of total population). A continuing internal migration trend to South Tarawa is well documented (e.g. ADB 2013, 2014b, 2016; GoK 2018, 2021). With 53% of the total national population, the villages of South Tarawa are reaching very high levels of settlement, compounding current overcrowding, social and environmental issues and increasing demand for government service delivery. The islet village of Betio alone recorded a population of 18,429 people (29% of South Tarawa) in 2020.

In the Line Is. group, Kiritimati Is. continues to grow and recorded 7,369 people in 2020 (6.2% of the total national population) as shown in Table 3 and Map 5. It is expected to maintain a growth trajectory into the future with direct focus in national development plans to significantly increase settlement and facilitate economic development opportunities (GoK 2018, 2021; MLPID 2016).

Table 2: Key population statistics

	MALE	FEMALE	TOTAL	% OF TOTAL
Total population	58,904	60,534	119,438	
Median age	21.8	24	22.9	
Pop. < 15	22,074	20,846	42,920	36%
Pop. 15-64	35,124	36,813	71,937	60%
Pop. 65+	1,706	2,875	4,581	4%
Child/Youth dependency ratio	62.8	56.6	59.7	
Old age dependency ratio	4.9	7.8	6.4	
Total dependency ratio	67.7	64.4	66.0	
Child/Woman ratio	-	51	-	

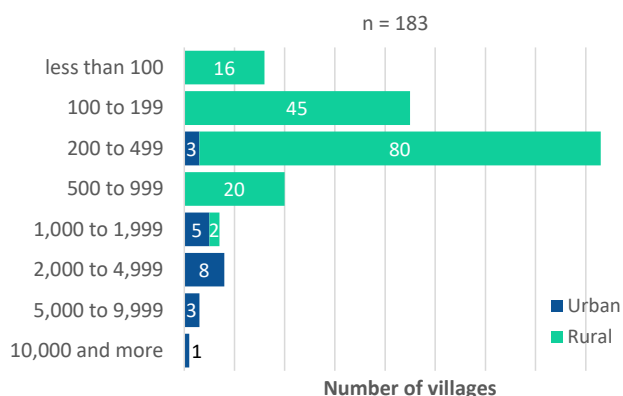
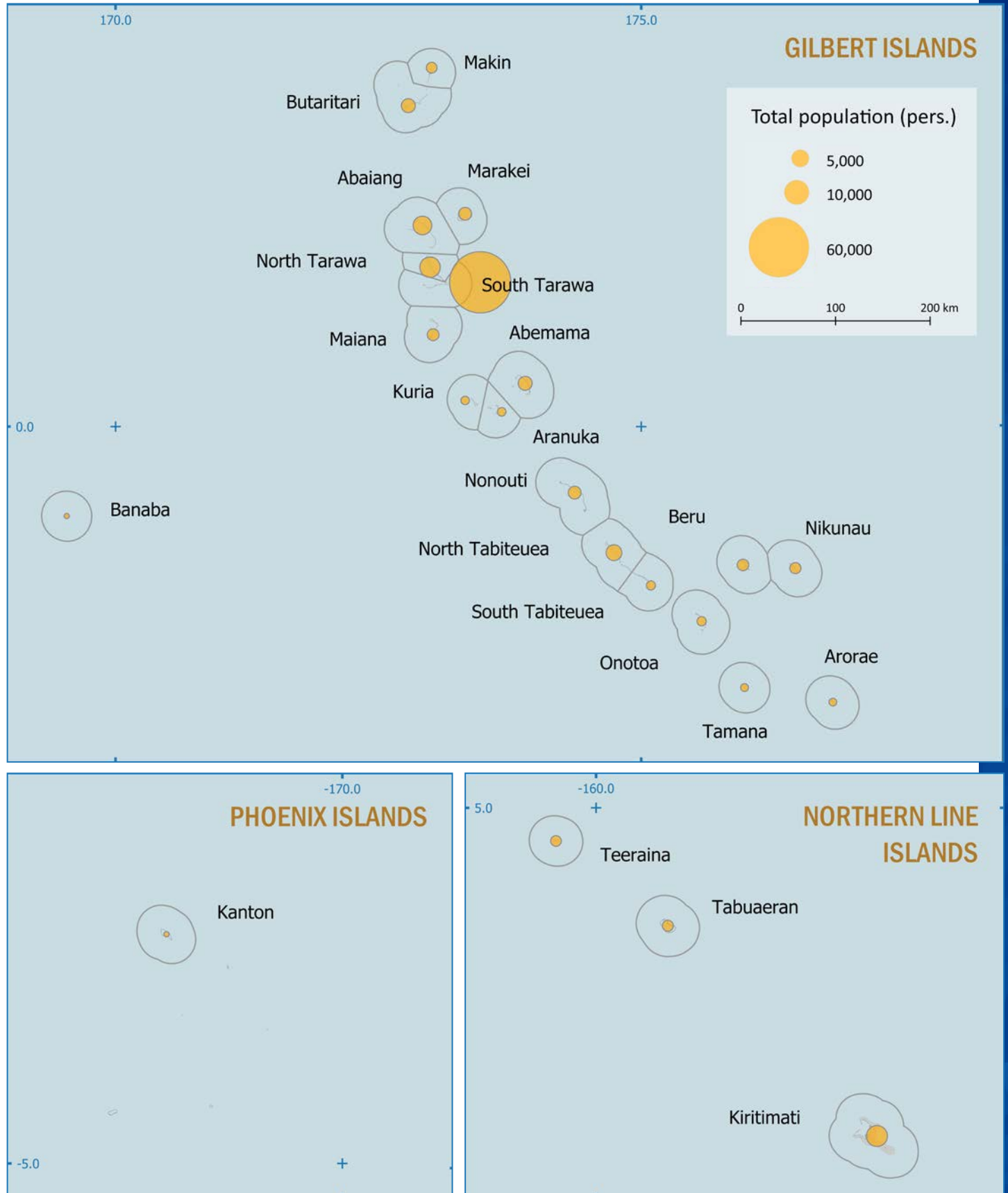
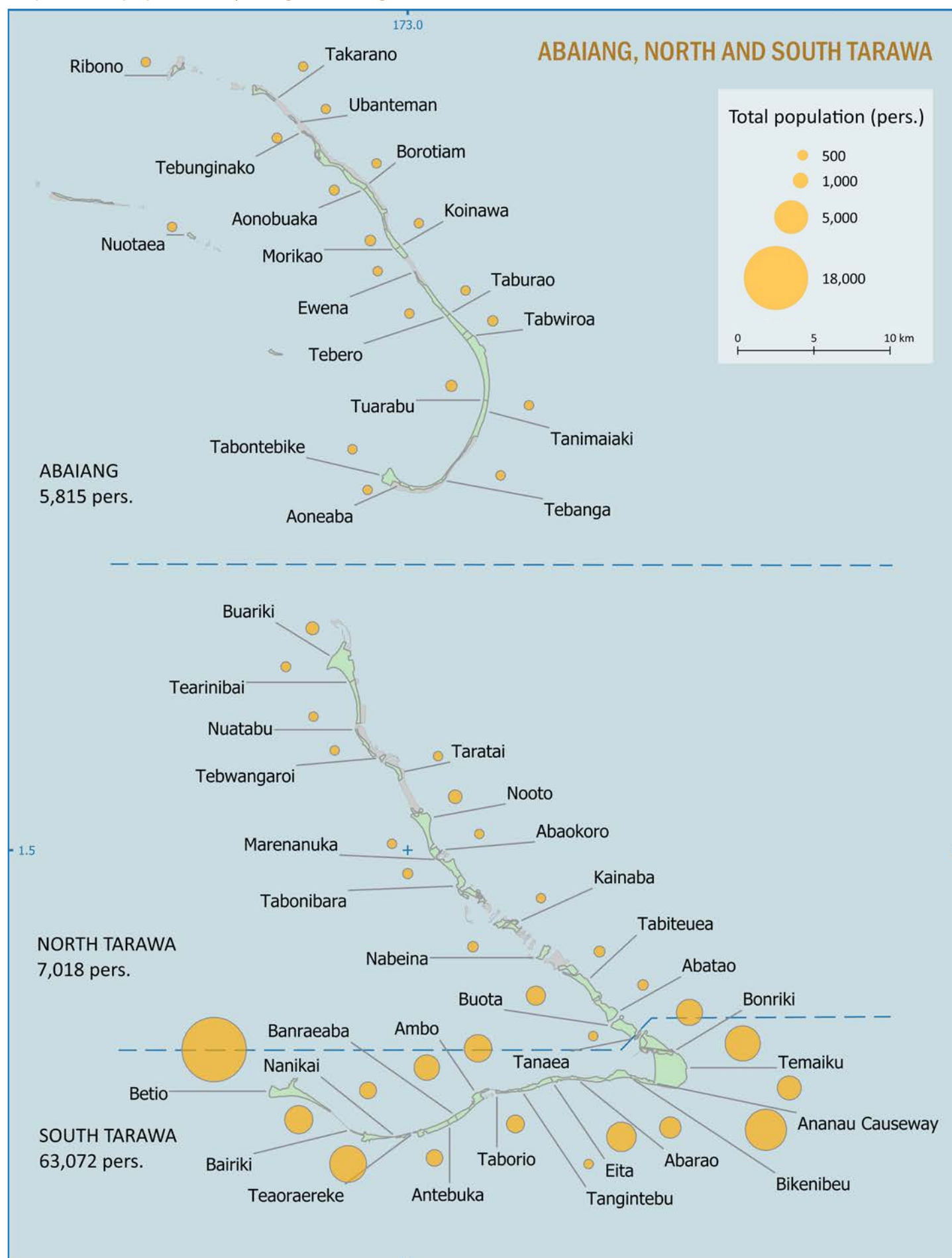


Figure 3: Village population by size

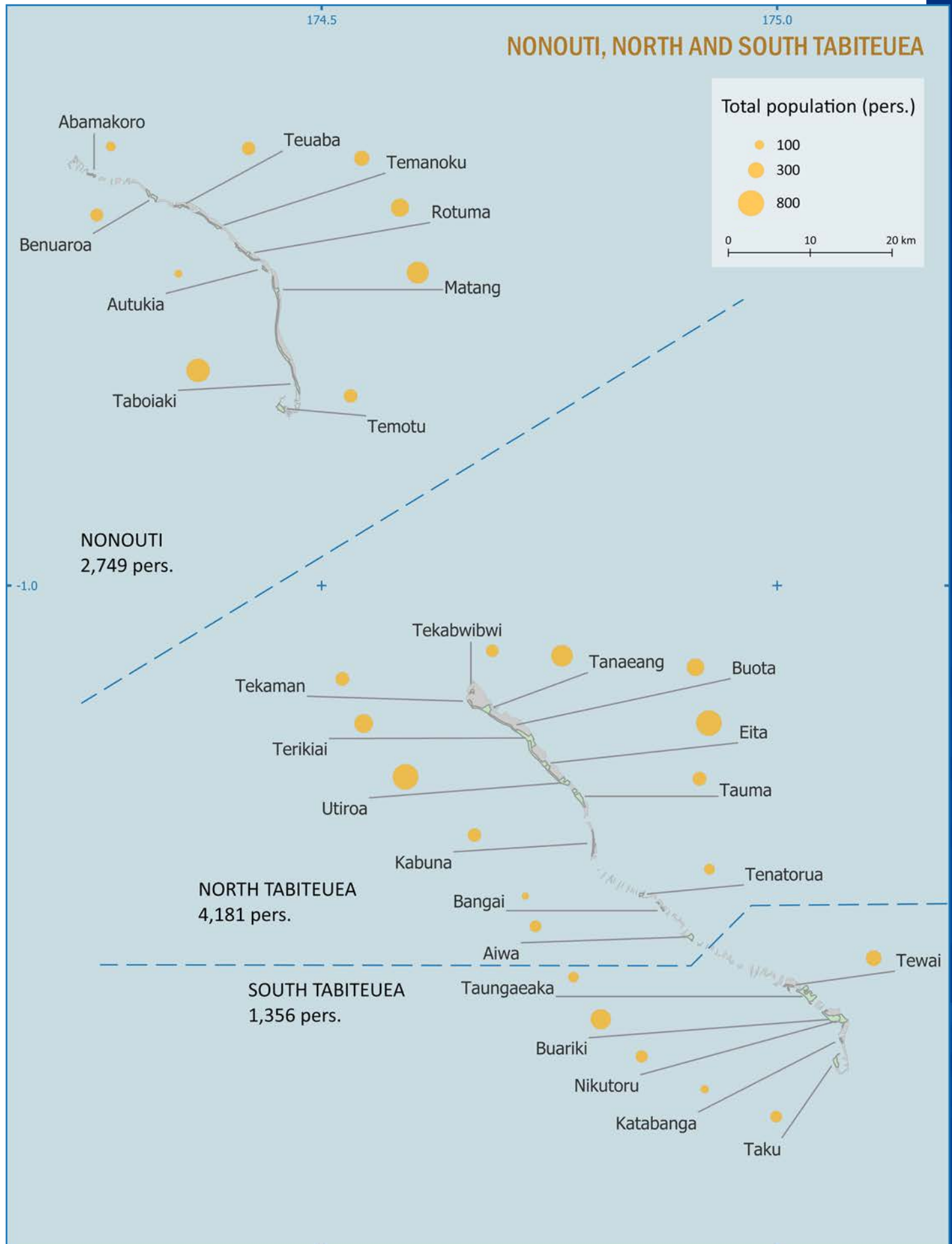
Map 2: Total population by island, Kiribati 2020



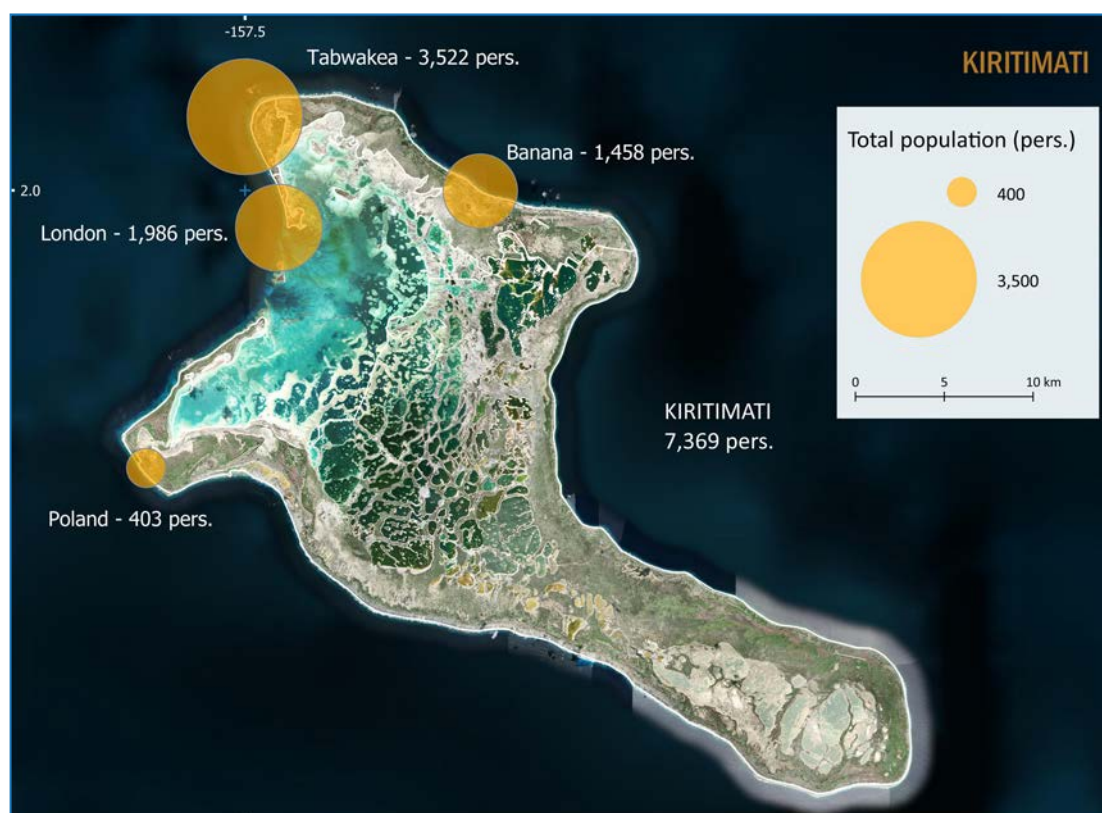
Map 3: Total population by village (Abaiang, North and South Tarawa)



Map 4: Total population by village (Nonouti, North and South Tabiteuea)



Map 5: Total population by village (Kiritimati island)



POPULATION SETTLEMENT

Table 3 presents the historical census population data for every island in Kiribati from 1947–2020. Review of these data clearly shows how the population has grown in particular locations. At 2020, there were seven islands recording a population of more than 3,000 people (Figure 4). Apart from the two designated “urban” islands of South Tarawa (63,072 people) and Kiritimati (7,369), the others are all located in the Gilbert Is. group: North Tarawa 7,018; Abaiang 5,815; North Tabiteuea 4,181; Abemama 3,255; and Butaritari 3,250.

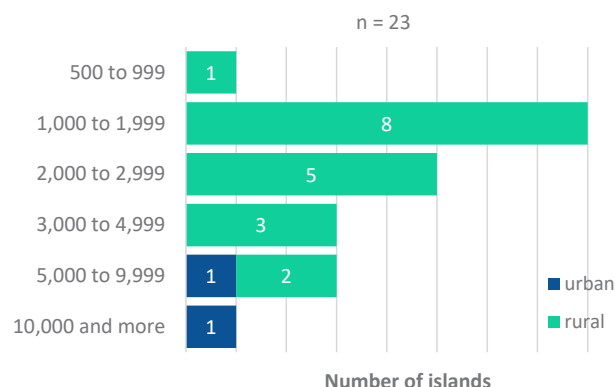


Figure 4: Island population by size

The population trend over the 30-year period from 1990–2020 is also shown in Table 3. This provides a simple overview of the general trends in population highlighting those islands that have seen increasing numbers of people due to both natural increase and internal migration.

South Tarawa has experienced a consistent increase in population since 1990. The extent to which those villages can continue this trajectory into the future is unknown given the social, public health and environmental pressures currently being experienced (ADB 2013, 2014a; Miedema et al 2019; UNICEF 2021a). Disorderly land use planning and development together with limited land to support growth has led the government to consider land reclamation around key settlements (Temaiku, Bikenibeu, Bairiki, Betio) as well as into Tarawa lagoon (GoK 2018, 2021).

Elsewhere, Kiritimati Is. in the Line Is. group, is targeted to have an additional 7.7 sq km of land developed by the year 2036 (GoK 2018). Furthermore, in 2014, the government purchased 55 sq kms of land in Vanua Levu, Fiji that is being considered for a number of uses in the future (GoK 2018).

Table 3: Historical Census population by Division and island, 1947–2020

Island Group	Division	Island	1947	1963	1968	1973	1978	1985	1990	1995	2000	2005	2010	2015	2020	% of TOTAL 2020	Trend 1990–20	
Gilbert Is. Group	Northern	Abaiang	2,823	3,370	3,271	3,296	3,447	4,386	5,233	6,020	5,794	5,502	5,502	5,568	5,815	4.9%		
		Butaritari	1,824	2,611	2,714	2,971	3,149	3,622	3,774	3,909	3,464	3,280	4,346	3,224	3,250	2.7%		
		Makin	969	1,292	1,387	1,445	1,419	1,777	1,762	1,830	1,691	2,385	1,798	1,990	1,914	1.6%		
		Marakei	1,803	2,213	2,180	2,212	2,335	2,693	2,863	2,724	2,544	2,741	2,872	2,799	2,738	2.3%		
		North Tarawa	1,911	1,813	2,026	2,268	2,227	3,205	3,648	4,004	4,477	5,678	6,102	6,629	7,018	5.9%		
	South Tarawa	South Tarawa	1,671	6,101	10,616	14,861	17,921	21,393	25,380	28,350	36,717	40,311	50,182	56,388	63,072	52.8%		
	Central	Abemama	1,174	2,060	2,126	2,300	2,411	2,966	3,218	3,442	3,142	3,404	3,404	3,213	3,262	3,255	2.7%	
		Aranuka	366	533	738	781	850	984	1,002	1,015	966	1,158	1,057	1,125	1,221	1,221	1.0%	
		Banaba	2,060	2,706	2,192	2,314	2,201	46	284	339	276	301	295	268	333	333	0.3%	
		Kuria	315	729	958	821	803	1,052	990	971	961	1,082	980	1,046	1,190	1,190	1.0%	
		Maiana	1,425	1,688	1,710	1,413	1,688	2,141	2,180	2,184	2,048	1,908	2,027	1,982	2,345	2,345	2.0%	
	Southern	Arorae	1,558	1,760	1,830	1,626	1,527	1,470	1,440	1,248	1,225	1,256	1,256	1,279	1,011	994	0.8%	
		Beru	2,231	2,337	2,412	2,318	2,212	2,702	2,909	2,784	2,732	2,169	2,169	2,099	2,051	2,214	1.9%	
		Nikunau	1,592	1,908	2,029	1,845	1,829	2,061	1,994	2,009	1,733	1,912	1,912	1,907	1,789	2,055	1.7%	
		Nonouti	2,004	2,229	2,408	2,223	2,284	2,930	2,814	3,042	3,176	3,179	2,683	2,743	2,749	2,749	2.3%	
		North Tabiteuea	2,904	3,022	3,303	2,850	2,975	3,171	3,201	3,383	3,365	3,600	3,689	3,955	4,181	4,181	3.5%	
		Onotoa	1,491	1,993	1,960	1,997	2,034	1,927	2,100	1,918	1,668	1,644	1,519	1,393	1,417	1,417	1.2%	
South Tabiteuea		880	1,060	1,116	1,092	1,182	1,322	1,331	1,404	1,217	1,298	1,290	1,306	1,356	1,356	1.1%		
Tamana		883	1,254	1,422	1,392	1,349	1,378	1,385	1,181	962	875	951	951	1,104	1,028	0.9%		
Total		29,884	40,679	46,398	50,025	53,843	61,226	67,508	71,757	78,158	83,683	93,791	99,633	108,145	90.5%			
Line Is. & Phoenix Is. group	Line & Phoenix	Kanton	984	1,018	-	-	-	24	45	83	61	41	31	20	41	0.0%		
		Kiritimati	52	477	367	674	1,265	1,737	2,537	3,225	3,431	5,115	5,586	6,456	7,369	6.2%		
		Tabuaeran	259	521	376	340	434	445	1,309	1,615	1,757	2,539	1,960	2,315	1,990	1.7%		
		Teraina	158	373	437	458	416	451	936	978	1,087	1,155	1,690	1,712	1,893	1.6%		
	Total		1,453	2,389	1,180	1,472	2,115	2,657	4,827	5,901	6,336	8,850	9,267	10,503	11,293	9.5%		
TOTAL			31,337	43,068	47,578	51,497	55,958	63,883	72,335	77,658	84,494	92,533	103,058	110,136	119,438	100.0%		

Source: Table G-I, KINSO 2021.

ENUMERATION AREAS (EAs)

EAs are developed and used specifically for the administration of the census and not based on recognised neighbourhoods, local communities or villages. They are the smallest level of census geography and are combined to build village and island level data. At a small scale, EAs are useful for understanding population related issues in a very small area. Across Kiribati, there were 517 EAs delineated for the 2020 census. Refer to the Annex for more information on Kiribati census geography.

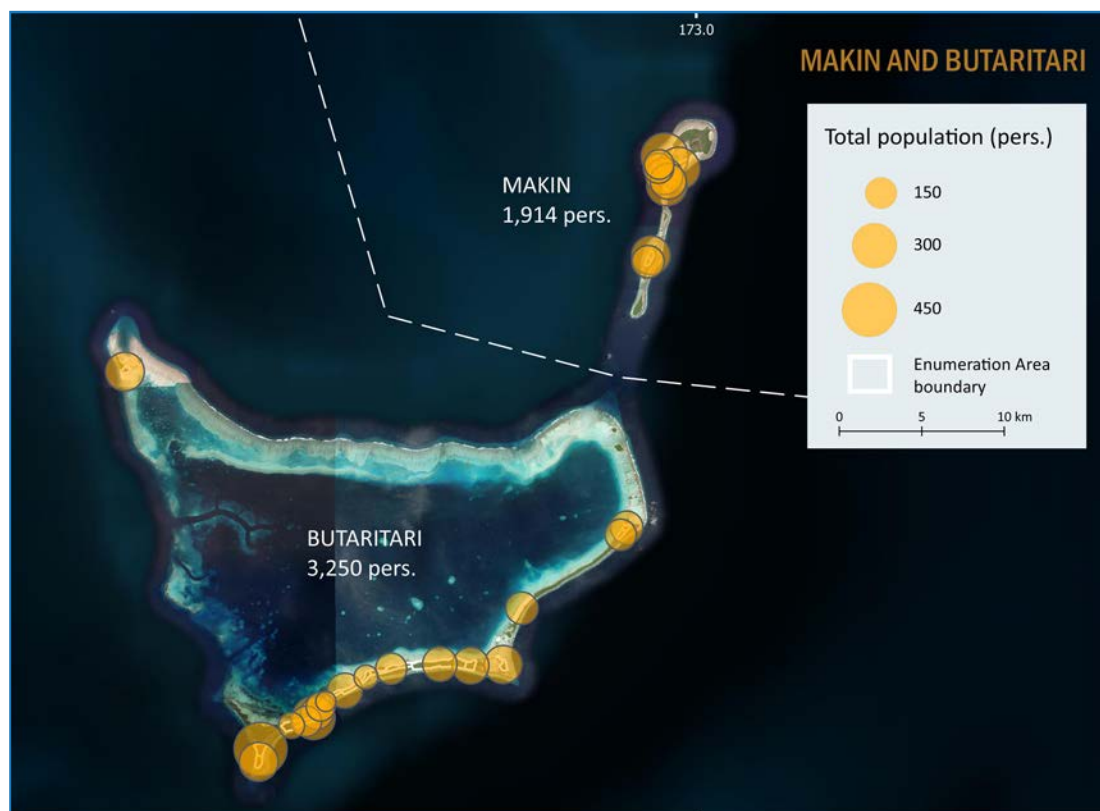
The map of **Betio**, South Tarawa (Map 6) clearly shows the current overcrowded population settlement on this urban islet with limited land between the ocean and atoll lagoon. Each circle represents the total population of one EA. There were 68 EAs in 2020 and the total population of Betio was 18,429 people which is 29% of the total population of South Tarawa. The EAs here vary between 150 to 450 people and have from 20 to 60 HHs each. The average household size (AHS) was 7 persons.

Map 6: Total population by enumeration areas (Betio), South Tarawa



In contrast, Map 7 shows the EA population distribution for the northern most rural islands of **Makin** and **Butaritari**. In 2020, Makin had 9 EAs and a total population of 1,914. The EAs ranged from 130 to 330 people with between 20 to 70 HHs and an AHS of 5 persons. Butaritari had 18 EAs with a total population of 3,250. The EAs ranged from 60 to 420 people with between 15 to 80 HHs and an AHS of 5 persons.

Map 7: Total population enumeration areas (Makin and Butaritari islands)



3. AVERAGE HOUSEHOLD SIZE

Households and families are the basic units in which most people live. Trends in the number, type, and composition of HHs are important to a range of government policy makers and planners, Island Councils, NGOs and researchers. Knowledge about HH characteristics is important for development of appropriate and targeted policies and plans in many sectors. For example, to respond to changing patterns of living arrangements; family formation, housing types and tenure as well as requirements for family support services. Data on HH sizes are needed to assess related requirements for health and education services, land allocation, energy and water supply, waste disposal and sewerage connections, communications and general infrastructure.

The size and composition of a HH is very often dependent on socioeconomic and cultural factors. Like many other Pacific countries, in Kiribati, family structure and size is central to the way of life with close knit nuclear and extended family HHs. Map 8 and Table 4 provide information on the AHS in Kiribati. At the island level, South Tarawa recorded the highest AHS of 6.5 with Kiritimati at 5.9. At the village level, the top 10 highest AHS are all located within South Tarawa as shown in Map 9, with Nanikai and Bairiki both recording an average greater than 7 persons. These are average figures which means that the maximum HH size in some locations will be much higher.

At different scales of census geography, these data can provide valuable insights into a range of issues. In some crowded villages with very high population densities, links can be made to social problems as well as environmental public health issues leading to outbreaks of communicable diseases (Miedema et al 2019; ADB 2013; MHMS 2015; Zendejas-Heredia et al 2021).

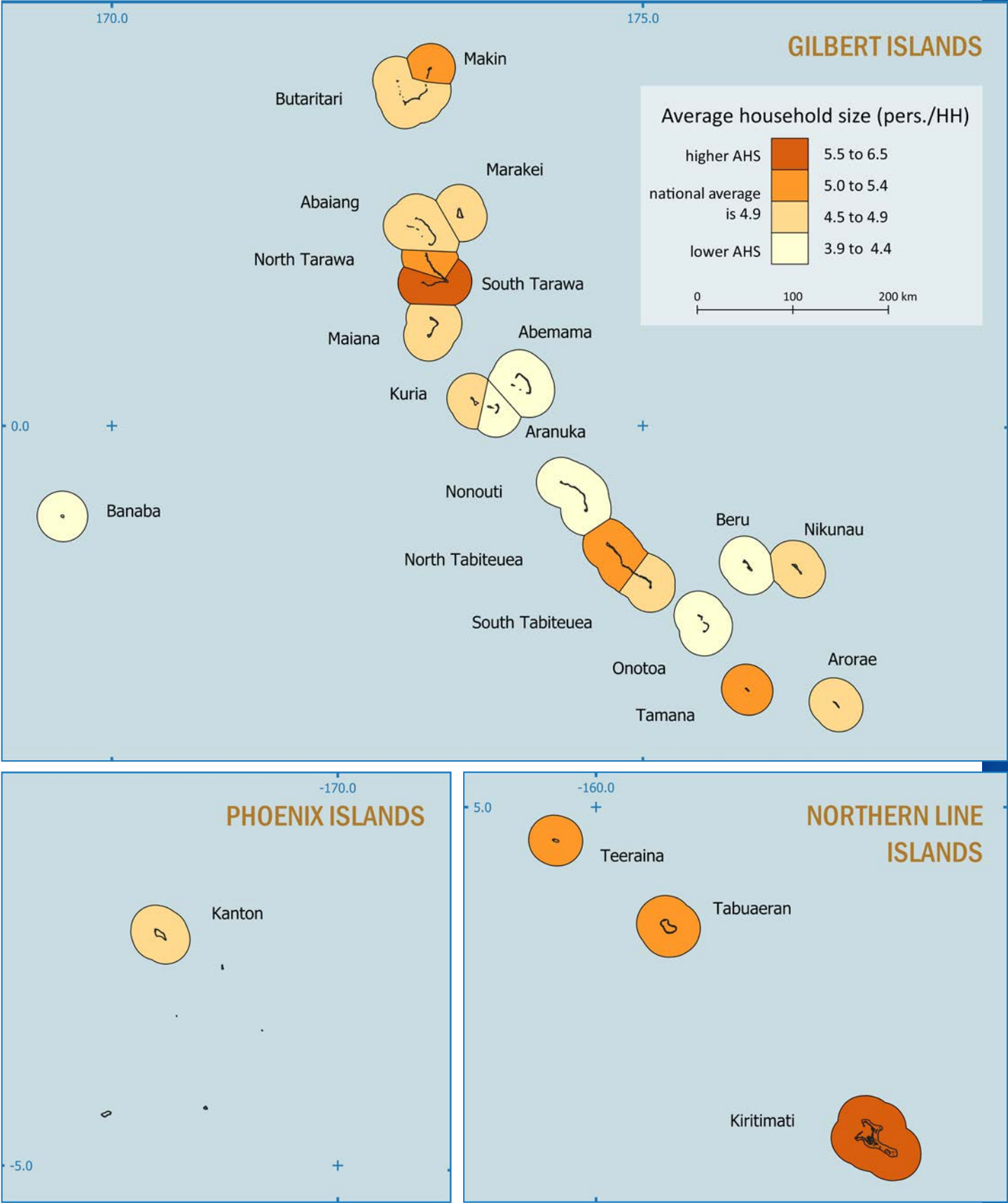
Table 4: Average household size by island

ISLAND	TOTAL POP.*	PRIVATE HHS	AVERAGE HH SIZE
South Tarawa	61,604	9,444	6.5
Kiritimati	7,132	1,208	5.9
North Tabiteuea	3,848	753	5.1
Makin	1,898	371	5.1
North Tarawa	6,622	1,310	5.1
Tamana	961	192	5.0
Teeraina	1,553	312	5.0
Tabuaeran	1,990	398	5.0
South Tabiteuea	1,356	279	4.9
Butaritari	3,028	618	4.9
Maiana	2,198	449	4.9
Marakei	2,733	575	4.8
Kuria	1,178	250	4.7
Arorae	994	210	4.7
Abaiang	5,041	1,065	4.7
Nikunau	1,936	423	4.6
Kanton	41	9	4.6
Aranuka	1,137	259	4.4
Nonouti	2,682	611	4.4
Abemama	2,876	674	4.3
Onotoa	1,328	326	4.1
Banaba	333	85	3.9
Beru	2,080	533	3.9
Total	114,549	20,354	4.8

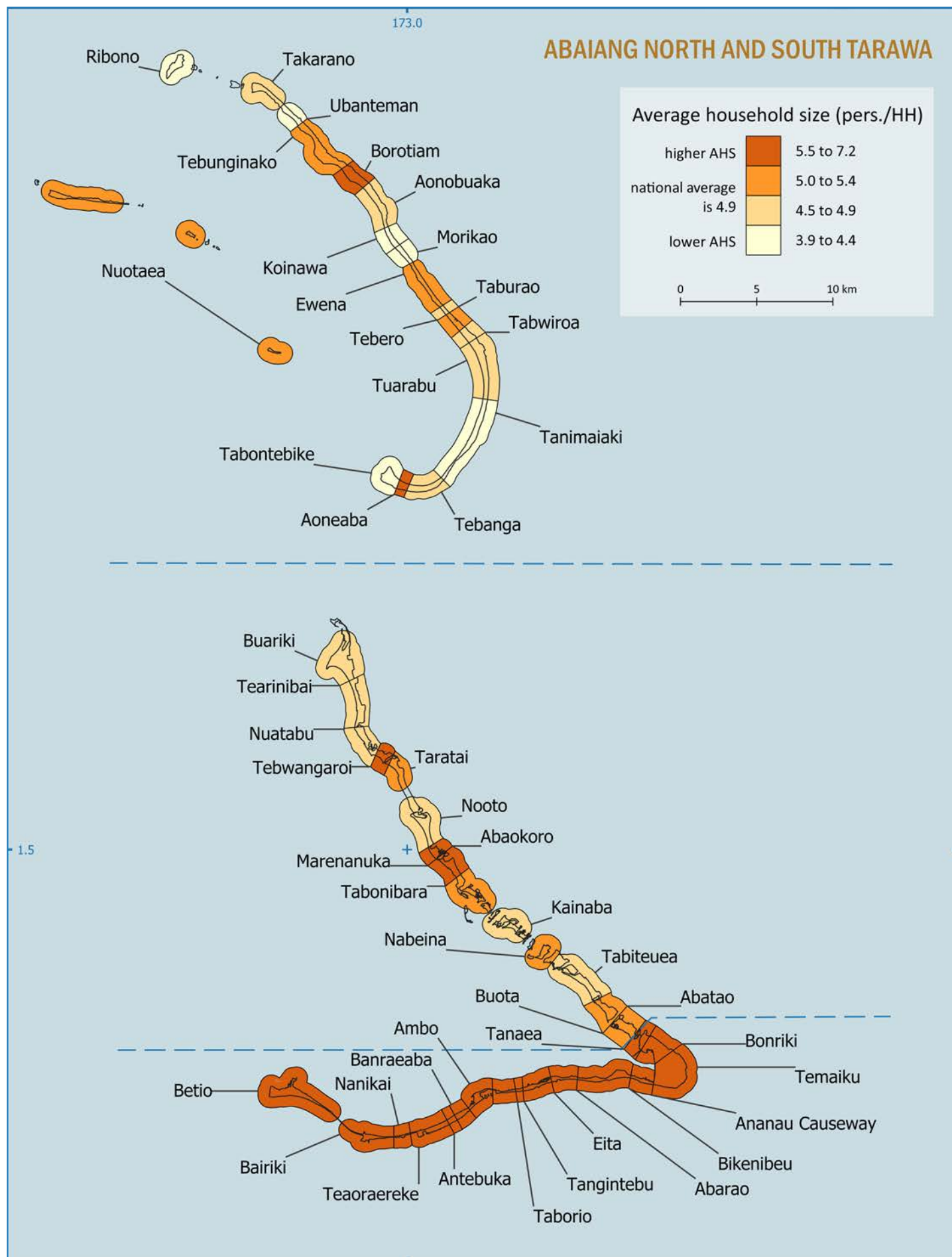
* Population recorded living in private HHS.



Map 8: Average household size by island



Map 9: Average household size by village (Abaiang, North and South Tarawa)



4. POPULATION DENSITY

Despite having a relatively small total population, Kiribati is similar to other atoll-based countries in the Pacific region and elsewhere with internal migration patterns and major services focussed on one main urban settlement. With more than half of the total population, South Tarawa is recognised as having very high levels of population density and that situation is likely to continue in the short to medium term (UN-Habitat 2015a).

The census derived total land area is 730 sq km (KINSO 2012). With 63,072 people, South Tarawa recorded a density of 3,942 people per sq km in 2020 as shown in Table 5 and Map 10. At smaller scales of geography, the situation is stark for some communities on this island. Two villages, Betio islet (total population 18,429, 29% of the total South Tarawa population) and Nanikai (total population 1,256) recorded densities greater than 10,000 people per sq km) with another 11 villages on South Tarawa recording more than 5,000 persons per sq km as shown in Map 10. Some small rural islands can also experience population density issues relative to their size.

The direct and indirect impacts of high population densities on individuals, families and local communities can be quite dramatic. The overcrowding, informal settlements, lack of personal privacy combined with limited infrastructure and employment opportunities as well as waste management challenges are facilitating an environment conducive to increasing social problems as well as the spread of infectious and communicable diseases (ADB 2013; KINSO 2019; GoK 2021; Miedema et al 2019; Tabunga et al 2014; MHMS 2015; IHME 2022; UNESCAP 2021; Zendejas-Heredi-aet al 2021).

Sustainable development and expansion options are currently limited on South Tarawa as the islets and villages are confined between the ocean and atoll lagoon. Land reclamation is being considered along with major development of Kiritimati Is. (GoK 2018, 2021; MLPID 2016).

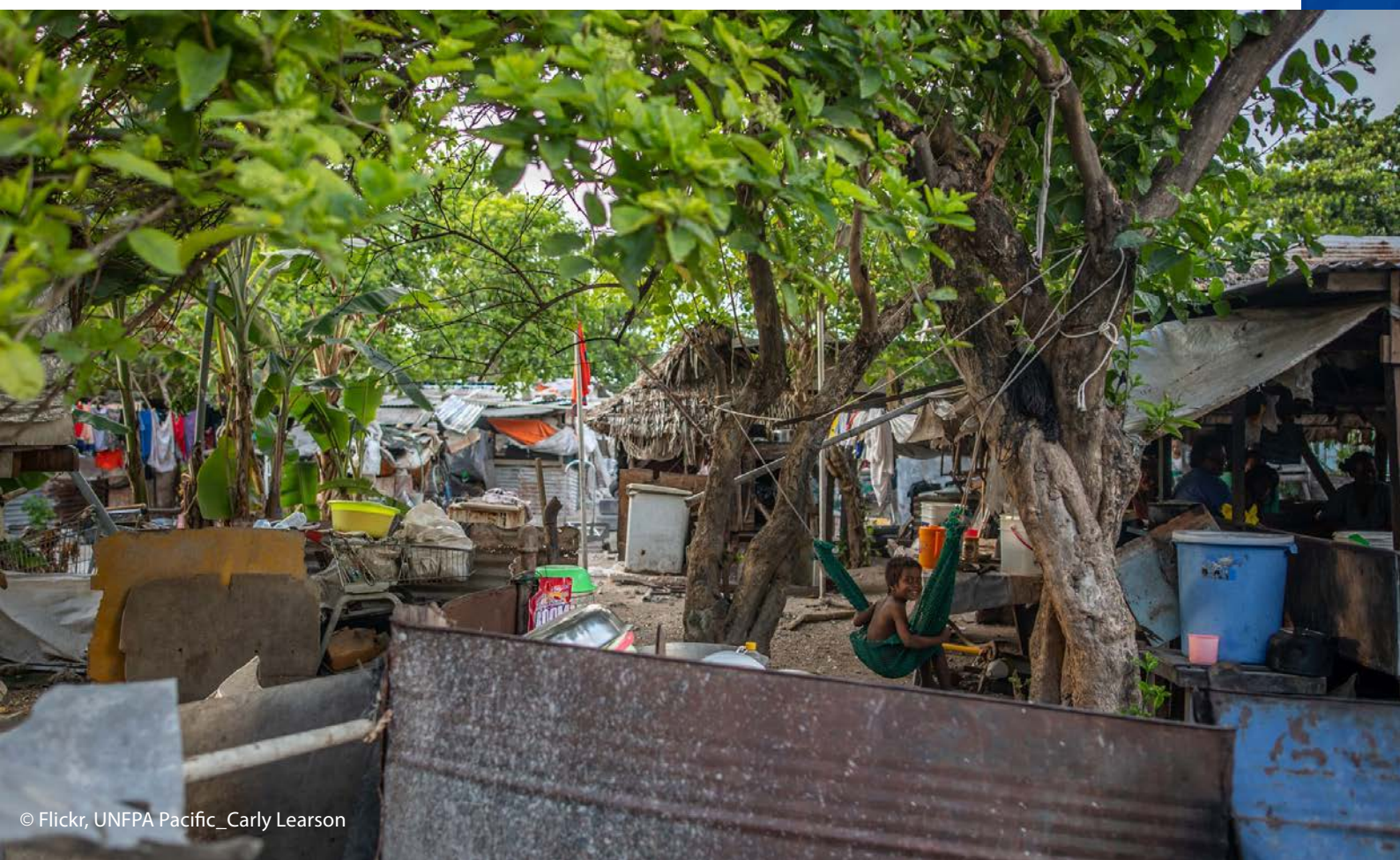
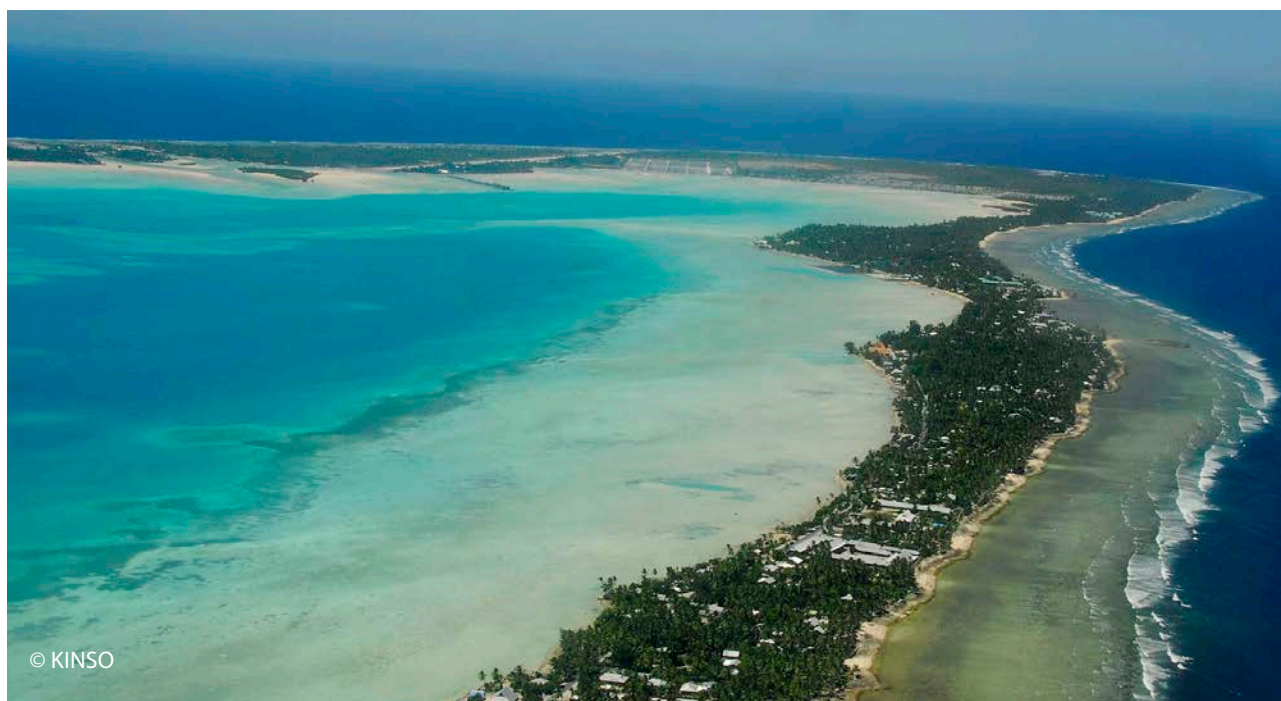


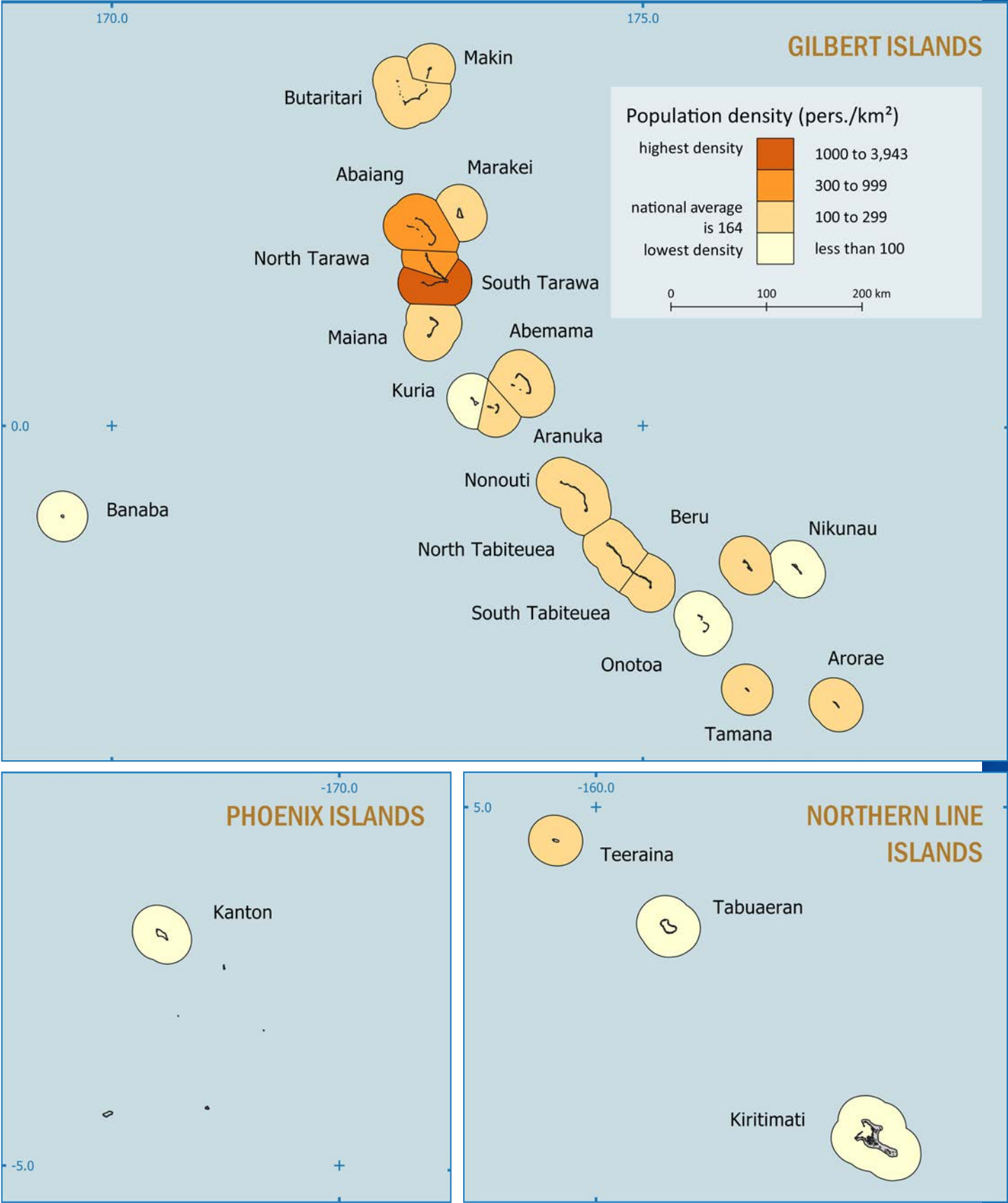
Table 5: Population density by island

DIVISION	ISLAND	POP.	LAND AREA SQ KM*	DENSITY: PERS./SQ KM
Northern	Abaiang	5,815	18	323
	Butaritari	3,250	14	232
	Makin	1,914	8	239
	Marakei	2,738	14	196
	North Tarawa	7,018	15	468
South Tarawa	South Tarawa	63,072	16	3,942
Central	Abemama	3,255	27	121
	Aranuka	1,221	12	102
	Banaba	333	6	56
	Kuria	1,190	16	74
	Maiana	2,345	17	138
Southern	Arorae	994	10	99
	Beru	2,214	18	123
	Nikunau	2,055	19	108
	Nonouti	2,749	20	137
	North Tabiteuea	4,181	26	161
	Onotoa	1,417	16	89
	South Tabiteuea	1,356	12	113
	Tamana	1,028	5	206
Line & Phoenix	Kanton	41	9	5
	Kiritimati	7,369	388	19
	Tabuaeran	1,990	34	59
	Teraina	1,893	10	189
	Total	119,438	730	164

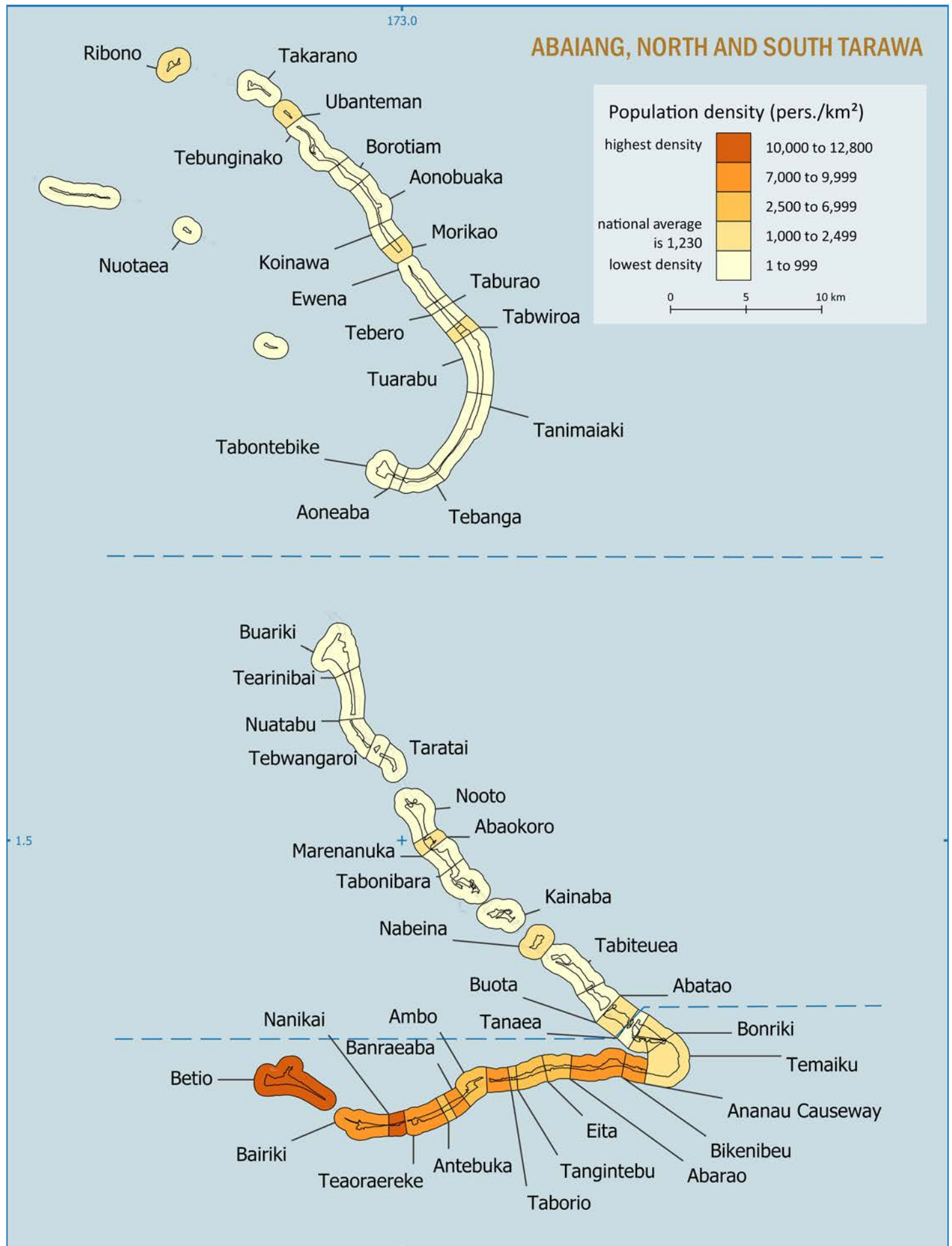
* Census derived land area (KINSO 2012).



Map 10: Population density by island



Map 11: Population density, by village (Abaiang, North and South Tarawa)



5. INTERNAL MIGRATION AND URBANISATION

This increasing urbanisation in Kiribati is consistent with many other Pacific countries (ADB 2016) as a result of internal migration patterns from rural islands to the “primary hub of administrative and economic activity” (UN-Habitat 2015a p14). Map 12 shows that Kiribati continues to experience a high level of population increase in the urban islands of South Tarawa and Kiritimati Is. (GoK 2021). This reinforces the increasing urbanisation (particularly on South Tarawa) which recorded 8,804 more people who were living on another island or overseas in 2015 (Table 6). In 2020, South Tarawa had 53% of the total national population with the trend likely to continue (Figure 5). Kiritimati Is. recorded an increase of 1,321 people over the same 5-year period as shown in Table 6. It is now designated as a key focus of future population growth and economic development (GoK 2018, 2021; MLPID 2016).

Map 13 and Figure 6 highlights the flow of people to South Tarawa over the intercensal period 2015–20. At the current levels, continued in-migration of people into South Tarawa, together with natural population growth will add more social, health, education, housing and environmental pressures evident in those villages. Land scarcity is a major obstacle to this continued movement of people and associated development of South Tarawa. This is recognised by the Government who are working with Development Partners to address the issues and provide the enabling environments for public and private sectors to respond accordingly (GoK 2021; MELAD 2022). Land reclamation and raising of 3.4 sq km in the Temaiku area of South Tarawa is one solution currently being discussed to house up to 30,000 people (Jacobs 2022) in addition to a focus on the future urban development and growth of Kiritimati Is. (GoK 2018, 2021; MLPID 2016).

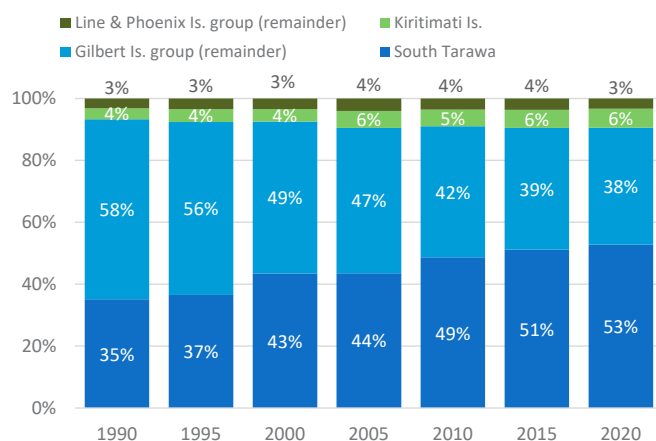


Figure 5: Urbanisation, 1990–2020 (Proportion of total population)

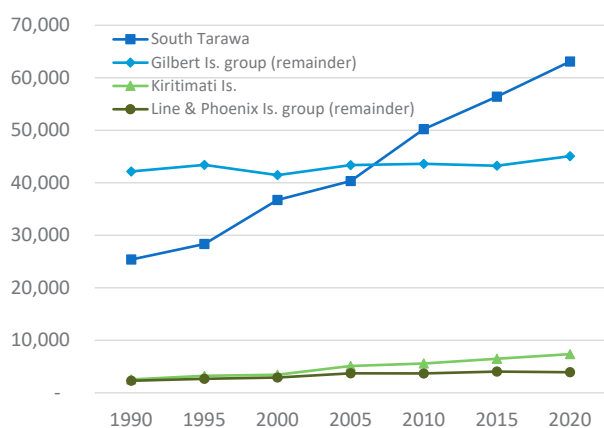
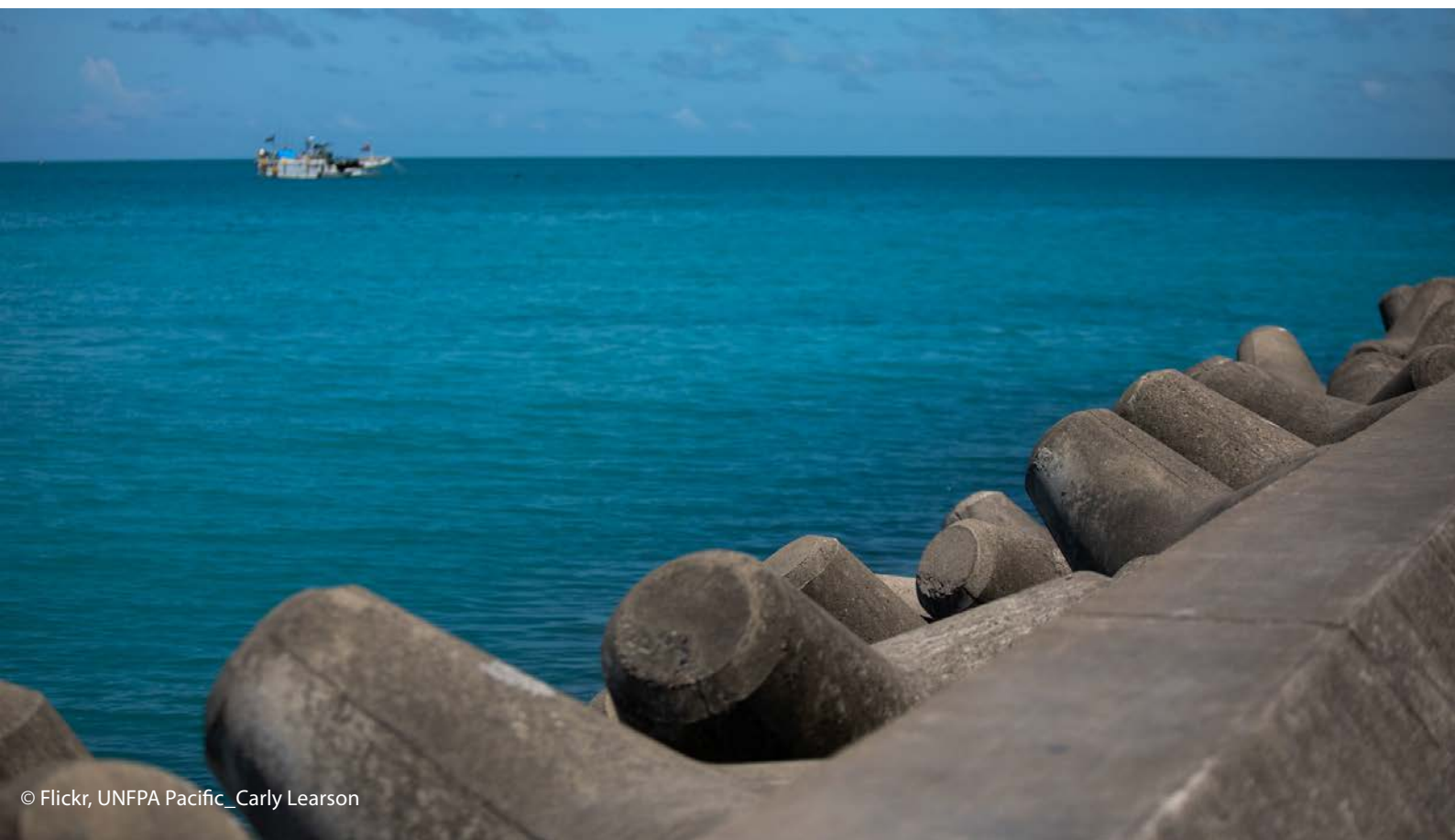


Figure 6: Urbanisation trend, 1990–2020

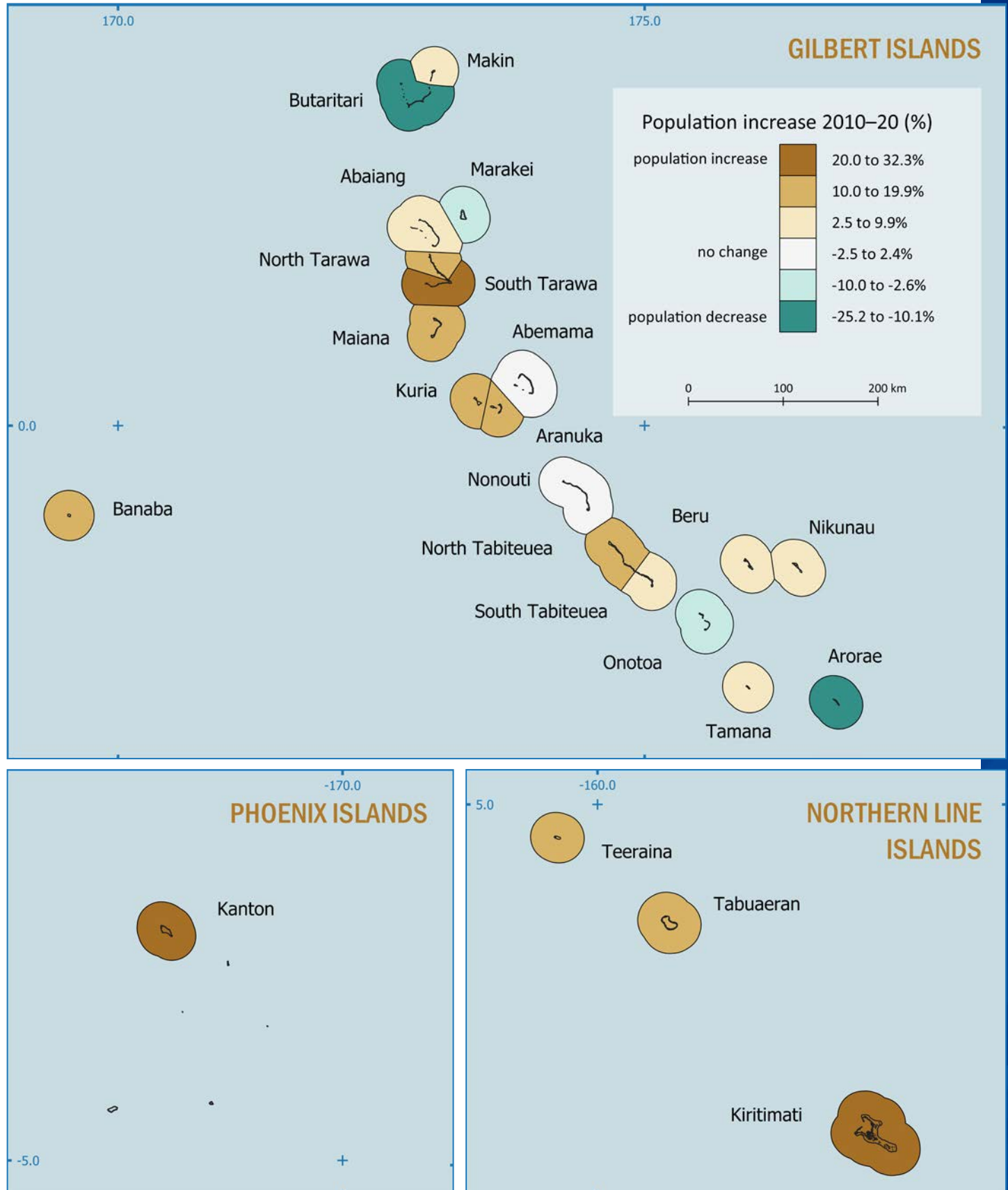
Table 6: Internal migration to Kiritimati and South Tarawa, 2015–20

FROM: *	Kiritimati	% of total:	South Tarawa	% of total:
Abaiang	16	1.2%	886	11.0%
Abemama	38	2.9%	529	6.5%
Aranuka	2	0.2%	171	2.1%
Arorae	12	0.9%	143	1.8%
Banaba	-	0.0%	76	0.9%
Beru	8	0.6%	270	3.3%
Butaritari	6	0.5%	584	7.2%
Kanton	6	0.5%	14	0.2%
Kiritimati			582	7.2%
Kuria	5	0.4%	156	1.9%
Maiana	14	1.1%	318	3.9%
Makin	1	0.1%	250	3.1%
Marakei	13	1.0%	387	4.8%
Nikunau	7	0.5%	198	2.4%
Nonouti	5	0.4%	519	6.4%
North Tabiteuea	6	0.5%	423	5.2%
North Tarawa	55	4.2%	657	8.1%
Onotoa	3	0.2%	200	2.5%
South Tabiteuea	26	2.0%	234	2.9%
South Tarawa	688	52.1%		
Tabuaeran	179	13.6%	228	2.8%
Tamana	3	0.2%	110	1.4%
Teraina	136	10.3%	104	1.3%
Overseas	92	7.0%	1,045	12.9%
TOTAL:	1,321	100.0%	8,084	100.0%

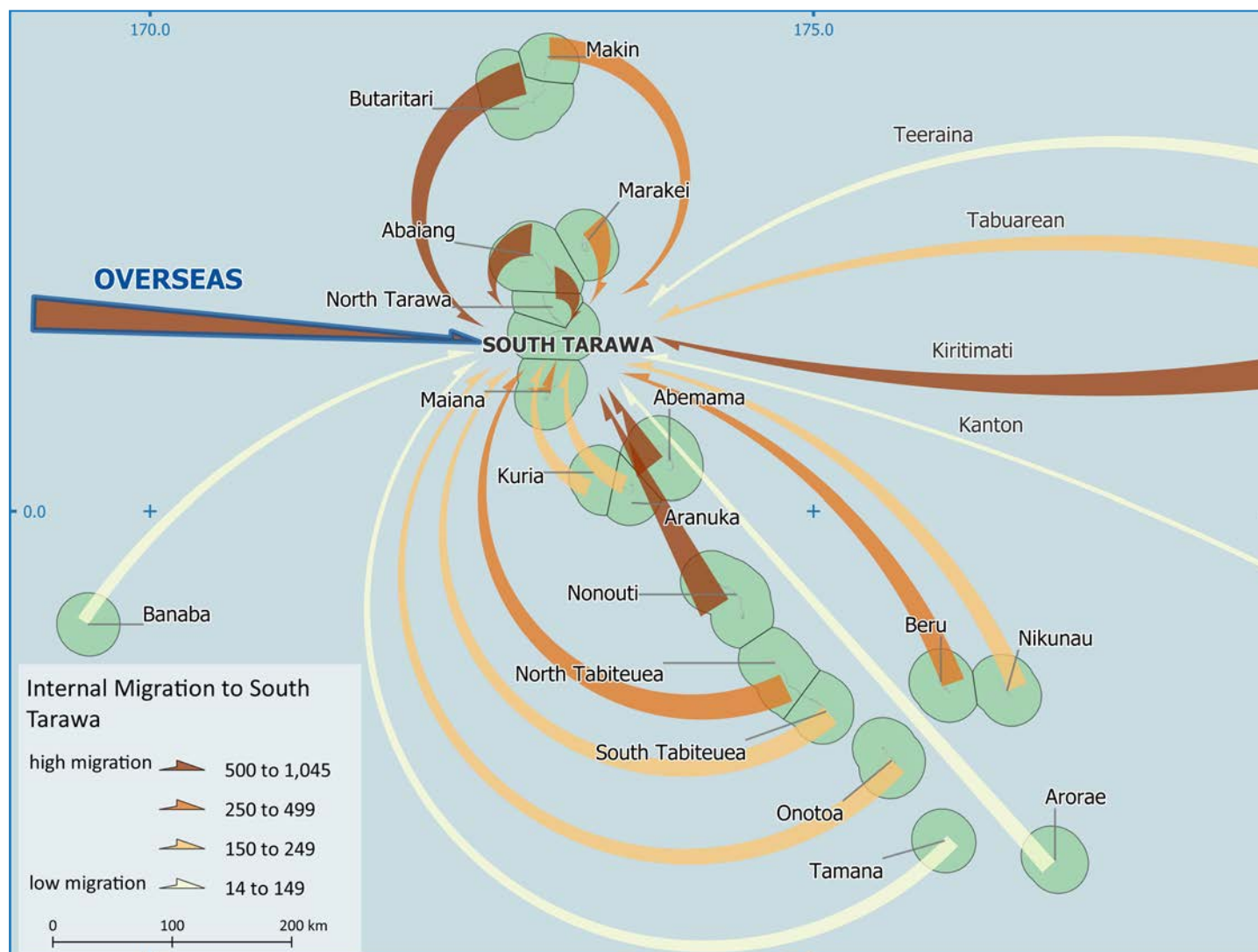
* Usual place of residence in 2015.



Map 12: Population increase by island, 2010–20



Map 13: Internal migration to South Tarawa, 2015–20



6. DEPENDENCY RATIOS

In any population, the total dependency ratio is a useful indicator to understand and is reflected in the population structure (Figure 2). It is the ratio of people in the younger (0–14 years) and older (65+ years) “dependent ages” to those in the “economically productive ages” (15–64 years) who are considered to support those younger and older members of the society (PRB 2011).

As 2020, Kiribati has a large number of children aged 0–14 years (36% of the total population) and a relatively small number of elderly aged 65+ years (4% of total population). The dependency ratio for the nation is 66 (i.e. 66 dependents for every 100 potential workers aged 15–64 years) while the variation between islands ranges from 60 to a high of 92 as shown in Map 14.

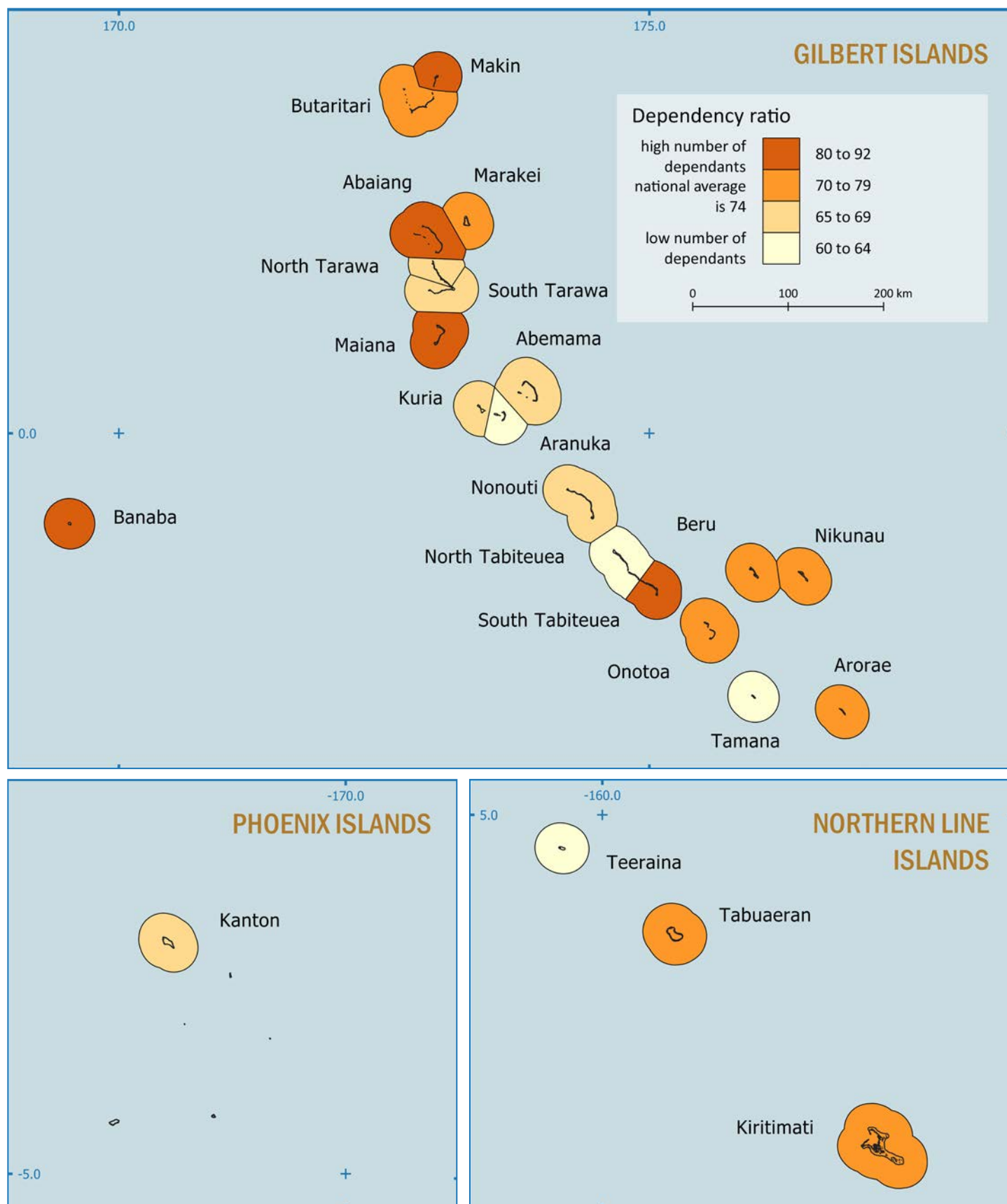
In Kiribati, with a relatively small number of older people, the Youth dependency ratio provides more detail on the general economic burden related to caring and supporting children under 15 years of age by the pool of potential workers. At a very basic level, this ratio can be used to better understand the role of women as primary carers in a community. As shown in Table 7, there is some variation at the island level across Kiribati reflecting the relatively large numbers of children in each location. Be aware that small population numbers for some islands and villages (Map 15) can distort the interpretation of this indicator.

Table 7: Youth dependency ratio by island

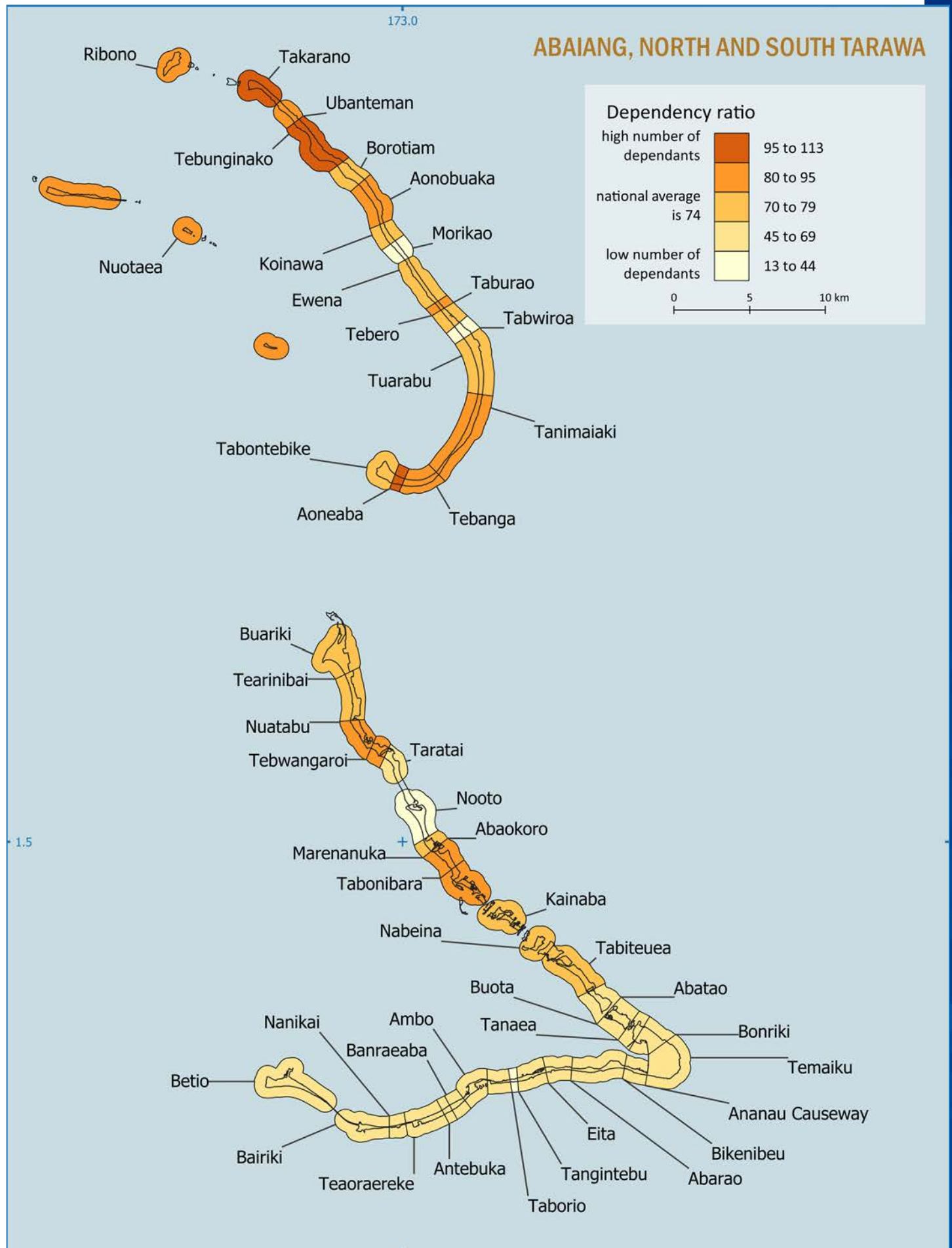
LABEL	YOUTH DEPENDANCY RATIO	TOTAL POPULATION 0–14 YEARS	FEMALE POPULATION 15–64 YEARS	TOTAL POPULATION 15–64 YEARS
Banaba	86.7	150	88	173
Makin	82.9	827	495	997
Marakei	75.5	1,125	750	1,491
Butaritari	74.6	1,328	889	1,779
Tabuaeran	73.9	818	520	1,107
Teeraina	73.8	784	504	1,062
Kuria	72.7	479	325	659
Kanton	70.8	17	11	24
Nikunau	69.1	802	548	1,160
Aranuka	68.6	475	336	692
South Tabiteuea	68.5	523	370	763
North Tabiteuea	66.9	1,616	1,235	2,417
Kiritimati	64.4	2,802	2,050	4,348
Abaiang	63.4	2,172	1,696	3,424
Nonouti	63.1	1,010	780	1,601
Maiana	62.0	860	675	1,386
North Tarawa	61.1	2,573	2,193	4,214
Onotoa	56.5	480	414	849
South Tarawa	55.3	21,645	20,629	39,162
Abemama	53.5	1,084	1,033	2,027
Arorae	52.8	320	286	606
Tamana	52.3	322	319	616
Beru	51.3	708	667	1,380
Total	59.7	42,920	36,813	71,937



Map 14: Dependency ratio by island



Map 15: Dependency ratio by village (Abaiang, North and South Tarawa)



7. SEX RATIO

The sex composition of a population can be summarised by the sex ratio – **the ratio of males to females**. This ratio is usually expressed as the number of males for every 100 females. Sex ratios are determined by fertility, mortality and migration. At the national level, there were slightly more females than males recorded in the 2020 census with 50.7% of the total population. The sex ratio was 97 i.e. 97 males for every 100 females. Interesting patterns emerge when these data are viewed at sub-national level as shown in Table 8 and Maps 16 and 17.

Table 8: Sex ratio by island

DIVISION	ISLAND	TOTAL	MALE	FEMALE	SEX RATIO
Northern	Abaiang	5,815	2,972	2,843	105
	Butaritari	3,250	1,626	1,624	100
	Makin	1,914	968	946	102
	Marakei	2,738	1,350	1,388	97
	North Tarawa	7,018	3,443	3,575	96
South Tarawa	South Tarawa	63,072	30,281	32,791	92
Central	Abemama	3,255	1,614	1,641	98
	Aranuka	1,221	624	597	105
	Banaba	333	183	150	122
	Kuria	1,190	605	585	103
	Maiana	2,345	1,193	1,152	104
Southern	Arorae	994	512	482	106
	Beru	2,214	1,117	1,097	102
	Nikunau	2,055	1,089	966	113
	Nonouti	2,749	1,415	1,334	106
	North Tabiteuea	4,181	2,081	2,100	99
	Onotoa	1,417	732	685	107
	South Tabiteuea	1,356	674	682	99
	Tamana	1,028	514	514	100
Line & Phoenix	Kanton	41	20	21	95
	Kiritimati	7,369	3,837	3,532	109
	Tabuaeran	1,990	1,060	930	114
	Teraina	1,893	994	899	111
	Total	119,438	58,904	60,534	97
	Urban*	70,441	34,118	36,323	94
	Rural	48,997	24,786	24,211	102

* South Tarawa and Kiritimati Is.

Source: Table G-2, KINSO 2021.

Across the Gilbert Is. group, most of the rural islands have slightly more men than women. South Tarawa is an exception with a sex ratio of 92 and likely related to the education and employment opportunities in the urban setting. Be aware that small population numbers disaggregated by sex can greatly influence the sex ratio as shown for Kanton and Banaba Is. as well as many of the rural villages across Kiribati.

WHY DOES THE SEX RATIO MATTER?

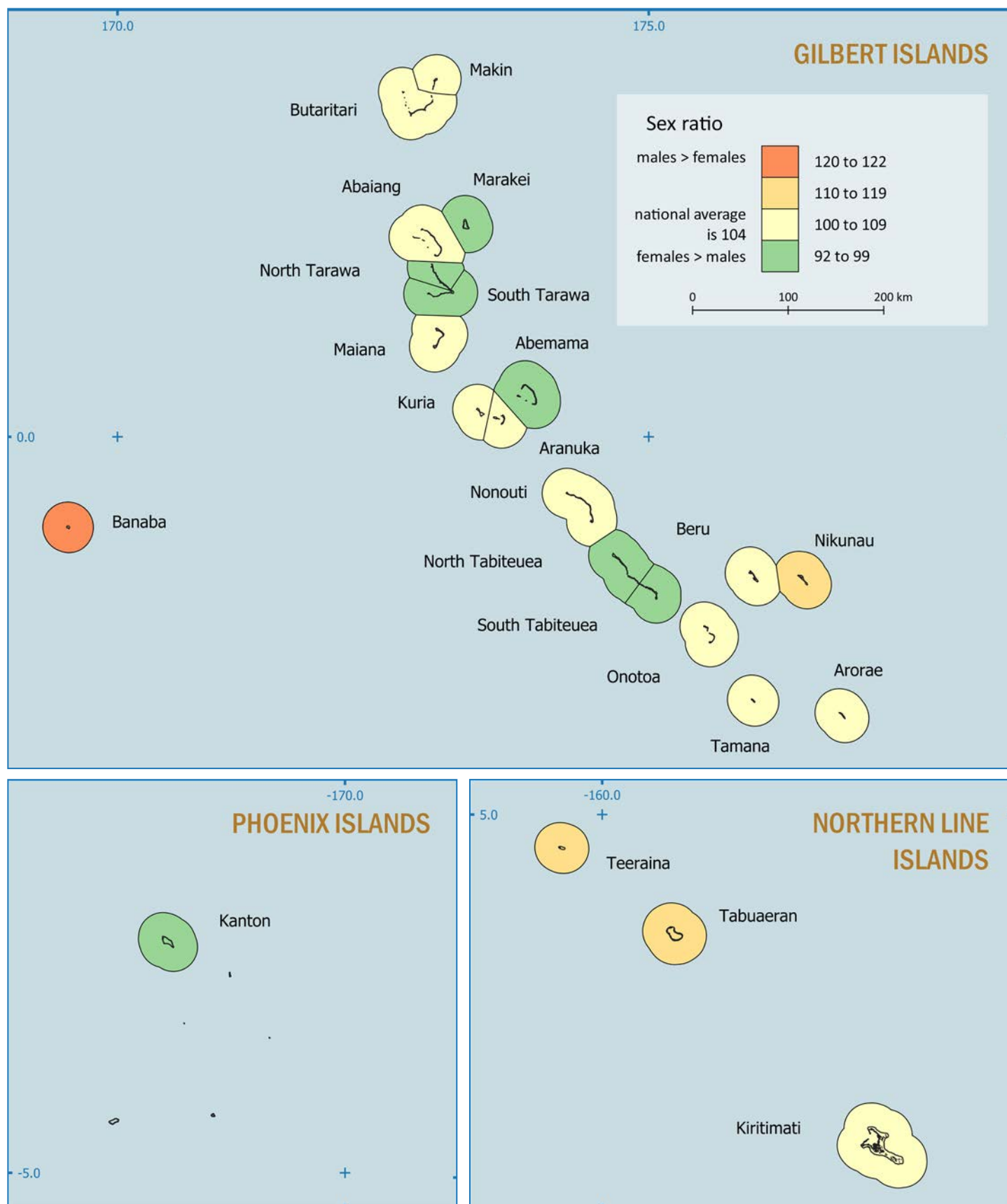
An unbalanced sex ratio shown in some areas can be attributed to sex-differential migration, especially labour and education related migration to urban areas or to areas where there are

economic activities and employment opportunities – in Kiribati, this includes the people who work in the international shipping industry. The majority of these labour migrants have traditionally been men who are not usually accompanied by their families. Mortality also influences the sex ratio because males have higher death rates than females at nearly every age, beginning at the neonatal stage through to old age.

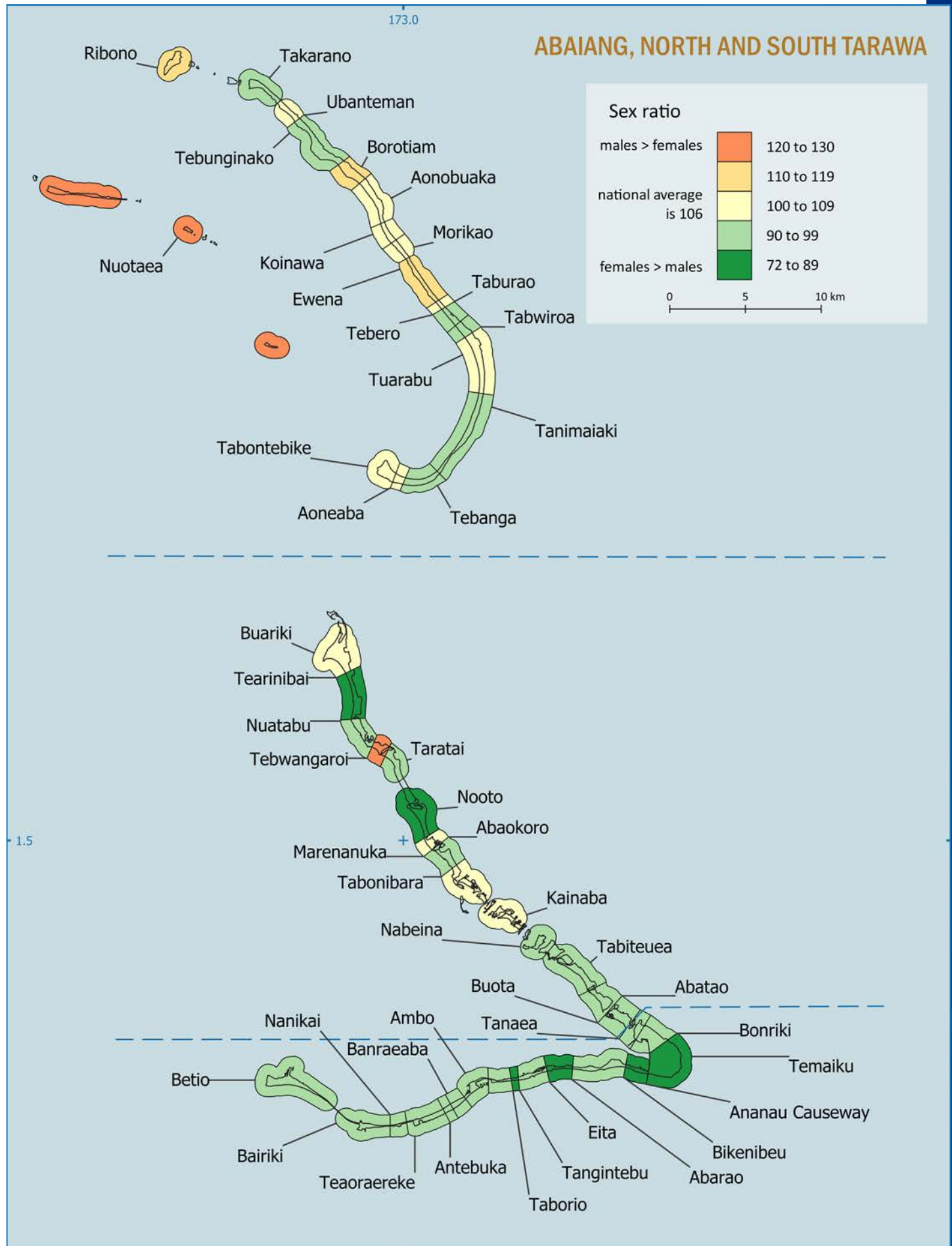
Population policy analysts often cite the fact that an unbalanced sex ratio affects the availability of marriage partners. An unbalanced sex ratio in the young adult years because of migration or changes in fertility, means that there may not be enough men or women for everyone to find a spouse and start a family. This can affect the social and economic structure of a population. Marriage rates, childbearing practices, family stability, crime rates, and even the comparative status and power of women and men can be influenced by the sex ratio.



Map 16: Sex ratio by island



Map 17: Sex ratio by village (Abaiang, North and South Tarawa)



8. RELIGION

Religion and faith are central to I-Kiribati life and culture. As in other Pacific Island countries, pioneering Christian missionaries laid foundations for the communities where they lived and worked (Fischer 2017). The 2020 census recorded more than 99% of the total population as having a religious affiliation across a number of organisations as shown in Map 18, Table 9 and Figures 7 and 8. Nationally, the Catholic Church dominates with 59% of the population following this faith. The Kiribati Uniting Church (KUC), formally established in 2014 following integration with the Kiribati Protestant Church (KPC) and some smaller related denominations (Global Ministries 2022), was the next largest with affiliation at 29%.

Over the 30-year period from 1990–2020, some changes are evident across the population with an 6% increase in affiliation with the Catholic Church. The KUC/KPC has seen a decline of 10% as shown in Table 9.

Religion is active in urban and rural island communities providing pastoral care, youth faith programmes, women's activities, support for overseas workers, chaplaincy work as well as vocational training for young men and women. The KUC also runs a Theological College where pastors of the church are trained (KUC 2022). It is becoming more common for church groups to build *mwaneaba*, a traditional style meeting house, particularly in the larger villages' settlements and especially in South Tarawa (Wincup 2010). While lacking the deep cultural significance and use, the church groups utilise these large space buildings for a range of community activities.

The role of church organisations in the education sector is evident in their role in Early Childhood Education & Care (ECCE) Centres and Secondary level schools. Data from the Kiribati Ministry of Education (MoE) for 2020 report that 130 ECCE Centres (43% of total ECCE) are administered by Church groups. At the Secondary level, all 11 Combined (Junior & Secondary) High Schools across Kiribati are run by the Catholic Church (n = 5), Kiribati Uniting Church (4), Seventh Day Adventists (1) and the Church of Latter Day Saints (1). At the Senior High School level, the Catholic Church (4) and KUC (2) contribute an important part of the education sector and the community (MoE 2022).

Table 9: Religious affiliation by denomination 1990–2020

RELIGION AFFILIATION	TOTAL	2020	1990
Catholic	70,333	58.9%	53.4%
Kiribati Uniting Church (KUC)	25,322	21.2%	-
Kiribati Protestant Church (KPC)	10,016	8.4%	39.2%
The Church of LDS	6,720	5.6%	1.6%
Seventh-day Adventist	2,542	2.1%	1.9%
Bahai	2,454	2.1%	2.4%
Assemblies of God	509	0.4%	-
Jehovah's Witness	449	0.4%	-
All Nations	244	0.2%	-
United Pentecostal Church International	206	0.2%	-
Muslim	102	0.1%	-
Te Ran	89	0.1%	-
Church of God	68	0.1%	0.7%
Baptist Church	65	0.1%	-
Other religion	137	0.1%	0.7%
No religion	120	0.1%	0.1%
Not stated	62	0.1%	-
Total	119,438	100.0%	100.0%



© Vladimir Lysenko

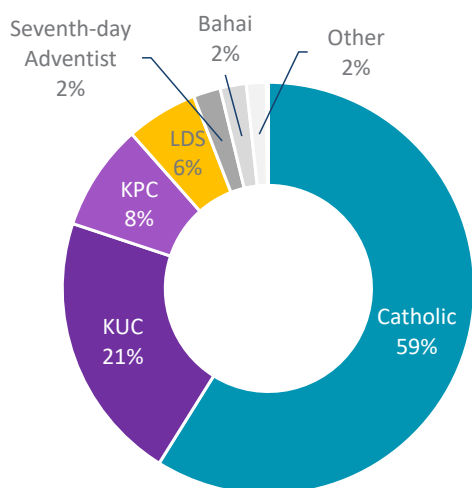


Figure 7: Religious affiliation by denomination

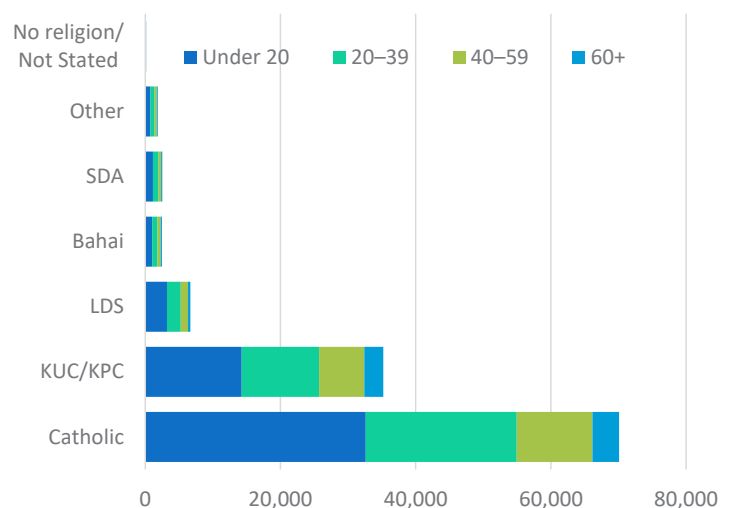
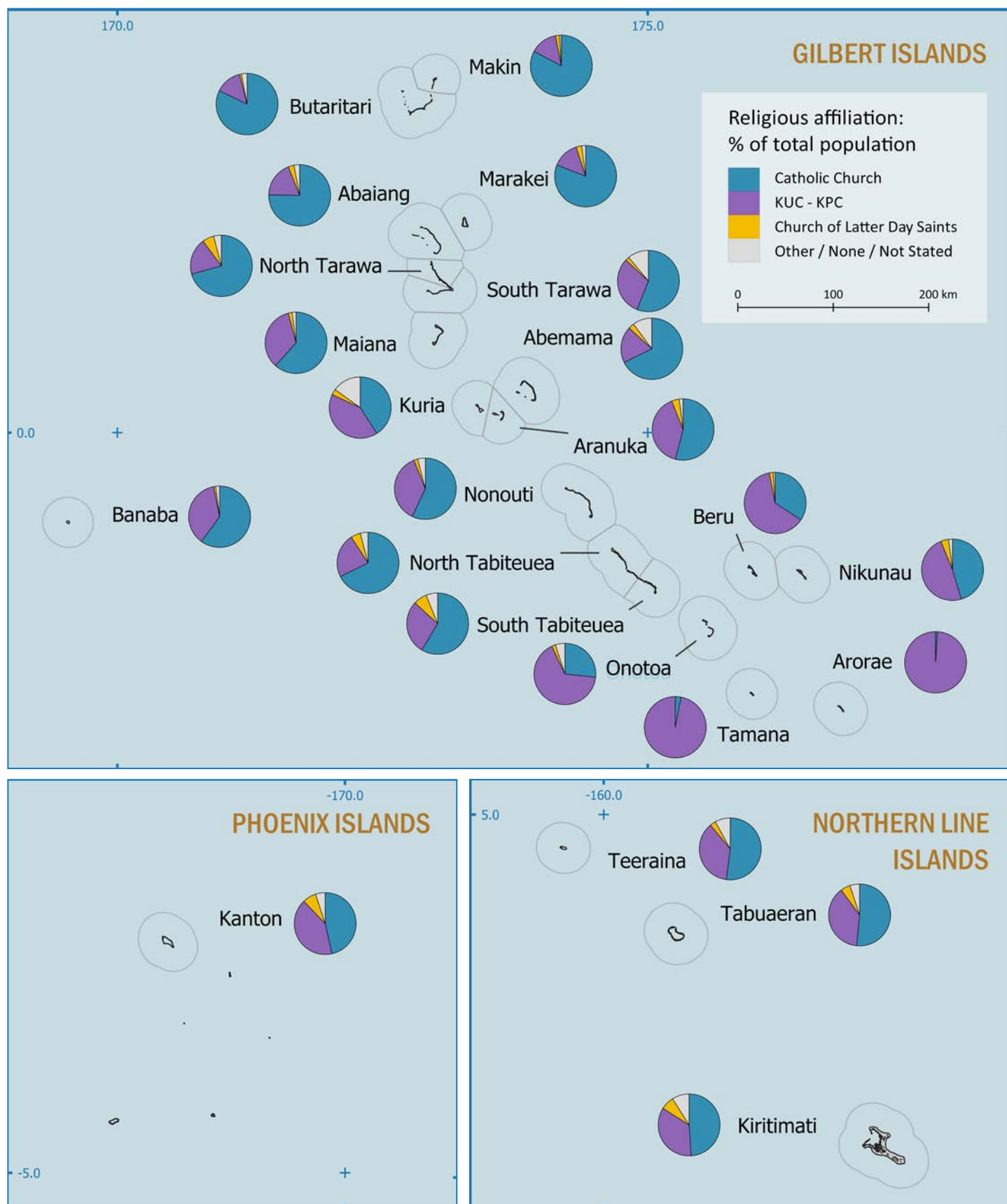


Figure 8: Religious affiliation by age group

Map 18: Religious affiliation by island



9. EDUCATION

A highly educated and skilled population with access to decent employment opportunities is central to developing the human capital of Kiribati (GoK 2018). Improved education participation and outcomes will promote the role of girls and women in the society and facilitate the overall social and sustainable economic development of the nation. Free and compulsory education is from Year 1 Primary to Year 9 Junior Secondary (i.e ages 6–14 years). Technical and Vocation Education and Training (TVET) and Tertiary (USP) facilities on South Tarawa provide local opportunities for post-secondary education. A number of people relocate overseas to undertake tertiary studies.

In 2020, Kiribati had 300 ECCE Centres and 140 schools (97 Primary, 24 Junior Secondary, 11 Combined Junior/Senior Secondary and 8 Senior Secondary) providing education services to almost 40,000 enrolled students (MoE 2022). ECCE, Primary and Junior secondary is available on all islands except Kanton with just 1 Primary school. Senior Secondary education is only available on a few larger islands with many students moving to boarding facilities to attend this level of schooling. Some families will support their children to relocate overseas to complete secondary studies. Gender parity exists at the ECCE, Primary and Junior Secondary levels. At Senior Secondary level, more girls are enrolled and complete this level of education (56%, MoE 2022).

Gross Attendance Ratios (GAR) for Primary level by islands is shown on Map 19. These ratios are based on the number of students attending Primary school Years 1 to 6 irrespective of age (UIS 2022) and provides a measure of the attendance of students at specific levels of education. It is not based on official school enrolment. In Kiribati, there are no significant issues with attendance at Primary school level with a national average of 102% indicating that all students are being accommodated by the education system. However, the national GARs for Senior Secondary level indicates declining attendance as students do not progress through to higher education levels.

Table 10: Key education indicators

SDG INDICATOR (% OF TOTAL POPULATION)	MALE	FEMALE	TOTAL
4.1.1 Minimum proficiency level (all education levels):			
Reading	30.5	40.5	35.4
Mathematics	18.9	24.3	21.6
4.2.2 Participation rate in organised learning*, (all education levels)	95.6	100.0	97.7
4.5.1 Gender parity index for achievement:			
Literacy (Year 4)			126
Numeracy (Year 4)			107
Literacy (Year 6)			154
Numeracy (Year 6)			113

All data 2018 except * 2020.

Source: <https://pacificdata.org/dashboard/sdg-4-quality-education>.

LITERACY

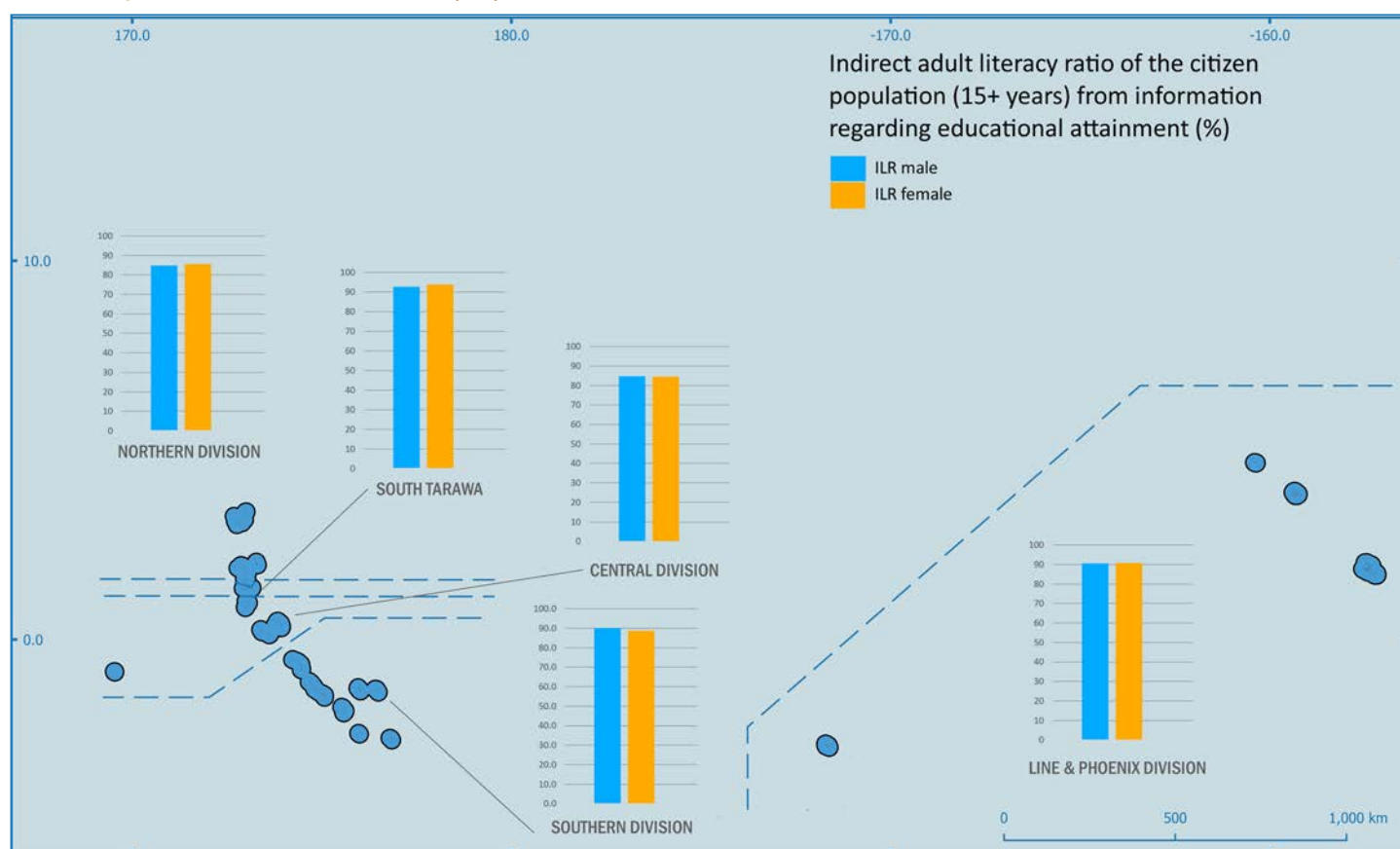
Census data collects information on self-assessed basic literacy skills (reading and writing in any language) for all people aged 12+ years as reported by the head of HH. This is not “functional literacy”, which is a measure based on formal literacy and numeracy proficiency tests - these data are presented in Table 10. As shown in Table 11, at the national level, 83% of people (39% males and 44% females) report “no difficulty” for both reading and writing skills. The urban areas are up to 10% higher than rural islands with females tending to report slightly better reading and writing skills than males.

Table 11: Literacy skills (reading and writing) by urban-rural and sex

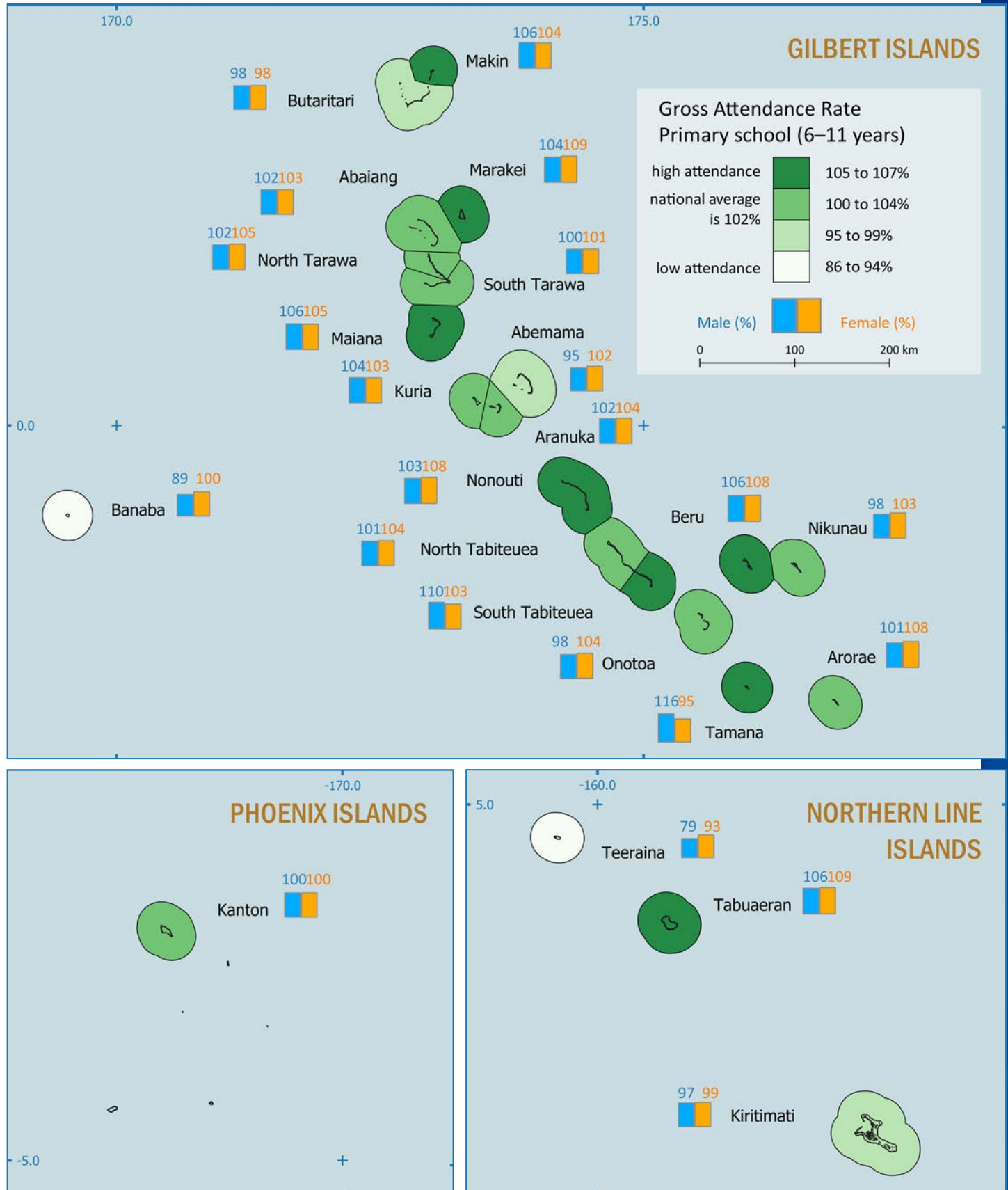
	Reading skills (any language)						Writing skills (any language)						Total pop. 12+ years
	Male			Female			Male			Female			
	No difficulty	Some/a lot of difficulty/or cannot at all		No difficulty	Some/a lot of difficulty/or cannot at all		No difficulty	Some/a lot of difficulty/or cannot at all		No difficulty	Some/a lot of difficulty/or cannot at all		
Urban	40%	<div></div>	7%	46%	<div></div>	7%	40%	<div></div>	7%	47%	<div></div>	6%	48,337
Rural	38%	<div></div>	12%	40%	<div></div>	11%	37%	<div></div>	12%	39%	<div></div>	11%	30,974
Total	39%	<div></div>	9%	44%	<div></div>	8%	39%	<div></div>	9%	44%	<div></div>	8%	79,311

Map 19 shows the gender disaggregation by Division for “indirect estimates of adult literacy” as determined from census educational attainment data. Nationally, the ratios are high at 90.6% with the urban areas higher at 93.4% and rural islands 88.6%. When Divisions are considered, lower ratios are calculated for Central (84.7% for males and 84.5% for females) and Northern (84.8 % males and 85.6% females).

Map 19: Indirect adult literacy by sex and Division



Map 20: Gross Attendance Rate (GAR) in Primary education by island



10. DISABILITY

The Government of Kiribati has made a number of significant steps in its commitment to all citizens. In 2013, it ratified the International Convention on the Rights of Persons with Disabilities (CRPD). In 2015, the Inclusive Education Policy was launched to increase and support the number of students with disabilities into mainstream schooling. Six inclusive schools were established in South Tarawa in 2016. The Disability Inclusive Unit within the Ministry of Women, Youth, Sport and Social Affairs (MWYSSA) was established in 2015 and was the first government agency to focus specifically on disability affairs in Kiribati. And, in 2018, the Government released the Kiribati National Disability Policy (KNDP) and Action Plan 2018–21 (MWYSSA 2018).

The KNDP is a bold initiative to breakdown social and economic barriers and remove discrimination for all I-Kiribati with a variety of disability conditions. It includes a commitment to *“better resourcing for the Kiribati School and Centre for Children with Special Needs (KSCCSN) to meet the education needs of children who require a specialist teaching environment”* and furthermore provides a *“commitment to support our most vulnerable citizens to rise above the challenges of poverty and hardship (with) the introduction of a social protection payment”* (MWYSSA 2018 p4).

Data methodology related to the collection and reporting of persons with disabilities has progressed significantly over the past 10 years. The KINSO have adopted the international standard “Washington Group Short Set of Questions on Disability” (WGDS 2022) in its census and survey collections and reporting (KINSO et al 2017; KINSO 2021d). Under this guide, the focus is on identifying limitations in personal functioning and includes six “core functional domains”- seeing, hearing, walking, cognition/memory, self-care and communication. Census derived information on disability can be used by the government and other key stakeholders to inform policy and programme development in all sectors as well as monitor prevalence and trends for persons with disabilities over time.

Figure 9 shows the 2020 census summary of people aged 5+ years who reported with one or more domains of disability. It is generally acknowledged that within each domain, those who have “a lot of difficulty” or “cannot do at all” are the people most likely to be restricted from participating in many everyday activities. Considering just these two domains, the data indicate that walking was the most reported issue for 2,878 people (58% females) followed by sight (1,365 people, 55% females) and hearing (1,232 people, 54% female).

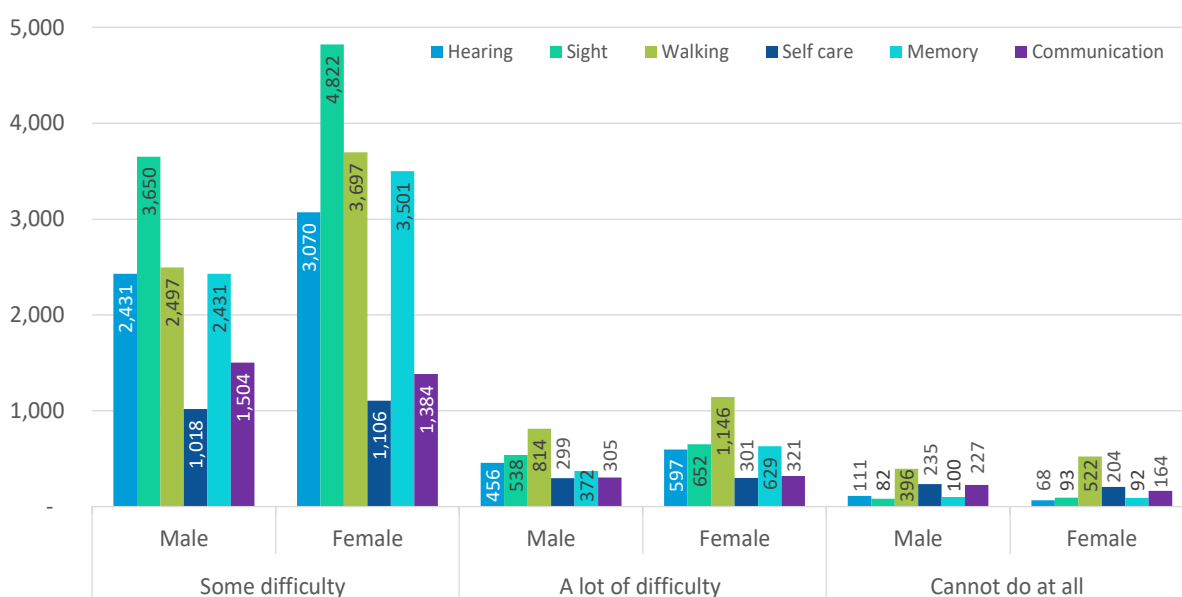
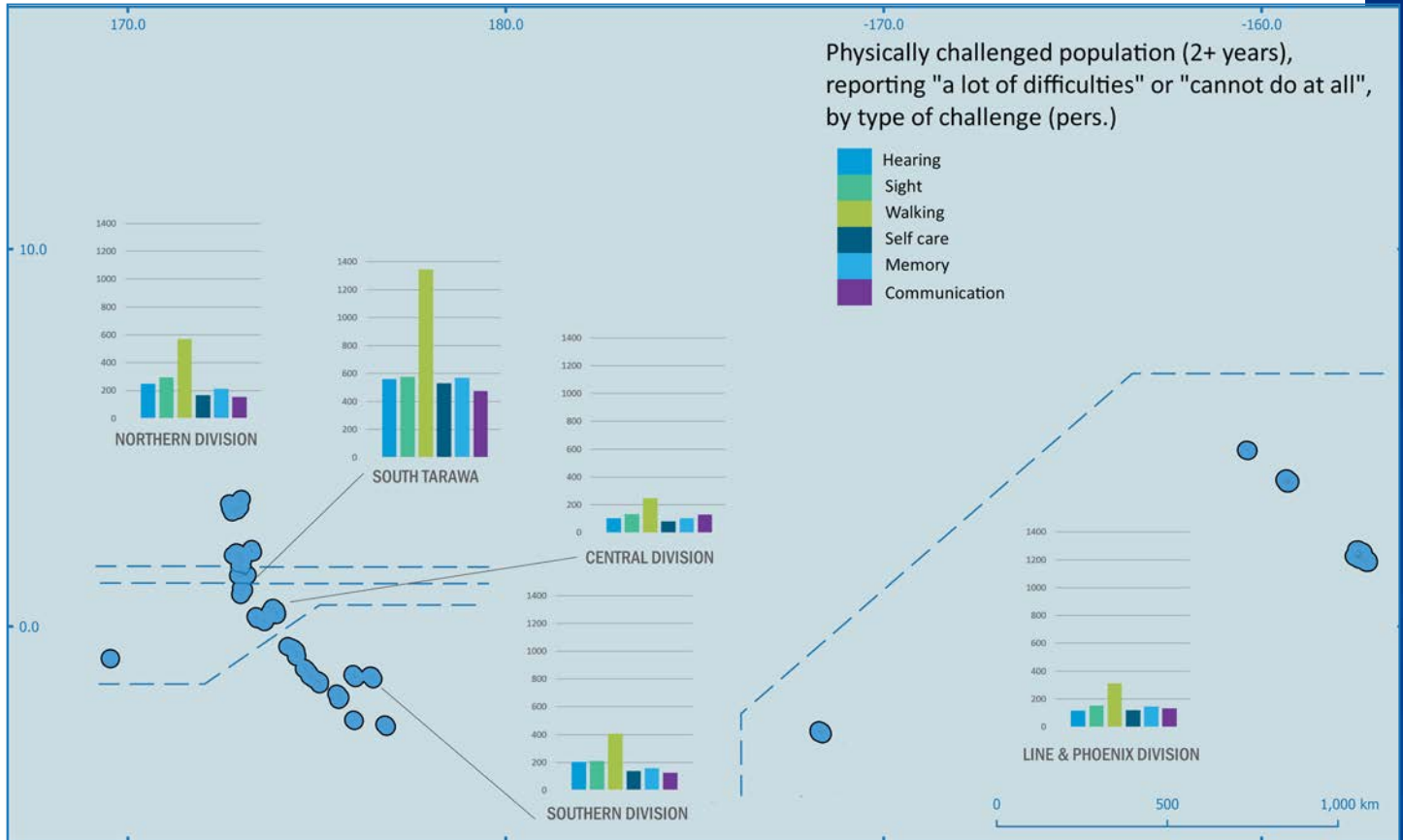


Figure 9: Disability by domain, degree of difficulty and sex

Map 21 shows these data by Divisions across Kiribati. While it reflects the higher number of people in the main urban area of South Tarawa, it also highlights the situation in rural islands where access to a range of education, health and social services are limited and understanding of accessibility issues are largely non-existent.

Map 21: Disability by domain and Division



11. LABOUR FORCE

The number and characteristics of the labour force (employed and unemployed people) provide important information for planners and policy makers who are concerned with the socio-economic development of Kiribati and improving living standards. One of the key pillars of the Government's long term planning strategy, KV20, is ensuring that the country is developing its human capital through improved education outcomes and laying the foundations for increasing employment opportunities through sustainable economic growth (GoK 2018). With a young population structure, high dependency ratio, increasing urbanisation, remote rural islands and a limited economic base, Kiribati is currently facing numerous employment development challenges. Improved Senior Secondary education outcomes and facilitating more TVET and Tertiary graduates will drive up-skilling of the workforce while private sector investment and new industries will create more opportunities for a growing population, particularly in the urban areas.

The 2020 census provides a variety of information on the labour force. It is important to understand that the data relate specifically to what **economic activity** people aged 15–64 years, known as the working age population, were involved in the week prior to the census enumeration. The **participation rate** is “a measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or looking for work” (ILO 2022) and provides an indication the characteristics of the supply of labour available. Map 22 presents these rates by island and gender. With a national rate of 54%, there are a few rural islands (Butaritari, Banaba, Aranuka, Nonouti and South Tabiteuea) reporting the highest rates which may reflect both small populations or specific local employment activities related to handicraft production, agriculture, livestock rearing and fishing.

A number of villages in Abaiang and North and South Tarawa (Map 23) have below average and relatively low participation rates which again can be related to limited employment opportunities despite being located within or nearby the main urban centre.

UNEMPLOYMENT

As shown in Table 12, the urban areas (South Tarawa and Kiritimati Is.) have the dilemma of too many people seeking a limited number of jobs and as such have a high total unemployment rate of 15.1% compared to 6.3% for all rural islands. Map 25 shows the unemployment rate by islands highlighting the locations with high rates 9% and more. When disaggregated by gender, female unemployment rates are particularly high in Beru (19%), Nikunau (17%), Kiritimati (16%), South Tarawa (15%) and North Tarawa (14%).

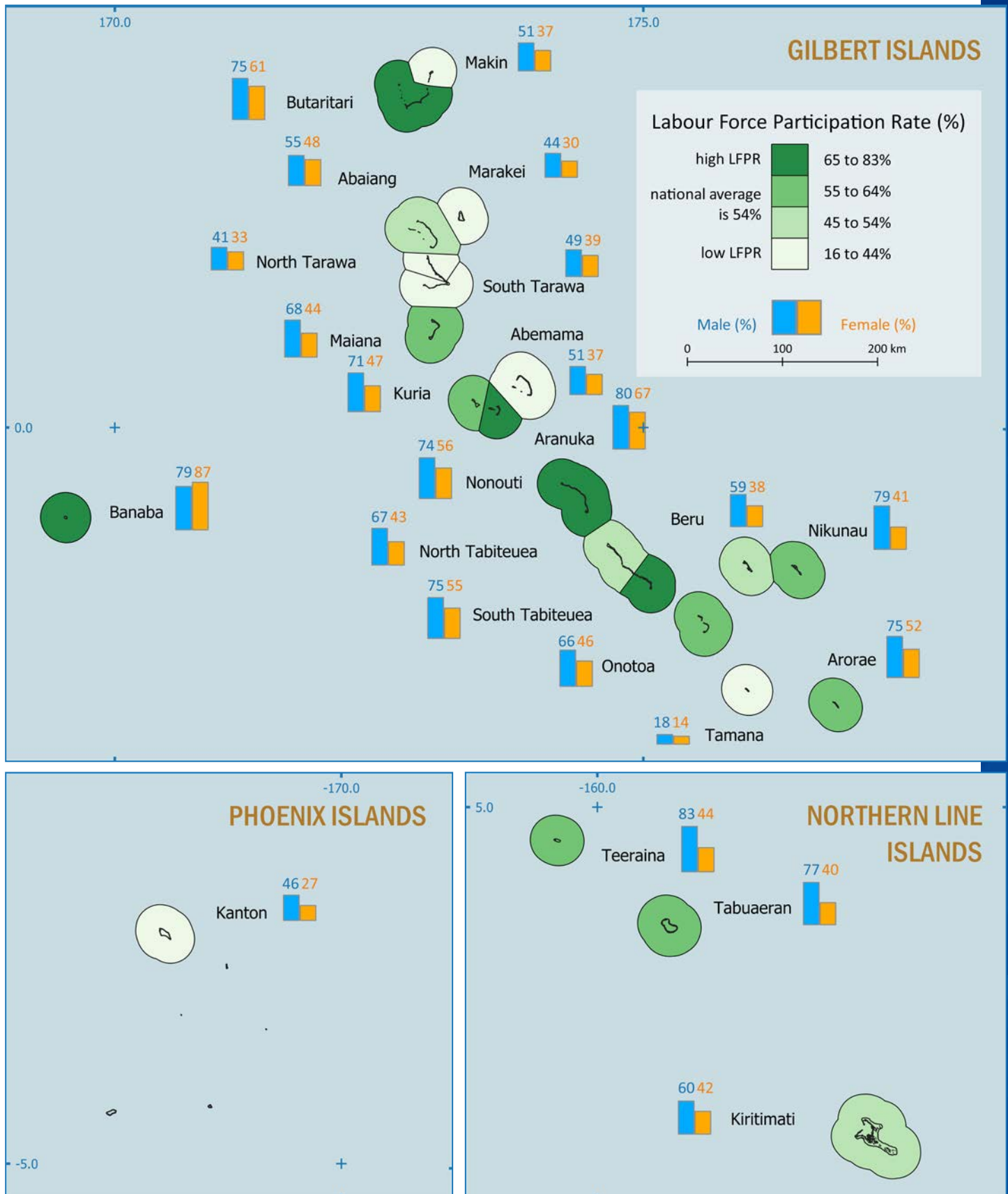
Table 12: Key labour force statistics

LABOUR FORCE INDICATORS*	DIVISION							
	URBAN	RURAL	SOUTH TARAWA	NORTHERN	CENTRAL	SOUTHERN	LINE IS. & PHOENIX	TOTAL
Population aged 15+	44,256	27,748	39,908	11,457	4,709	9,505	6,425	72,004
Labour force status								
Employed	16,600	13,510	14,668	4,789	2,486	4,991	3,176	30,110
Unemployed	2,954	901	2,659	476	118	274	328	3,855
<i>Unemployment rate</i>	15.1	6.3	15.3	9.0	4.5	5.2	9.4	11.3
Outside labour force	24,702	13,337	22,581	6,192	2,105	4,240	2,921	38,039
Youth (15–24 years) not in education, employment or training	5,813	3,094	5,300	1,575	425	946	661	8,907

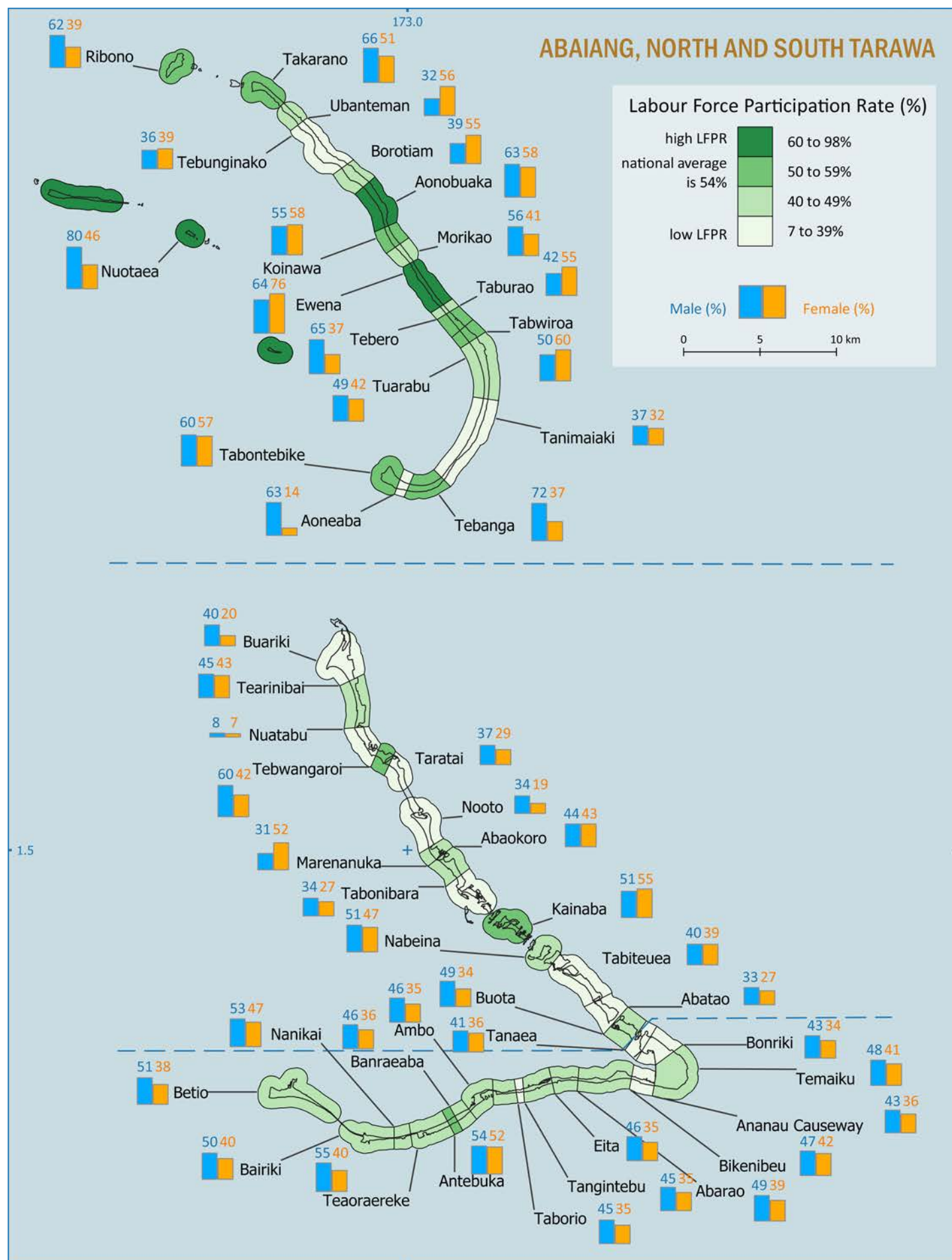
* ILO derived calculations based on persons aged 15+ living in private HHs.

The situation is stark for many urban youths with very high levels of unemployment evident and this can lead to social disengagement and delinquency. The strong supporting role of church and community groups is acknowledged as fundamental to supporting youth well-being.

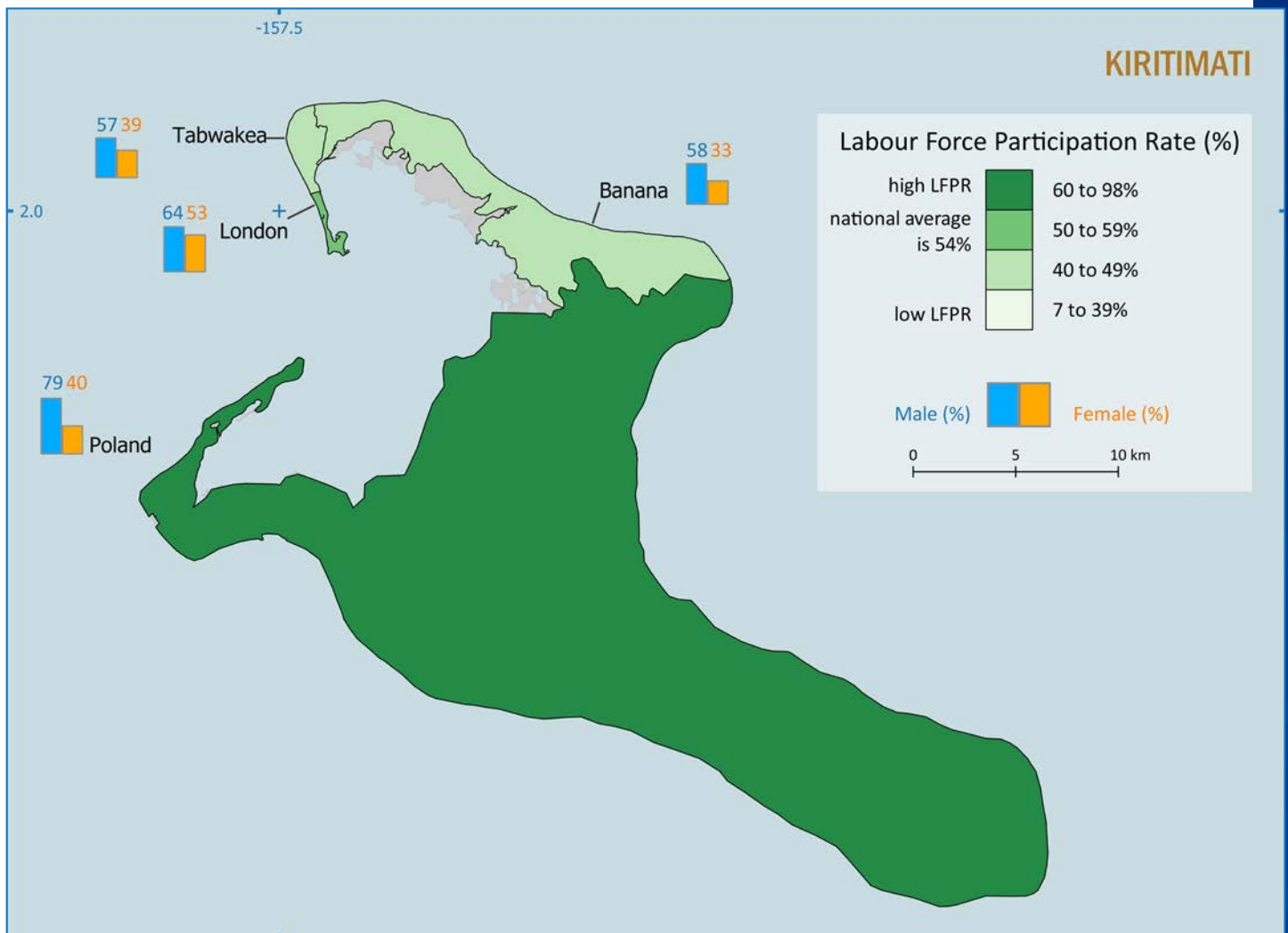
Map 22: Labour force participation rate by island



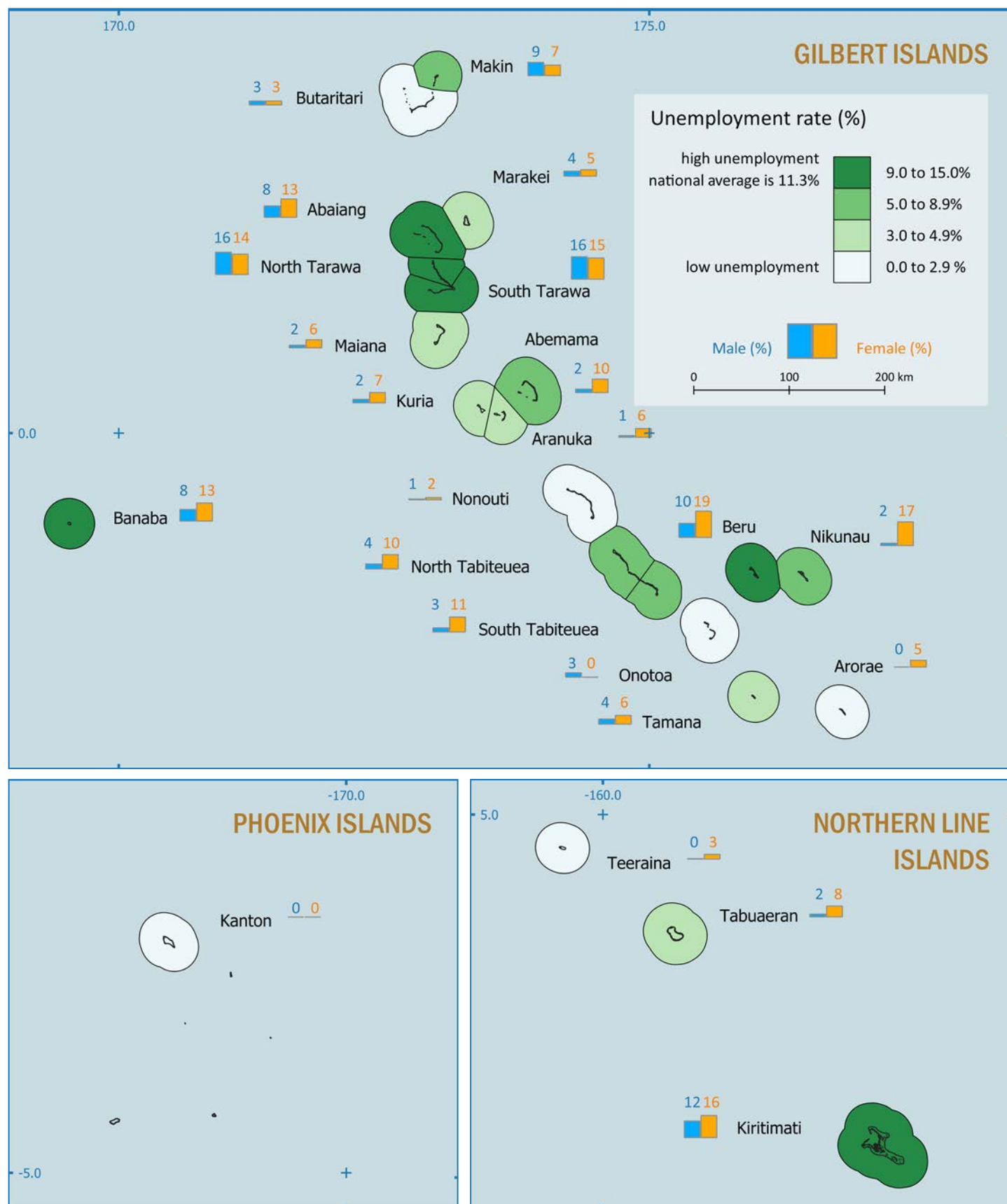
Map 23: Labour force participation rate by village (Abaiang, North and South Tarawa)



Map 24: Labour force participation rate by village (Kiritimati)



Map 25: Unemployment rate by island



12. INDUSTRY AND OCCUPATION

Kiribati is for the most part still a basic economy underpinned by fishing and agricultural activities with a significant informal sector. Similar to other small Pacific Island countries, many families, particularly in the rural islands, live a mainly subsistence lifestyle supplemented with additional support from overseas remittances and cash sales of some local products.

Over time, the Government is setting foundations to facilitate up-skilling of the population through improved education outcomes while also planning for new public and private investments to drive economic development and raise the living standards of all I-Kiribati (GoK 2018, 2021). In 2020, exports were dominated by sales of fish and coconut derived products (oil and copra, KINSO 2020). Tourism is one sector with significant potential in a number of islands if the appropriate infrastructure, workforce skills and marketing strategies can be developed and supported (TAK 2022).

Data from the 2020 census provides insights into the structure of industries and occupations based on responses of people aged 15+ years to a series of questions related to the “main economic activity last week”. This information is crucial for planners and policy makers to co-ordinate whole-of government strategies with regard to education, training and socio-economic development.

INDUSTRY

The classification of workers into Industry categories provides an understanding of the structure of the current economy in 2020. As shown in Figure 10, the three dominant industries are “Wholesale and retail trade” (29% of all employed persons), “Agriculture and Fishing” (23%) and “Public administration” (14%). The gender breakdowns highlight the nature of particular industries with Education (75% females), “Health and social work” (74% females), “Construction” (97% males) and “Agriculture and fishing” (85% males).

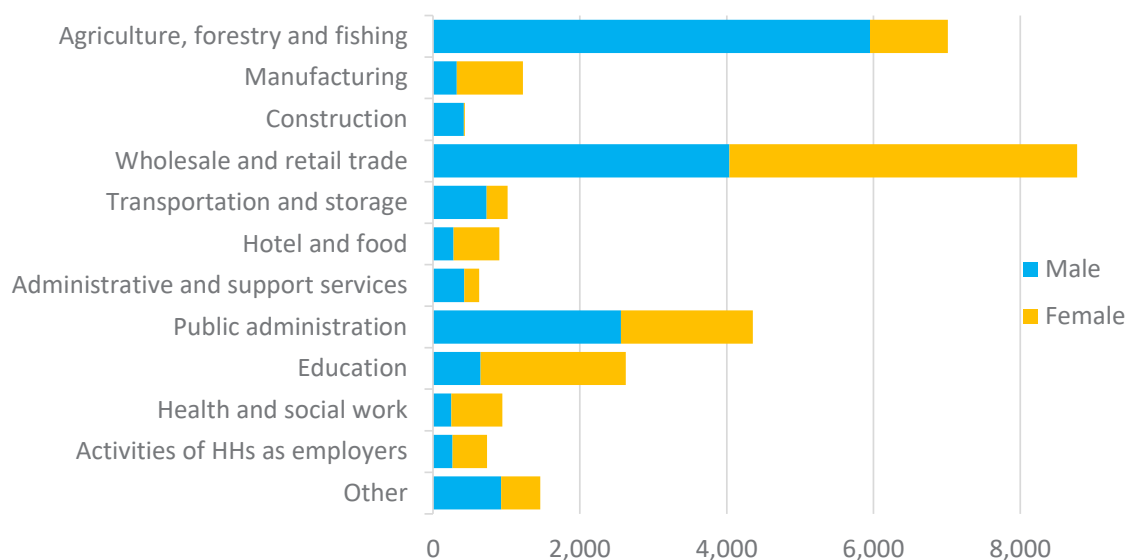


Figure 10: Main industry of employment by sex

OCCUPATION

Nationally, as shown by Figures 11 and 12, from a total of 30,110 people aged 15+, 33% of all occupations recorded are in classified in “Elementary occupations” – mostly low skilled workers in agriculture and fisheries, street and market sellers or as general labourers in various industries (44% of all employed males and 18% of all employed females). The next largest categories were “Craft and

- Managers
- Professionals
- Technicians and associate professionals
- Clerical support workers
- Service and sales workers
- Skilled agricultural, forestry and fishery workers
- Craft and related trades workers
- Plant and machine operators and assemblers
- Elementary occupations

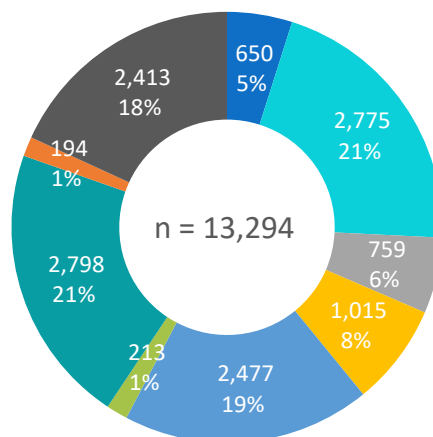
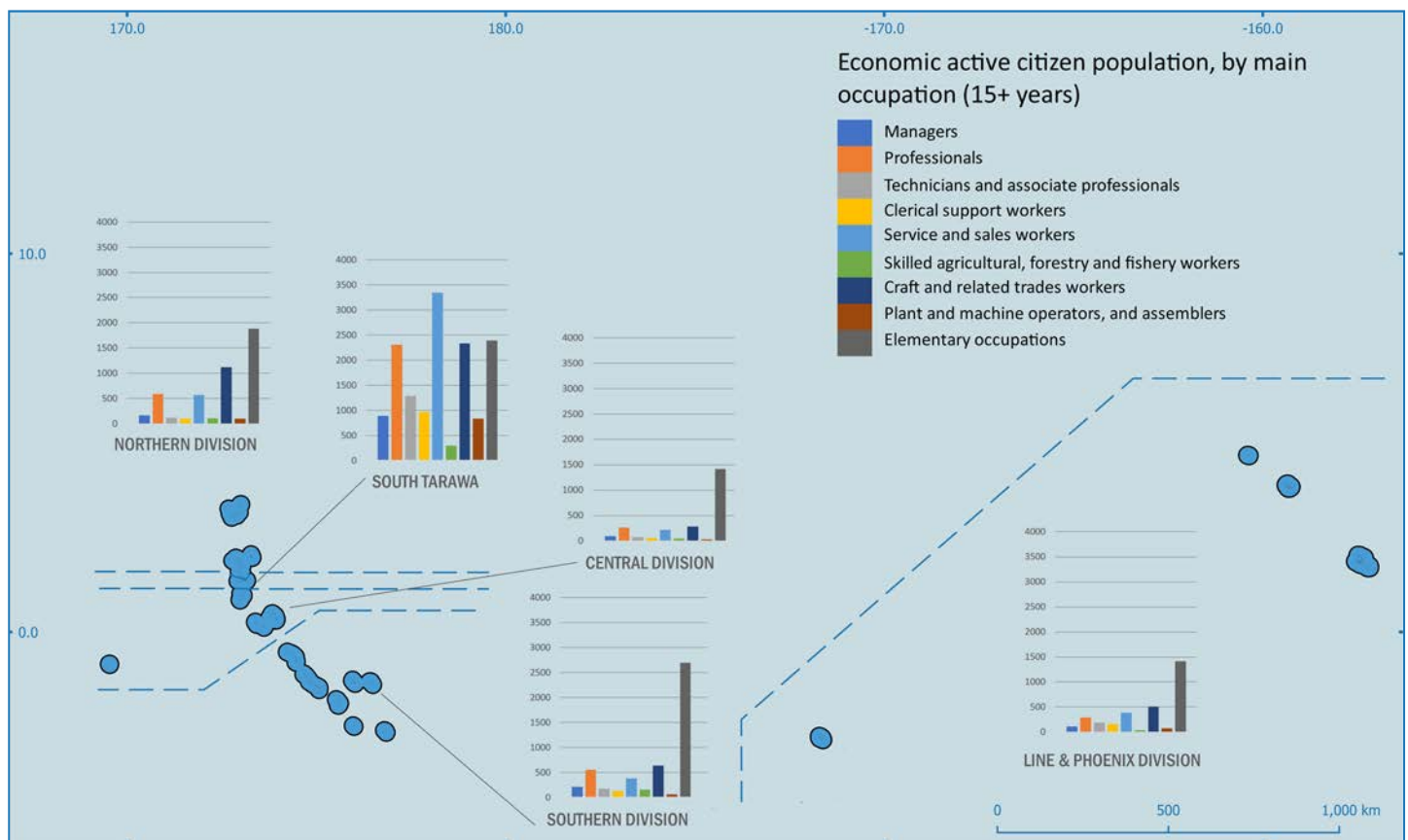


Figure 12: Occupation employed Females (15+ years)

Map 26: Main occupation by Division



13. IT AND COMMUNICATIONS

To facilitate social and sustainable economic development in a modern globalised world, all countries require an effective and efficient Information and Communications Technology (ICT) sector to engage in the digital and information revolution. The Government of Kiribati has been working with Development Partners for a number of years to overcome the significant challenges of providing IT infrastructure and services to all citizens spread across vast distances of the Pacific Ocean (GoK 2019; 2021; World Bank 2017). The Ministry of Information, Communications and Transport (MICT) is the lead government agency in this sector, co-ordinating activities and developing strategies. The 2nd National ICT Policy outlines a number of goals related to the ongoing development of ICT systems (GoK 2019). These developments will transform operations and delivery of services operations for all government services especially health, education, justice, and emergency management, while also providing the necessary foundations to encourage private sector investments and growth. New international submarine cables are being laid to connect Kiribati with the Federated States of Micronesia to the east while to the west, Kiritimati Is. also included in the cable network (MICT 2021).

Communications technologies can enhance social connections and access to information for all people (Data Portal 2022; ITU 2022). The 2020 census reported on all persons aged 10+ years with regard to internet access, use and most common method or location to gain access. It also collected information from HHs on ownership of phones, computers and tablets.

Map 27 shows the pattern of responses by island to the question: "Did you access the internet in the last week?" so this timeframe must be considered in correctly interpreting these data. Nationally, 31,159 (35% of the population aged 10+ years) reported having accessed the internet. Six islands (Arorae, Nikunau, South Tarawa, Beru, Nonouti and South Tabiteuea) reported more than 40% of people accessed the internet. While the absolute number of people is, as expected, greater in the urban area of South Tarawa, the rural islands in this higher internet access category are likely to be related to the place of access as well as their relatively small populations.

Figure 13 shows the breakdown of internet access by main location of access. Again, it is important to understand the small numbers for many of the rural islands when interpreting these data. 87 % of people accessed the internet from home, 9% from a workplace and 4% from an island council office.

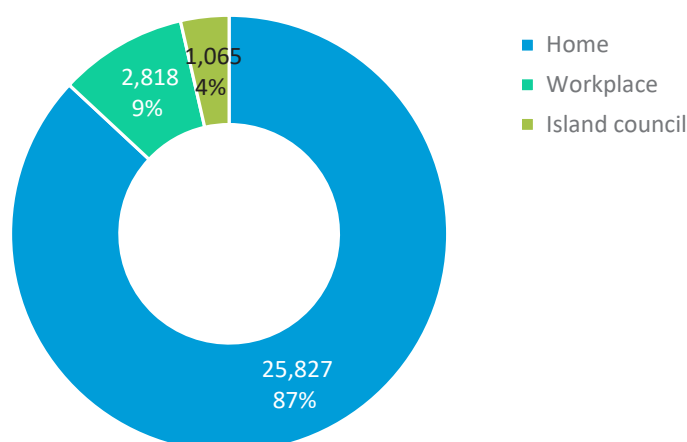


Figure 13: Main location of internet access

Table 13 presents HH ownership of cordless phones, computers (desktop/laptop) and tablets. This provides an indication of the purchase of ITC related consumer goods within each HH. It does not indicate how many of these devices are connected to the internet or how often. Overall, ownership

of computers is dominant in the urban areas with 83% of HHs owning at least one device. Some rural islands report relatively high proportions of ownership of cordless phones (Kuria 58%, Teraina 22%) and tablets (Tabuaeran 67%, Teraina 63%). The data does not indicate whether modern smart-phones are included in the enumeration.

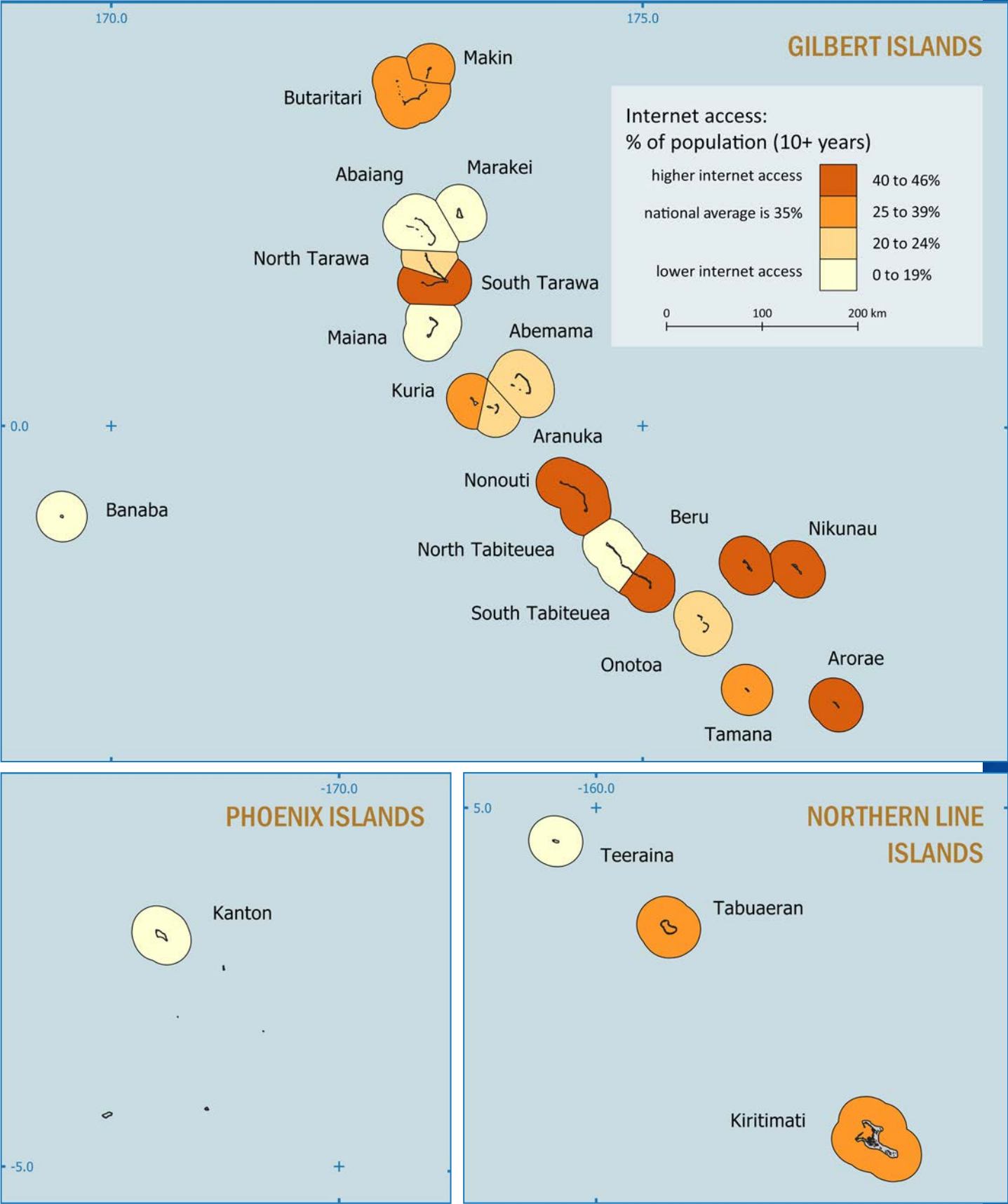
Table 13: Household ownership of ITC related goods by island

DIVISION	ISLAND	CORDLESS PHONES	COMPUTERS (DESKTOP/ LAPTOP)	TABLET	TOTAL HHS
Northern	Abaiang	15%	6%	8%	1,065
	Butaritari	2%	6%	13%	618
	Makin	2%	3%	3%	371
	Marakei	1%	1%	1%	575
	North Tarawa	9%	11%	5%	1,310
South Tarawa	South Tarawa	11%	33%	15%	9,444
Central	Abemama	17%	8%	6%	674
	Aranuka	-	2%	7%	259
	Banaba	-	9%	7%	85
	Kuria	58%	8%	6%	250
	Maiana	29%	4%	13%	449
Southern	Arorae	-	5%	9%	210
	Beru	18%	7%	7%	533
	Nikunau	1%	3%	13%	423
	Nonouti	3%	7%	3%	611
	North Tabiteuea	11%	9%	10%	753
	Onotoa	9%	4%	3%	326
	South Tabiteuea	-	7%	3%	279
	Tamana	-	15%	10%	192
Line & Phoenix	Kanton	-	78%	11%	9
	Kiritimati	3%	38%	14%	1,208
	Tabuaeran	7%	16%	67%	398
	Teraina	22%	13%	63%	312
Total					20,354
Urban		52%	83%	59%	10,652
Rural		48%	17%	41%	9,702

* HHs can report multiple goods.



Map 27: Internet access by island



14. HOUSING STRUCTURES

"The nature of the housing sector with its institutions, laws and regulations, is one that touches every single aspect of the economy of a country and has interface with practically every social development sector. People living in adequate homes have better health, higher chances to improve their human capital and seize the opportunities available in urban contexts. At the same time, a housing sector that performs well acts as a 'development multiplier' benefiting complementary industries, contributing to economic development, employment generation, service provision and overall poverty reduction". (UN-Habitat 2020 p2)

For the 20,304 HHs counted in the census, Figures 14 to 16, show that nationally, there is a mix of modern and traditional roof (51% metal and 47% traditional), wall (22% metal, 15% wood based, 14% concrete or bricks and 17% traditional) and floor (44% traditional, 32% concrete or cement, and 18% wood based) materials. At the sub-national level, the materials used for housing distinctly vary between the urban areas and rural islands as shown in Maps 28 and 29.

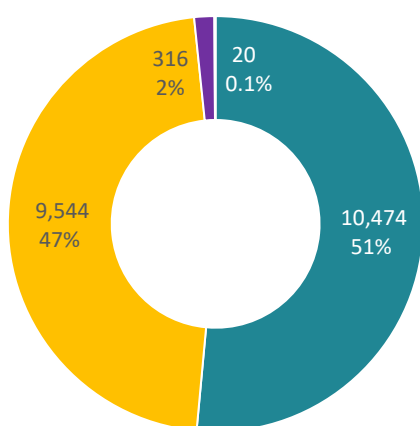


Figure 14: Roof material

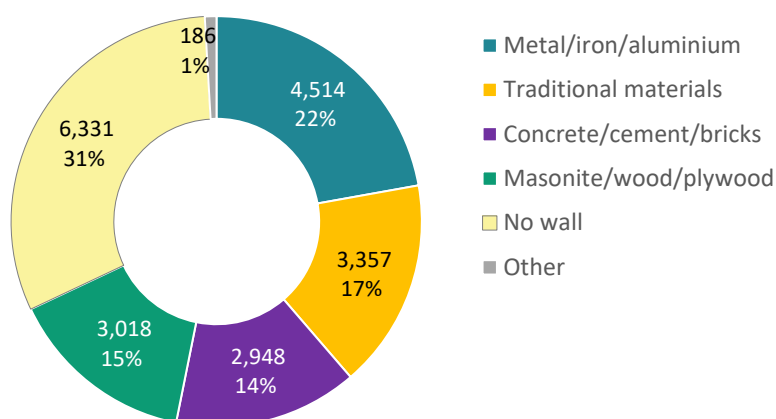


Figure 15: Wall material

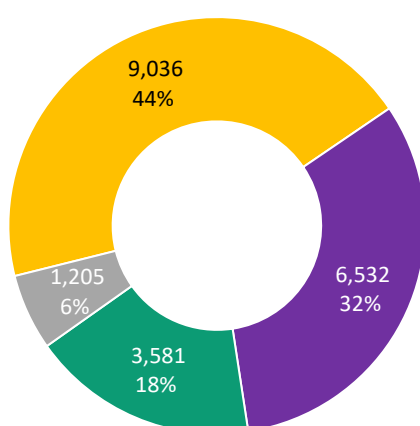


Figure 16: Floor material

Most of the residential housing on the rural islands use traditional materials. This reflects both the hot and humid climatic conditions and low HH wealth with raised floors, no walls and constructed using local "bush materials" such as coconut palms, *te kora* string made from coconut husks, mangrove and pandanus fronds (Whincup 2010). In the urban areas of South Tarawa and Kiritimati Is., as well as Banaba, the availability of imported materials such as concrete, metal sheeting, structural timber, Masonite and plywood have transformed the housing stock. Within the informal settlements, an



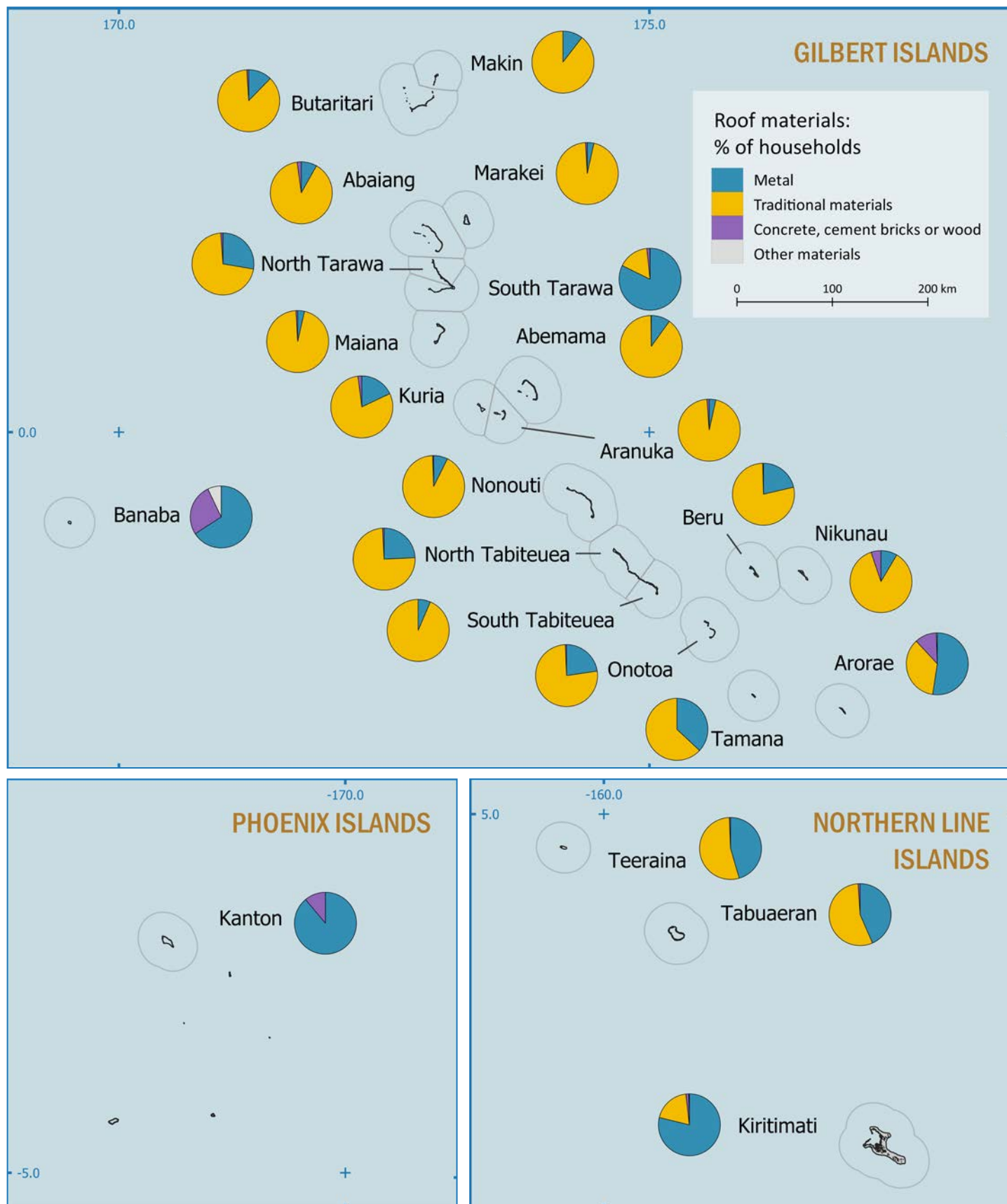
© SPC, Beryl Fulilagi

ad hoc mix of various traditional and imported materials are utilised by those residents to create a variety of shelters and housing.

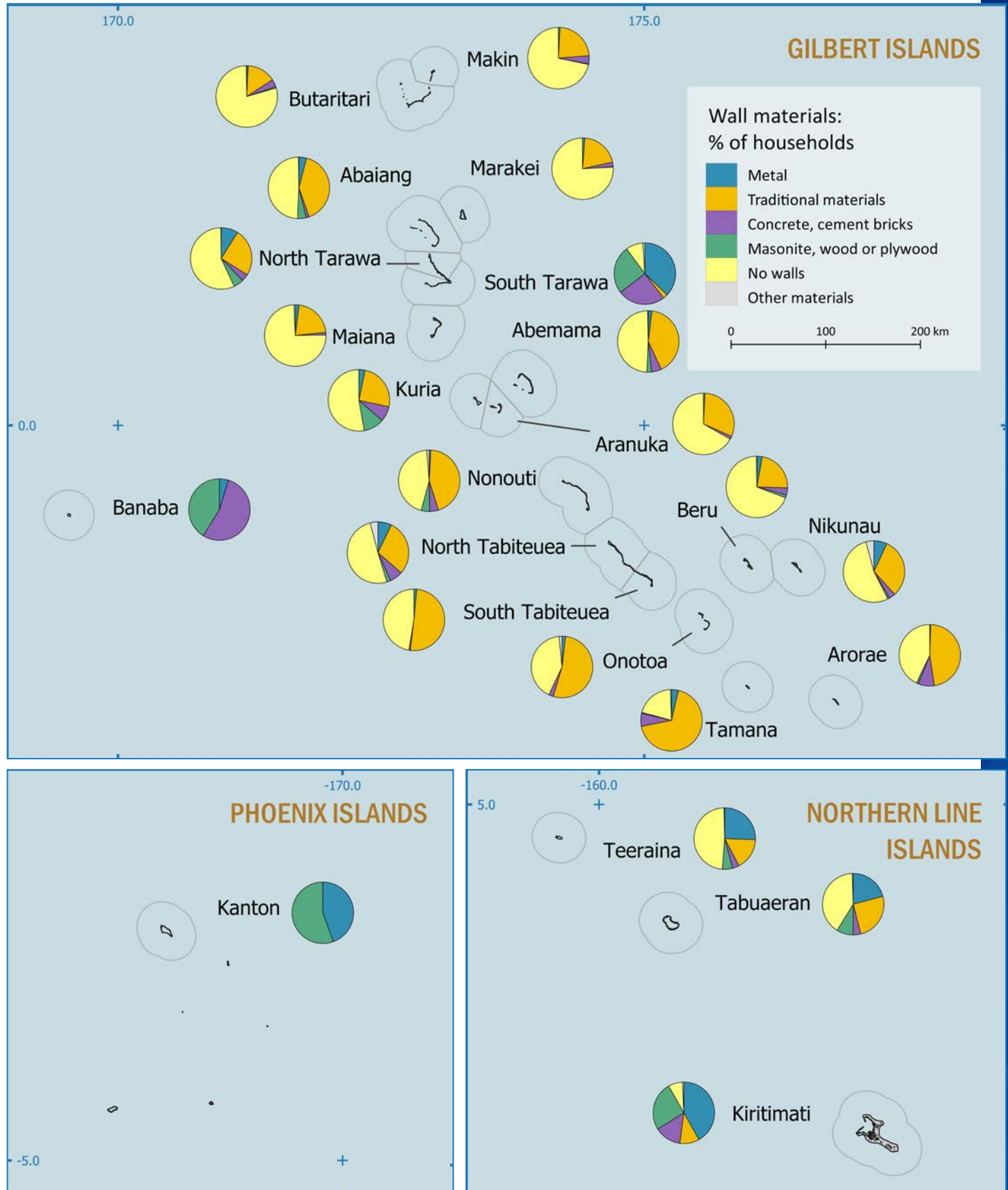
The HHs living in traditional structures in the rural islands as well as those residents in the densely populated urban informal settlements, are more likely to be predisposed to certain health outcomes directly related to their housing environment. Greater exposure to mosquito borne illnesses and communicable diseases such as scabies and respiratory conditions are evident (KINSO 2021d; Tabunga et al 2014; MHMS 2015). Infants and young children are often more severely affected requiring medical treatment at village health clinics or district hospitals.

As the islands in Kiribati straddle the equator, they are located outside of the direct band of destructive tropical cyclones which would potentially decimate traditional and ad hoc housing structures as occurs in many other Pacific countries. Some islands however, are subject to strong winds, storm surges and periods of heavy rain that can cause damage to structures particularly during the wet season, *au meang*, from November to April. Kiribati is also located the Pacific region of high seismic activity where undersea earthquakes can generate destructive tsunamis with potential devastation of low-lying atoll island housing and infrastructure (UN-OCHA 2022). Furthermore, the impacts of a changing climate on all sectors including housing are recognised and are leading to disaster resilience and adaptation strategies from the Government and Development Partners (WBG & ADB 2021; GoK 2022a; World Bank 2022).

Map 28: Household roof materials by island



Map 29: Household wall materials by island



15. HOUSEHOLD ENERGY

Kiribati continues to make enormous progress in the transition to base-load renewable energy (RE) for HH use across the islands. The Kiribati Solar Energy Company (KSEC) was originally formed in 1984 and became majority Government owned in 1987 with a specific objective to “expand the use of renewable energy through the application of solar photovoltaic on outer islands and in urban districts” (KSEC 2022). The Kiribati Integrated Energy Roadmap 2017–25, was developed to support the transition to RE and the efficient use of resources in line with Government national efforts for sustainability, reducing dependence on fossil fuel imports by increasing the renewable energy (RE) percentage of electricity generation (IRENA et al 2017; GoK 2018, 2021). All these efforts and initiatives are clearly showing positive results and creating benefits for the whole population and economy with a number of major solar energy projects having been completed or currently underway in different locations across Kiribati - both urban and rural (World Bank 2022; ADB 2021c).

In addition to individual HHs, many public buildings such as the Central Hospital and schools are increasingly being modified with solar panels. These developments are clearly reflected in the results of the 2020 census with evidence of significant up-take and use of solar power for lighting and electricity at the HH level.

LIGHTING AND ELECTRICITY

As shown by Figure 17 and Map 30, solar generated energy is now a significant factor in the everyday life of many I-Kiribati. For the 20,354 HHs across all Divisions and islands there is a high level of use of solar power used for both lighting and general electrical uses with 17 rural islands reporting 75% or more of HHs (6,141, or 30.2% of all HHs) using this form of power.

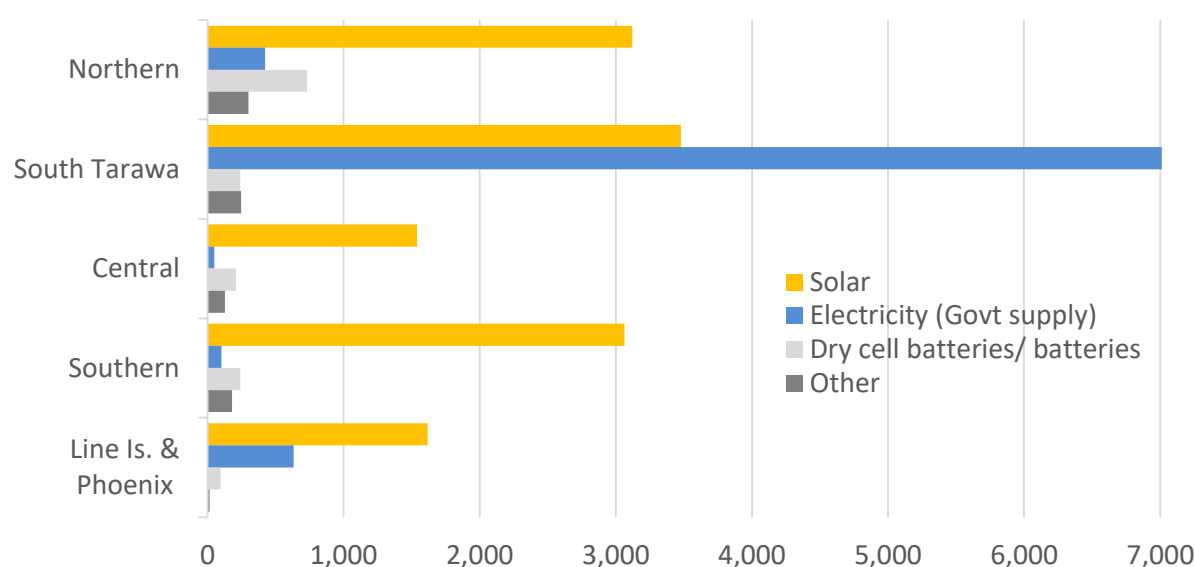
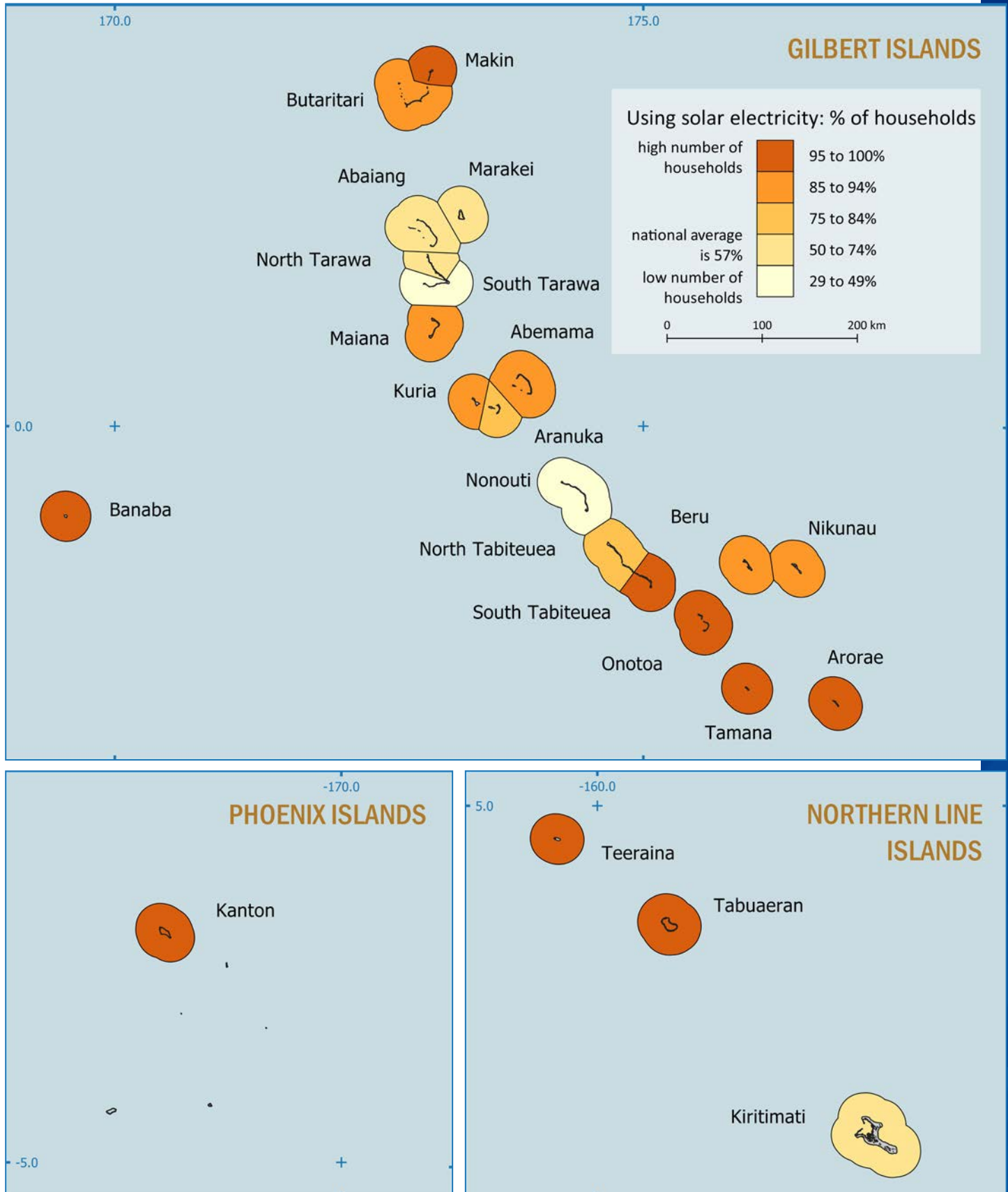


Figure 17: Household main source of lighting by Division

Private HHs (n =20,354).

In the urban area of South Tarawa, there is still a significant reliance on Government utility supplied grid “electricity” sourced from large scale diesel generators with 63.9% (7,011) of HHs reporting this as their main source of power for lighting.

Map 30: Household solar electricity by island



FUEL FOR COOKING

While significant progress continues to be made with RE for lighting and electricity, the conversion to “clean fuel” for HH level cooking largely relies on the continued use of open fires and solid fuels (biomass). This is globally regarded as a major pressing health and environmental problem, directly

impacting many people every day. It is a major gender equality issue with women and their children disproportionately affected by this situation with direct and indirect exposure to toxic smoke and fumes causing respiratory illnesses, skin burn injuries and time burden required to regularly collect and prepare wood and biomass (MWPU & SPC 2014; Mahoney 2022; Clean Cooking Alliance 2022).

This situation for HHs is common across both urban and rural areas of Kiribati (KINSO 2021d) with the 2020 census showing that 37% of HHs use kerosene, 23% wood and 24% using coconut husks or shells as the main type of cooking fuel as shown in Figure 18. There is a correlation with income levels as these fuels tend to be either free (wood and coconuts gathered in rural islands) or relatively cheap and readily available as with kerosene (MWPU & SPC 2014).

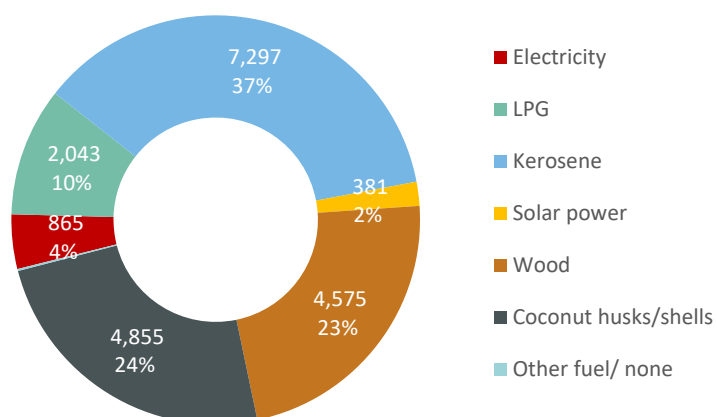


Figure 18: Household main type of cooking fuel

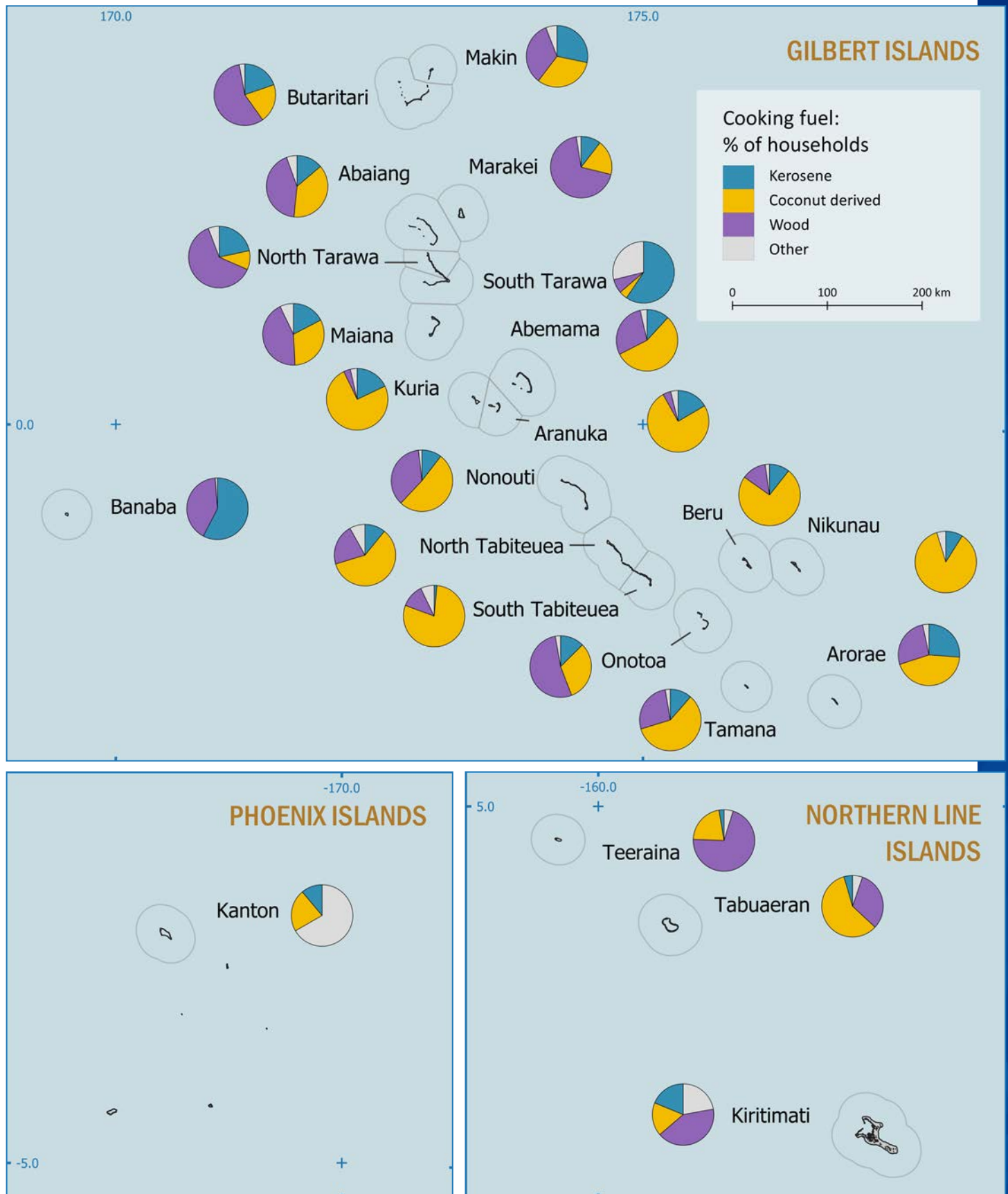
Table 14 and Map 31 clearly presents the situation by islands and highlights the large number and proportion of HHs using “unclean fuels” is common across all Kiribati. Even within the large and crowded urban areas of South Tarawa, there is major use of kerosene with 5,611 (59.4%) of all HHs reporting this as their main type of cooking fuel.

The situation is likely to change and evolve over time as new low cost, efficient and clean sourced cooking stoves and fuels become more readily available to HHs regardless of income levels and location.

Table 14: Household cooking fuels by island

DIVISION	ISLAND	KEROSENE	WOOD	COCONUT HUSKS/ SHELLS	LPG	SOLAR POWER	ELECTRICITY	OTHER/ NONE	TOTAL HHs
Northern	Abaiang	147	456	381	40	14	0	27	1,065
	Butaritari	122	352	120	7	10	0	7	618
	Makin	105	125	115	16	6	0	4	371
	Marakei	60	394	106	0	14	1	0	575
	North Tarawa	284	820	125	39	13	22	7	1,310
South Tarawa	South Tarawa	5,611	701	279	1,771	155	719	207	9,444
Central	Abemama	80	195	373	10	13	0	3	674
	Aranuka	43	11	192	7	3	0	3	259
	Banaba	49	35	0	1	0	0	0	85
	Kuria	45	9	182	4	5	0	5	250
	Maiana	78	196	142	6	26	0	1	449
Southern	Arorae	55	56	89	0	6	1	3	210
	Beru	57	69	389	5	6	0	7	533
	Nikunau	38	0	365	3	17	0	0	423
	Nonouti	64	221	301	2	6	0	17	611
	North Tabiteuea	82	162	443	22	18	19	7	753
	Onotoa	41	173	97	4	5	0	6	326
	South Tabiteuea	4	34	220	0	20	0	1	279
	Tamana	22	52	113	4	0	0	1	192
Line & Phoenix	Kanton	6	2	0	0	1	0	0	9
	Kiritimati	268	211	497	97	22	103	10	1,208
	Tabuaeran	21	233	109	2	16	0	17	398
	Teraina	15	68	217	3	5	0	4	312
	Total	7,297	4,575	4,855	2,043	381	865	31	20,354

Map 31: Household cooking fuel by island



16. WATER AND SANITATION

“The 2030 Agenda for Sustainable Development includes a goal (SDG6) and targets for universal access to safe and affordable drinking-water, adequate and equitable sanitation and hygiene for all, and ending open defecation. SDG6 is widely recognised as an enabling goal, critical to the achievement of many other SDGs” (Pacific Community 2019b p2).

Kiribati has some dramatic population health statistics related to the supply and availability of clean water and appropriate sanitation in both urban and rural island settings (MHMS 2015; IHME 2022; Pacific Community 2022b). Significant and ongoing issues impact all aspects of social and economic development in Kiribati and young children are particularly affected (ADB 2013; ADB 2014a; KINSO 2019, 2021d; WHO-UNICEF 2021).

Population growth and continued internal migration to South Tarawa, places those communities in particular in difficult circumstances with regard to environmental public health outcomes (GoK 2018; Live and Learn 2022; Pacific Community 2022d; UNICEF 2022). While the Public Utilities Board (PUB) provides a subsidised reticulated water and sanitation service in South Tarawa, currently not all HHs have access. Major projects are currently being implemented to establish 2 water desalination plants (MISE 2022; FCG 2022) and a large-scale sanitation service on South Tarawa (ADB 2022) which should also result to improved water quality in the atoll lagoon and ocean side environments leading to improved public health outcomes (Graves et al 2021).

In Kiribati, national level data mask the reality and experiences of local communities at the sub-national level including informal urban settlements and rural islands as shown in Map 32 and Table 15.

Table 15: Household sources of drinking water

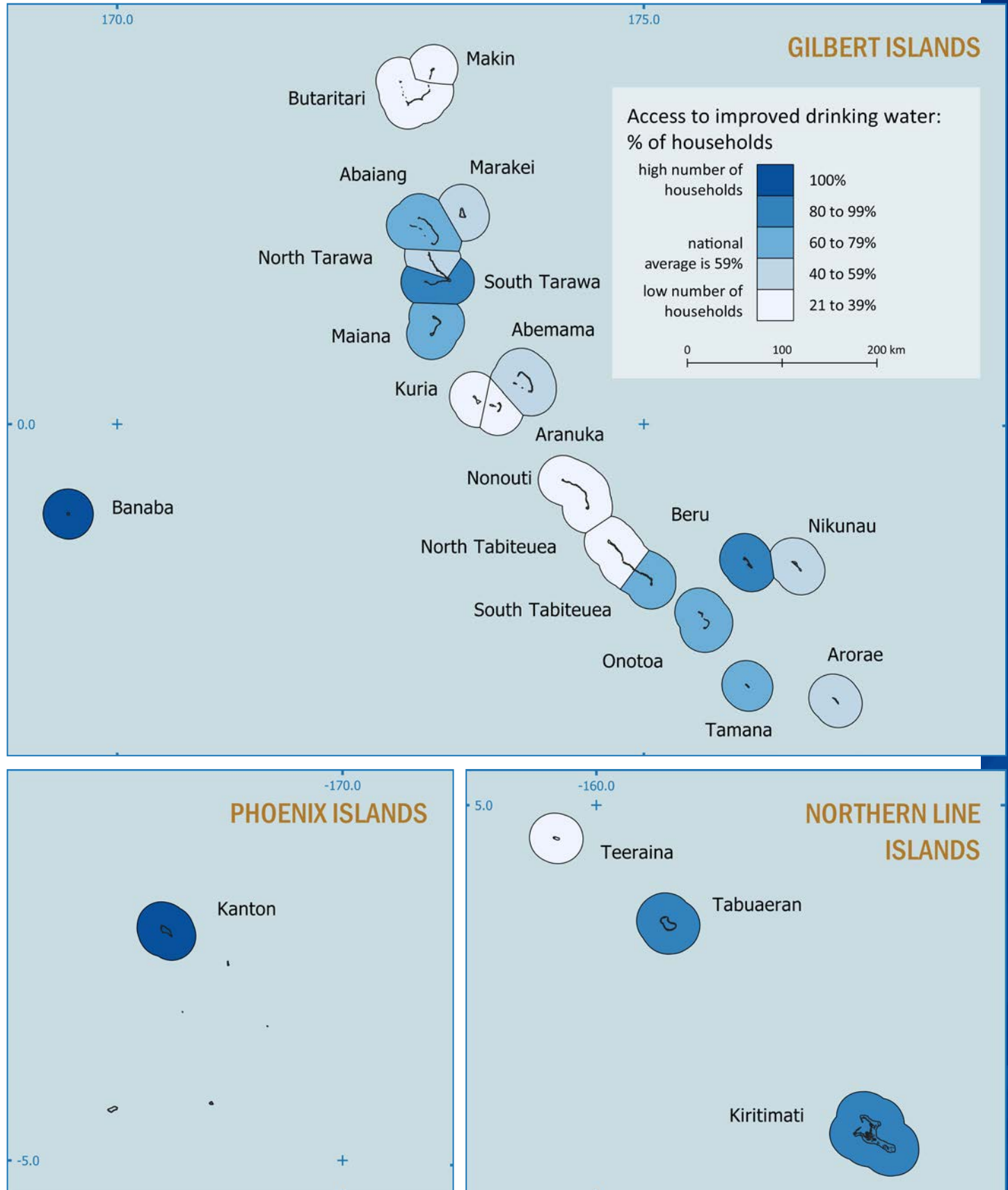
SOURCE OF DRINKING WATER	SOUTH TARAWA	ALL OTHER IS.	URBAN*	RURAL	NUMBER OF HHS
Piped into dwelling	65%	35%	84%	16%	788
Piped into compound, yard or plot	71%	29%	80%	20%	5,652
Public tap/standpipe	63%	37%	65%	35%	2,500
Piped to neighbour	58%	42%	63%	37%	1,257
Protected well	24%	76%	31%	69%	4,039
Unprotected well	24%	76%	27%	73%	7,000
Rain water with tank with tap inside	86%	14%	90%	10%	556
Rain water with tank with tap outside	82%	18%	84%	16%	2,731
Communal tank	21%	79%	26%	74%	2,478
Tanker truck	73%	27%	96%	4%	158
Bottled water	94%	6%	94%	6%	412
Desalinated water	56%	44%	56%	44%	34
Public Utilities Board water	89%	11%	96%	4%	449
Rainwater from neighbour	57%	43%	74%	26%	99
Other sources of drinking water	44%	56%	53%	47%	107
Total HHs in private dwellings					20,354

A private HH can report more than one source of drinking water.

** Urban includes South Tarawa and Kiritimati Is.*

Source: Table D-3 KINSO 2021.

Map 32: Households access to improved drinking water by island



WATER

For many communities across Kiribati, the availability of potable water for drinking, cooking and personal hygiene is directly linked to the unique small island geography, rainfall variability and limited infrastructure (Pacific Community 2022e).

It is acknowledged that hand washing with clean water and soap is the most effective method to prevent a number of illnesses in Kiribati (GoK 2022b; MHMS 2015; KINSO 2021d). The impact on children is particularly an issue in Kiribati which consistently reports high levels of infant and child morbidity and mortality related to poor hygiene and environmental health conditions (IHME 2022; Tabunga et al 2014). Health promotion initiatives, such as “WASH in Schools”, aim to change personal behaviours and are being driven by UNICEF and NGO partners with support from local communities (UNICEF 2021d; Live & Learn 2022).

Water capture and storage infrastructure is often limited and groundwater resources can be affected by contamination of pollutants (Loco et al 2020). Storm surges, causing saltwater intrusions into housing compounds, wells and groundwater reserves, also impact water quality (GoK 2022a; World Bank-ADB 2021). Some significant water supply projects are currently being implemented in different locations across Kiribati to improve this situation (Pacific Community 2022c, 2022d; World Bank 2019).

The source of drinking water to private HHs recorded in 2020, is shown in Table 15. The contrasts between the different source categories reflects the existing infrastructure in the urban areas and rural islands.

Table 16: Key water and sanitation indicators

SDG INDICATOR (% OF TOTAL POPULATION)	NATIONAL	URBAN	RURAL	TOTAL
6.1.1 Population using safely managed drinking water services	78.0	91.5	61.0	1,065
6.1.1 Population using an improved drinking water source	82.3	96.5	65.8	618
6.2.1 Population practicing open defecation	29.8	16.2	46.8	371
6.2.1 Population with basic handwashing facilities on premises	55.6	58.9	51.5	575
6.2.1 Population using safely managed sanitation services	26.7	26.1	27.4	1,310
6.2.1 Population using improved sanitation services *	60.6	74.2	-	9,444
6.3.1 Proportion of wastewater safely treated	-	-	30.8	674

All data as of 2020 except * 2018.

Source: <https://pacificdata.org/dashboard/sdg-6-clean-water-and-sanitation>.



SANITATION

Improvements to sanitation systems continue to be undertaken across Kiribati amid challenges related to population growth and appropriate infrastructure (ADB 2022; GoK 2018, 2021; UNICEF 2020, 2021b). The public health and quality of life impacts of improved sanitation are widely recognised and projects being implemented aim to empower people and provide socially acceptable sustainable sanitation facilities in a range of urban and remote rural island settings.

Table 17 presents information for different types of HH toilet facilities. Septic tanks are clearly the dominant sanitation facility across Kiribati with eight islands (Kanton, Butaritari, Nikunau, Aranuka, South Tarawa, Kuria, Makin and Kiritimati) recording more than 50% of private HHs flushing to this facility. Conversely, there continues to be current issues with a large proportion of HHs across Kiribati who have no toilet facility.

Table 17: Household sanitation facilities by island (% of private HHs)*

DIVISION	ISLAND	FLUSH TO:				PIT LATRINE	WATER SEALED	NO FACILITY, BEACH, BUSH ETC	OTHER FACILITY	TOTAL
		PIPED SEWER SYSTEM	SEPTIC TANK	PIT LATRINE WITH/ WITHOUT SLAB	ELSEWHERE					
Northern	Abaiang	-	45	6	4	-	1	47	0.4	1,065
	Butaritari	-	77	0.2	-	-	-	26	-	618
	Makin	-	54	13	7	-	-	27	-	371
	Marakei	-	2	34	-	5	1	59	-	575
	North Tarawa	-	32	1	3	-	3	63	0.1	1,310
South Tarawa	South Tarawa	7	56	4	2	1	9	25	0.3	9,444
Central	Abemama	-	34	3	10	9	4	45	-	674
	Aranuka	-	60	1	-	-	-	41	-	259
	Banaba	-	11	-	86	-	-	4	-	85
	Kuria	-	56	-	-	41	4	43	-	250
	Maiana	-	31	11	5	0.4	-	55	-	449
Southern	Arorae	-	9	69	1	6	-	18	-	210
	Beru	-	10	18	6	5	0	67	-	533
	Nikunau	-	64	1	1	-	1	40	0.5	423
	Nonouti	-	36	1	0	-	3	70	-	611
	North Tabiteuea	-	42	1	0	-	0	57	-	753
	Onotoa	-	46	-	6	-	-	50	-	326
	South Tabiteuea	-	38	1	0	-	-	67	-	279
	Tamana	-	42	27	-	-	-	31	-	192
Line & Phoenix	Kanton	-	100	-	-	-	-	-	-	9
	Kiritimati	2	53	3	1	1	2	40	0.1	1,208
	Tabuaeran	-	29	13	-	-	5	53	-	398
	Teraina	-	26	2	0.3	-	1	68	-	312
Total										20,354

* HHs can report more than 1 category.

17. FOOD AND NUTRITION SECURITY

Food and nutrition security is linked to population growth, health and wellbeing as well as food affordability and availability. Changing consumption patterns are evident in Kiribati as reported in research studies and surveys (ACIAR 2019; Troubat & Sharp 2021; IFAD 2020). Malnutrition, in all its forms, is becoming a major issue for many countries, including Kiribati, with increasing rates of Non-communicable Diseases (NCDs) co-existing alongside issues such as maternal, infant and child nutrition (Englberger et al 2006; KINSO et al 2021; WHO 2021). Furthermore, the predicted changes to global climate are likely to impact fisheries and agricultural ecosystems with direct and indirect impacts on production and food security (FAO 2019; World Bank & ADB 2021).

Data from the 2020 census reports information related to participation and HH consumption of growing various crops and fruits, raising livestock, fishing (KINSO 2021b).

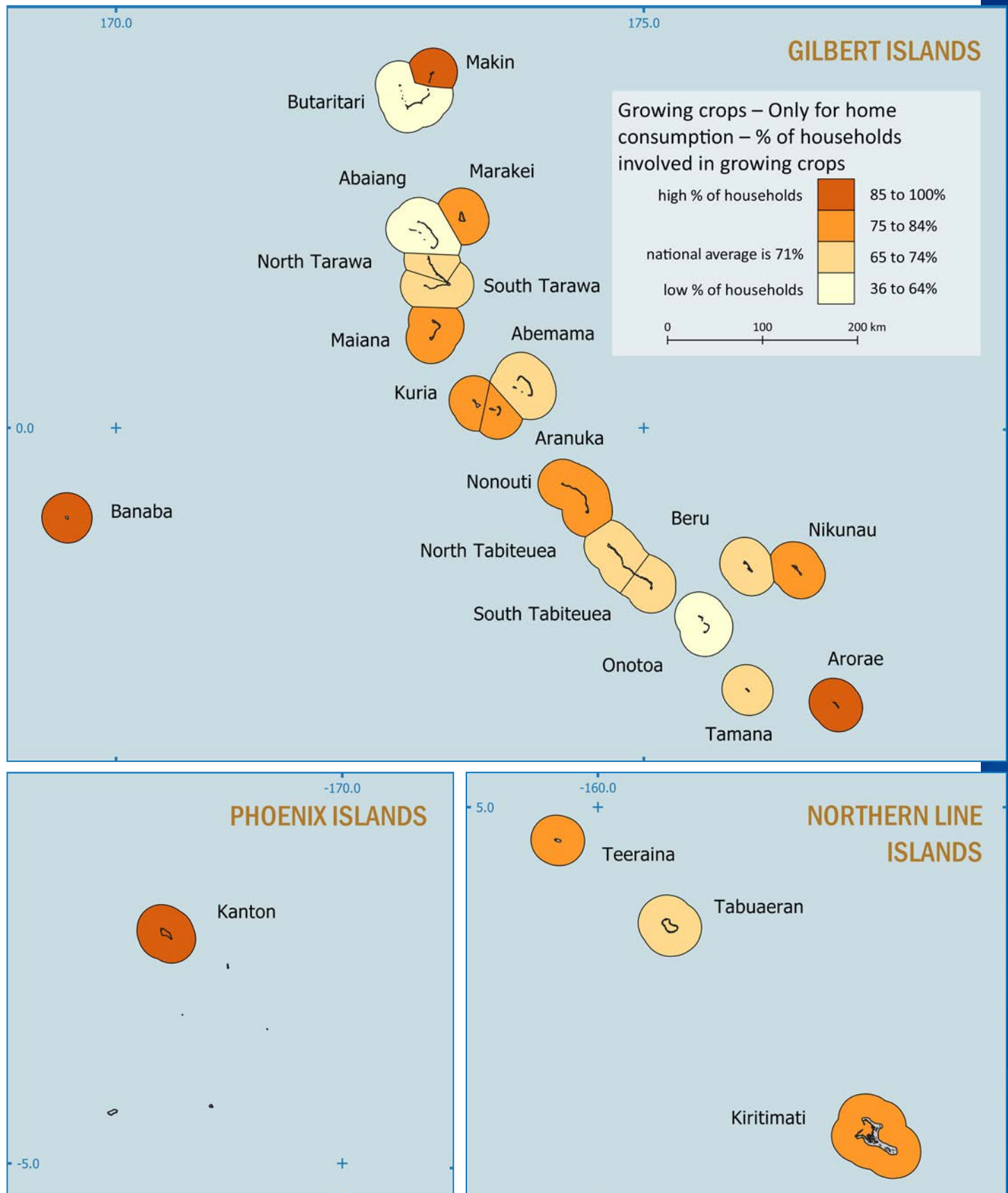
As shown in Table 18, it is clear that a large proportion of HHs across all islands actively participate in these activities and largely consume the foods at home as shown by Maps 33, 34 and 35.

Growing crops and fruit in addition to fishing “only for home consumption” is prevalent across Kiribati – urban and rural – with most islands reporting more than 50% of HHs contributing food for families by these activities as highlighted in Table 18. Raising livestock, mainly chickens and pigs, tends to be more dispersed with a smaller number of islands having HHs participating in this more demanding activity to produce meat and eggs.

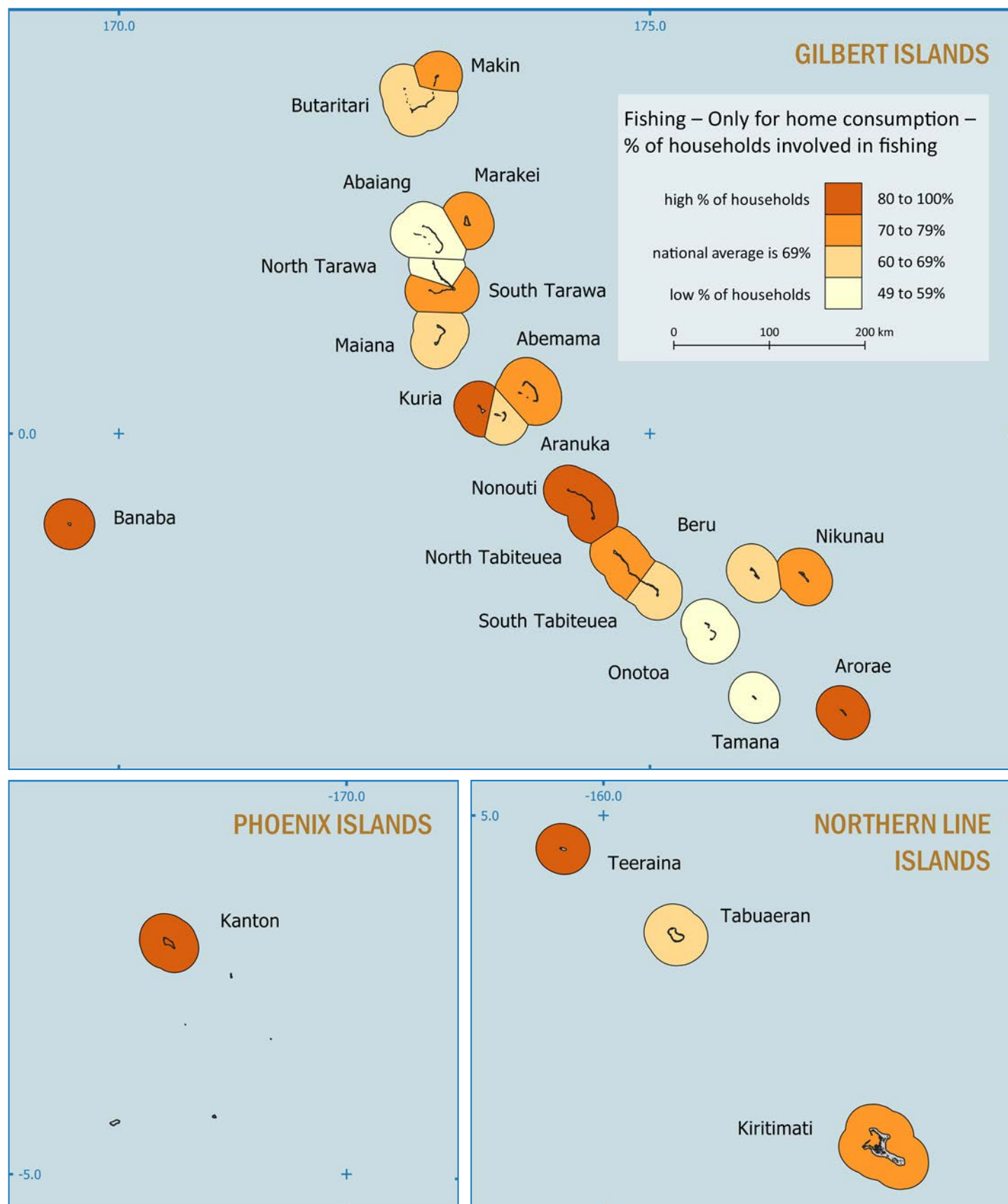
Table 18: Household food activity for home consumption by island (% of private HHs)

DIVISION	ISLAND	ONLY FOR HOME CONSUMPTION			MAINLY HOME CONSUMPTION, BUT SOME SALE		
		GROWING CROPS AND FRUIT	RAISING LIVESTOCK	FISHING	GROWING CROPS AND FRUIT	RAISING LIVESTOCK	FISHING
Northern	Abaiang	51	29	58	32	14	26
	Butaritari	36	23	65	51	13	23
	Makin	86	65	70	13	16	20
	Marakei	79	69	79	16	8	13
	North Tarawa	70	46	55	24	19	39
South Tarawa	South Tarawa	74	39	72	18	9	14
Central	Abemama	71	76	71	27	12	24
	Aranuka	80	48	69	10	11	23
	Banaba	90	79	83	8	4	11
	Kuria	77	64	80	13	3	12
	Maiana	76	23	69	16	5	23
Southern	Arorae	87	11	84	8	1	8
	Beru	68	57	63	19	28	30
	Nikunau	77	67	79	20	5	17
	Nonouti	81	76	82	16	9	15
	North Tabiteuea	71	33	72	21	8	16
	Onotoa	52	6	56	26	2	33
	South Tabiteuea	72	26	68	15	2	26
	Tamana	65	16	50	34	1	49
Line & Phoenix	Kanton	100	100	100	-	-	-
	Kiritimati	84	54	77	13	15	15
	Tabuaeran	74	58	67	22	23	28
	Teraina	84	63	85	14	12	8

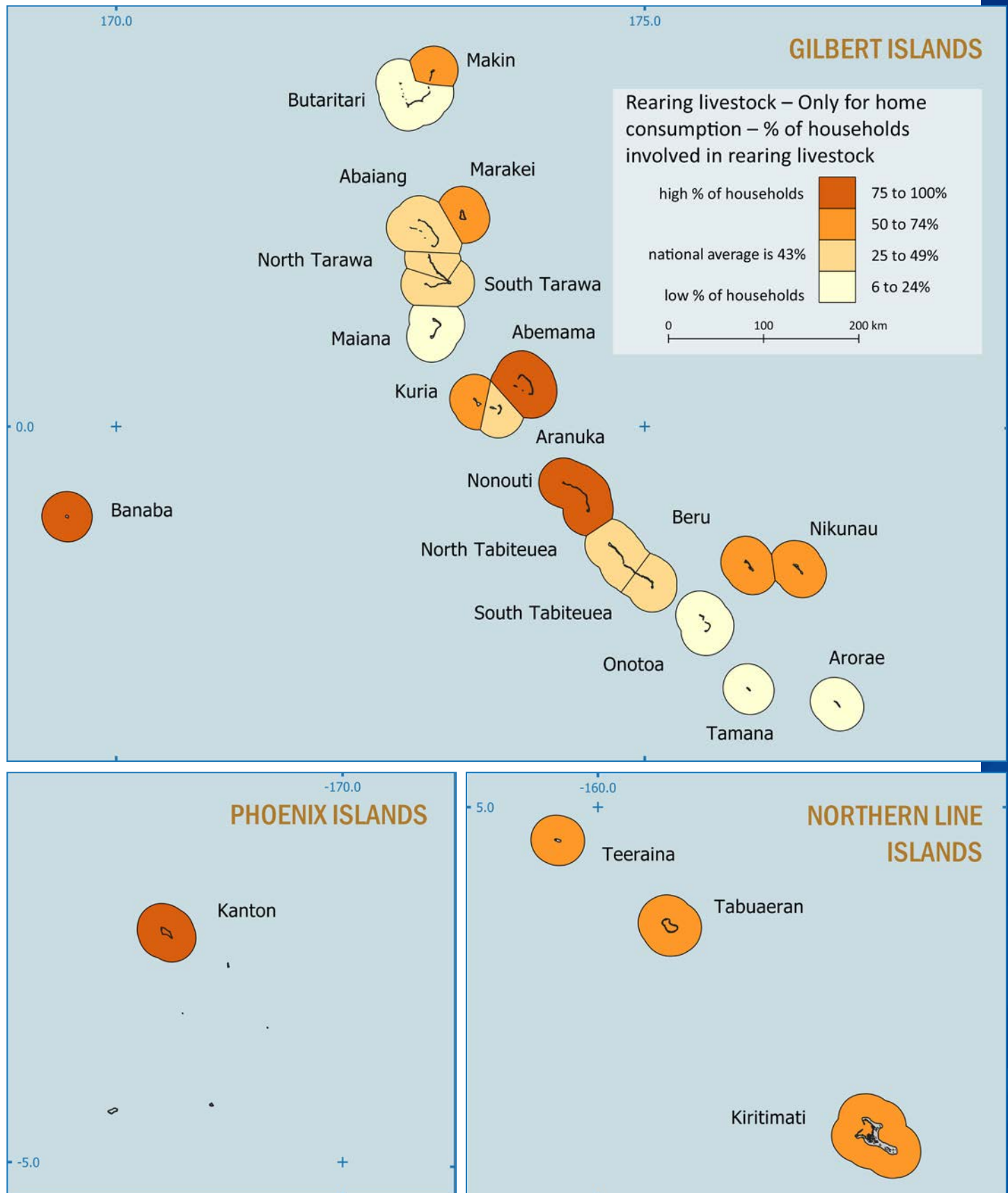
Map 33: Households growing food crops only for home consumption by island



Map 34: Households fishing and seafood gathering only for home consumption by island



Map 35: Households raising livestock only for home consumption by island





© SPC, Beryl Fulilagi

HOUSEHOLD FOOD STOCK

Traditional local foods provide important contributions to food and nutrition security in Kiribati. In 2020, a number of foods were reported derived from fish (Te tari n ika, Te kabwibwi n ika), pandanus (Te tuae, Te kabubu), coconuts (Te kamaimai) and breadfruit (Te kabwibwi ni mai). Te tari n ika (dried fish) was the most common local food stock reported across all islands with 35% of all private I-Kiribati HHs. A number of rural islands in the Southern Division also reported between 65-83% of HHs having stock of Te tuae (dried pandanus paste).

While both food stock and home consumption activities are important contributions to the national diet and I-Kiribati culture, data from the 2020 HIES indicate that only 12% of the average dietary energy consumption is from “food consumed from own production” (KINSO et al 2021). This further adds to the increasing reliance on high calorific imported foods such as flour, sugar and rice linked to poor health outcomes and a growing problem of NCD prevalence (Cauchi et al 2021).

18. HOUSEHOLD WASTE

Waste generation and management is an increasingly important issue in Kiribati. The environmental public health and pollution threat associated with solid and hazardous waste streams “*undermines the country’s resilience and efforts to achieving sustainable and inclusive socio-economic development*” (SPREP 2021a p.7). A number of waste management strategies and initiatives are currently underway to address the issue which impacts both the densely population settlements of South Tarawa as well as the smaller rural island settings (ADB 2013; SPREP 2020). This includes updated legislative frameworks, appropriate waste management facilities and fostering behavioural change in the community led by the Ministry of Environment, Lands and Agriculture Developments (MELAD) with support from NGOs. In 2020, the Government launched the Kiribati Waste Management and Resource Recovery Strategy – a long-term plan to respond to the increasing issues of waste and pollution (UNEP 2019).

There is large variability in the management of waste in Kiribati. South Tarawa’s two local councils provide has some formal HH waste collection services that operate alongside the Kaoki Manange Recycling Project (for glass and PET bottles) and three landfill sites. Kiritimati Is. currently has two unregulated dumpsites. In the rural islands, there are minimal collection services provided resulting in waste being buried, burned, or disposed of at sea (SPREP 2020). Community awareness and education is critical to success particularly establishing understanding of the link between polluted environments on both land and sea to human health and well-being.

Waste contamination of seaside/lagoon environments can significantly impact seafood (in-shore fish species, molluscs, sea plants) via bio-accumulation pathways that then affect people consuming those foods (Graves et al 2021). Rubbish strewn on beaches and in bush areas encourages vermin, stray dogs and insects. Furthermore, the common practice of burning piles of mixed organic and plastic rubbish creates localised air quality concerns, often with toxic fumes, that can create and exacerbate respiratory illnesses.

Household level data from the 2020 census, reveal the main types of waste disposal methods as shown in Figure 19, Table 19 and Map 36. The two urban islands highlight the use of formal “public collection” services with South Tarawa (61.3%) and Kiritimati (38.8%) HHs. A large proportion of HHs in most islands regularly burn waste and/or bury in the yard or bush areas. The practice of disposing waste in the ocean or sea continues to be a challenge for environment and health authorities.

In the census, HHs were asked if they perceived “A waste problem” in their local environment. Across 182 of 183 villages of Kiribati, more than 80% of HHs said “yes”. The reasons for the waste problem are presented in Figure 20 with clear links to human health evident.



Investigations are beginning into the potential adoption of a Waste to Energy facility in Kiribati, and other Pacific countries, as one option to consider in the development of comprehensive waste management plans specific to each country's context (SPREP 2021b).

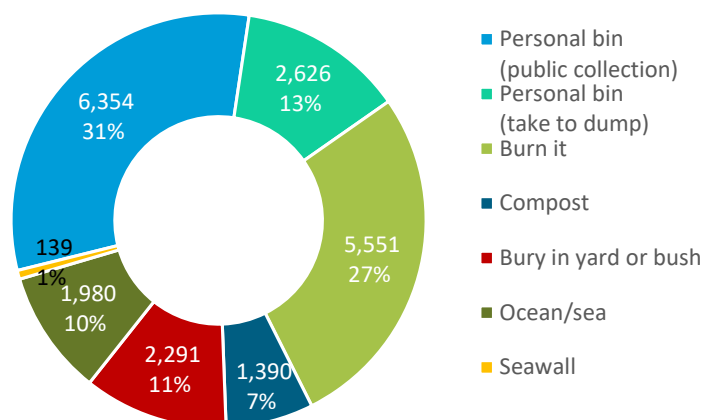


Figure 19: Household main type of waste disposal

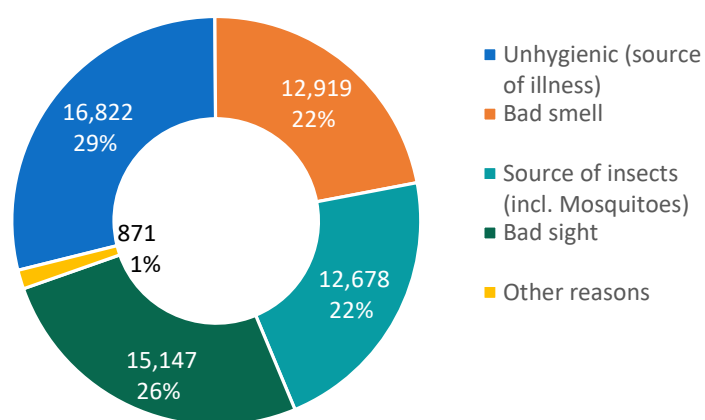


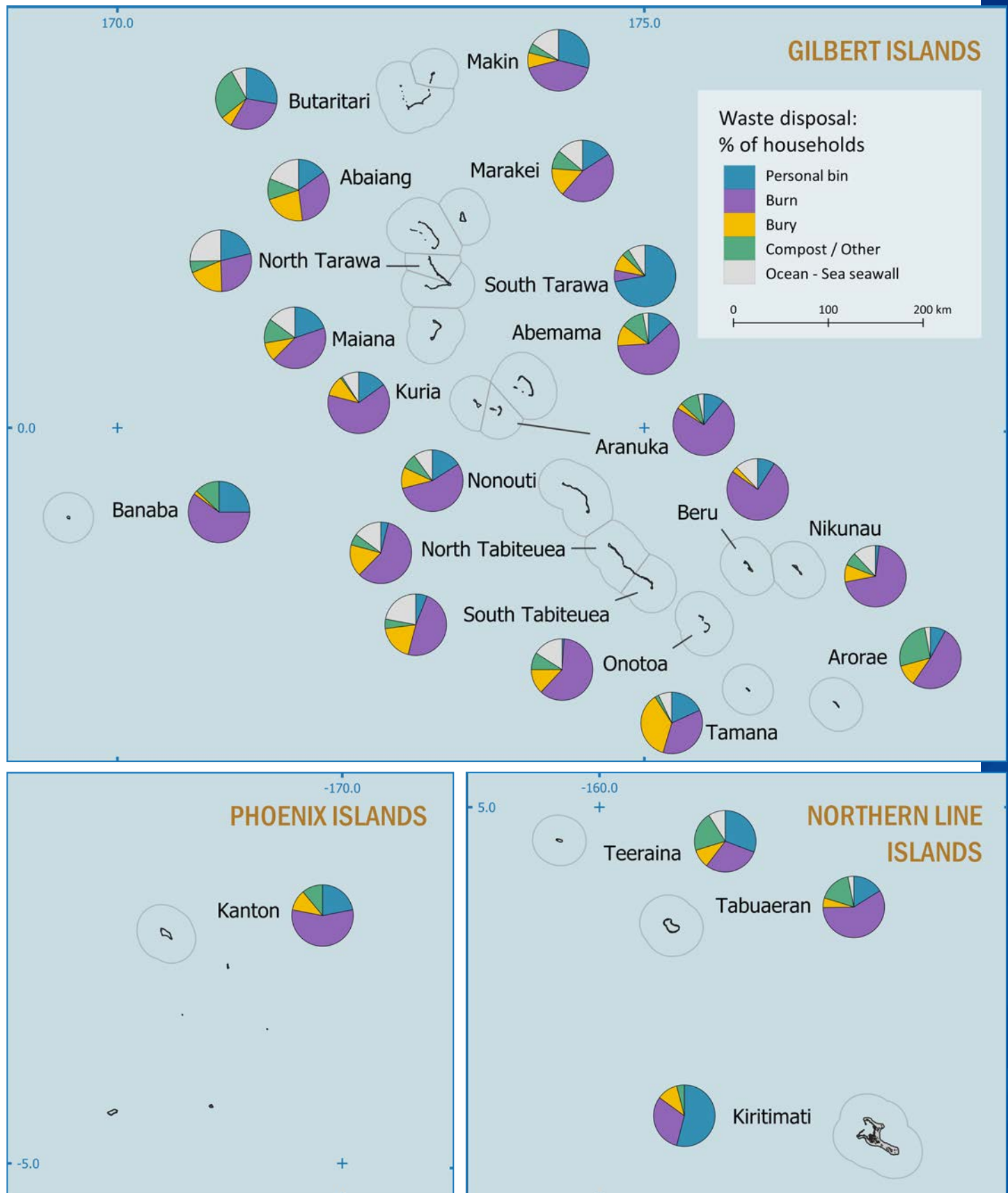
Figure 20: Waste problem reason

Table 19: Household disposal of rubbish by island (% of private HHs)*

DIVISION	ISLAND	PERSONAL BIN (PUBLIC COLLECTION)	PERSONAL BIN (TAKE TO DUMP)	BURN IT	COMPOST	BURY IN YARD OR BUSH	OCEAN /SEA	SEAWALL	OTHER METHODS OF WASTE DISPOSAL	TOTAL HHS
Northern	Abaiang	1	13.7	33.4	11	21.6	18	0.8	0.5	1,065
	Butaritari	1.5	26.1	30.6	27.3	6.5	7.9	0	0.2	618
	Makin	0.5	28.6	41.8	4.9	8.4	15.9	0	0	371
	Marakei	1	14.6	45.6	10.1	14.8	13.7	0	0.2	575
	North Tarawa	1.7	19.8	28.1	5.9	19.4	24.4	0.7	0.1	1,310
South Tarawa	South Tarawa	61.3	11.1	5.6	4	9.2	8	0.8	0.1	9,444
Central	Abemama	0.4	12.6	61	11.9	11.4	2.7	0	0	674
	Aranuka	0	10.8	73	9.7	3.5	2.7	0.4	0	259
	Banaba	2.4	22.4	60	12.9	2.4	0	0	0	85
	Kuria	1.2	14	63.6	1.2	10.8	9.2	0	0	250
	Maiana	0	19.8	42.5	12.7	10.2	14.3	0.4	0	449
Southern	Arorae	0	8.1	51.4	25.7	11.4	3.3	0	0	210
	Beru	0.2	9	75.2	0.4	3.4	11.8	0	0	533
	Nikunau	0	2.4	70	7.3	8.7	11.6	0	0	423
	Nonouti	1.5	14.6	55.5	7.7	10.8	8.8	1	0.2	611
	North Tabiteuea	0.1	3.5	59.1	5.3	16.6	10.8	4.2	0.4	753
	Onotoa	0.6	0.6	60.7	8.9	13.5	15.6	0	0	326
	South Tabiteuea	0	6.1	48.4	4.7	18.6	20.4	1.8	0	279
	Tamana	12.5	5.7	36.5	1.6	36.5	7.3	0	0	192
Line & Phoenix	Kanton	0	22.2	55.6	11.1	11.1	0	0	0	9
	Kiritimati	38.8	15.2	30.7	3.9	11	0.2	0	0.2	1,208
	Tabuaeran	0	16.3	58.3	16.8	5.3	3.3	0	0	398
	Teraina	0.3	30.4	29.8	20.8	9.9	8.7	0	0	312

* HHs can report more than one type of waste disposal.

Map 36: Households waste disposal by island



19. HEALTH FACILITIES

The health status of I-Kiribati has for many years lagged behind other Pacific countries with relatively high rates of infant and child mortality, persistent communicable diseases and a growing burden of NCDs. Remoteness of rural islands, lack of access to services, overcrowding in urban South Tarawa, shortages of qualified medical staff, lifestyle choices and low socio-economic status all contribute to this situation. The Government recognises this and is determined to make gains in population health outcomes, improve health infrastructure and facilitate more qualified health and medical staff. A Key Priority Area “KPA 3: Improving our Health” of the current National Development Plan recognises this fact and has identified a number of areas to address the issues (GoK 2021).

Health services are delivered free of charge through a network of 4 hospitals, 21 Community Health Centres and 95 village clinics (BES 2022). There is only 1 main referral facility, Tungaru Central Hospital located in Narwerewere village in South Tarawa. The other hospitals are located in Betio, South Tarawa; Utiroa, North Tabiteuea; and London, Kiritimati. As the population grows and current internal migration patterns continue, the demand for new and expanded health and medical services will be essential. With the rising prevalence of NCDs there will inevitably be a greater number of people requiring in-country specialist services such as dialysis treatment and related diabetic patient support. This is set against the need to maintain access to quality primary health care facilities in both the urban areas and rural islands.



Table 20 summarises the 2020 census HH responses to the question: “*what medical services does the HH have access to or have used*”. While most responses would indicate local services to the HH, these data may also capture information on other medical services where a member of the HH has travelled to another island to either seek that service and/or was located on another island for treatment. For many people in the rural islands, transport to a hospital facility often involves a long boat trip which can be problematic in emergency cases.

Table 20: Household access and use of health facilities by island (% of private HHs)*

DIVISION	ISLAND	HOSPITAL	HEALTH CENTER	DISPENSARY	VILLAGE CLINIC	BWAI NI KIRIBATI	PRIVATE SERVICES	OTHER SERVICES	TOTAL HHS
Northern	Abaiang	2.5	5.4	0.1	93.9	56.4	0.7	0.2	1,065
	Butaritari	0.5	20.6	1.8	79.4	54.2	-	0.2	618
	Makin	-	43.4	5.7	51.2	47.7	0.8	-	371
	Marakei	0.7	33.7	-	66.3	38.6	-	-	575
	North Tarawa	5	8.5	-	93.1	55.1	4.6	-	1,310
South Tarawa	South Tarawa	58.2	10.1	2.2	78.1	41.1	2.4	0.1	9,444
Central	Abemama	1.5	8.5	-	92	51.6	-	-	674
	Aranuka	-	56.8	-	45.2	35.1	1.5	-	259
	Banaba	-	100	-	-	5.9	-	-	85
	Kuria	1.6	4	-	92	83.2	0.8	0.4	250
	Maiana	0.2	10.7	26.1	80.8	43.2	-	-	449
Southern	Arorae	28.6	70.5	-	3.3	88.1	1	1.9	210
	Beru	0.9	70.7	-	63.8	60.6	0.2	-	533
	Nikunau	-	45.2	-	58.4	80.6	0.5	-	423
	Nonouti	0.2	36.2	-	63.7	67.9	0.2	-	611
	North Tabiteuea	23.6	12.2	-	89.5	76.1	0.3	0.1	753
	Onotoa	-	19.9	-	80.1	63.8	-	-	326
	South Tabiteuea	0.4	69.5	-	82.4	93.5	0.4	-	279
	Tamana	2.1	98.4	-	0	96.4	0	-	192
Line & Phoenix	Kanton	-	-	-	100	-	-	-	9
	Kiritimati	36.4	39.8	0.1	47.4	40.6	0.7	0.1	1,208
	Tabuaeran	0.8	42.7	-	63.6	71.4	0.3	-	398
	Teraina	0.6	97.1	-	1.3	78.5	-	-	312
Total									20,354

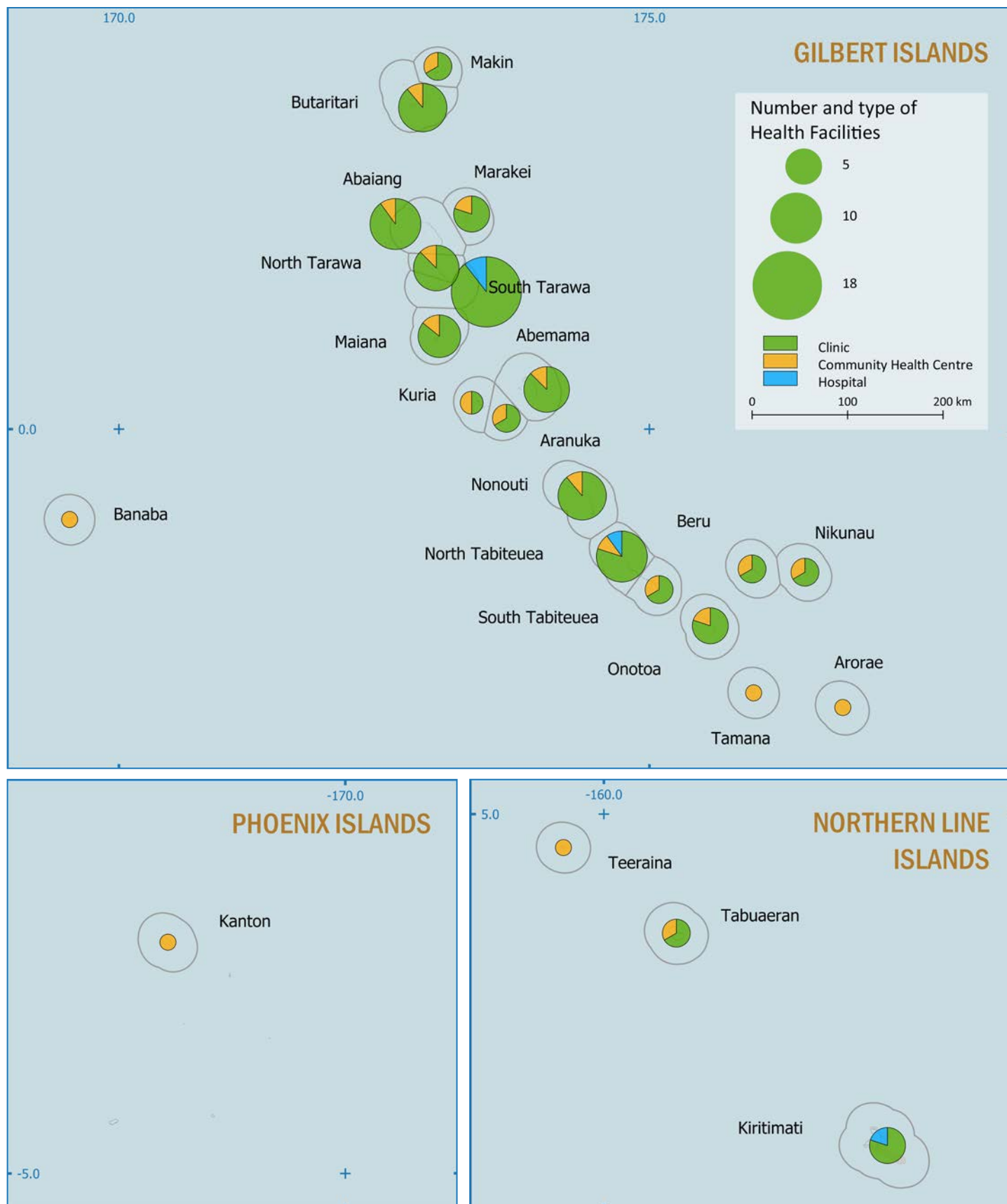
* HHs can report more than one health facility.

Use of hospital services is clearly focussed on HHs located on the same island as the facility – South Tarawa (including a Betio), Kiritimati and North Tabiteuea. 28.6% of HHs in the most southern island of the Gilbert Is. group, Arorae also report use of a hospital and this reflects travel to either the South Tarawa or North Tabiteuea facilities.

Village clinics provide essential primary care services for most people in the rural islands while the smaller number of Health Centers are also frequently accessed and used as shown in Table 20. The logistics of transport and cold storage for some medicines presents a major challenge for the health sector to maintain supplies to remote rural island facilities.

As in most other Pacific countries, the role of traditional healers and herbal medicines is very common throughout Kiribati (Da Silva et al 2004) and this is clear from the census data where many HHs report a high proportion use of “*bwai ni Kiribati*” particularly for islands in the Southern Division (Tamana 96.4%, South Tabiteuea 93.5% and Arorae 88.1%).

Map 37: Health facilities by island



REFERENCES

- Asian Development Bank ADB (2013) *Engagement in Fragile and Conflict-Affected Situations: Pilot Fragility Assessment of an Informal Urban Settlement in Kiribati*. Mandaluyong City. <https://www.adb.org/sites/default/files/publication/30147/pilot-fragility-kiribati.pdf>
- Asian Development Bank ADB (2014a) *Economic Costs of Inadequate Water and Sanitation: South Tarawa, Kiribati*. Mandaluyong City. <https://www.adb.org/sites/default/files/publication/41796/economic-costs-inadequate-water-sanitation.pdf>
- Asian Development Bank ADB (2014b) *Solid Waste Management in the Pacific: Kiribati Country Snapshot*. Mandaluyong City. <https://www.adb.org/sites/default/files/publication/42671/solid-waste-management-kiribati.pdf>
- Asian Development Bank ADB (2016) *The Emergence of Pacific Urban Villages: Urbanization Trends in the Pacific islands*. Mandaluyong City. <https://www.adb.org/publications/emergence-pacific-urban-villages>
- Asian Development Bank ADB (2020) *South Tarawa Renewable Energy Project*. Mandaluyong City. <https://www.adb.org/sites/default/files/project-documents/49450/49450-021-pfrr-en.pdf>
- Asian Development Bank ADB (2021a) *Kiribati – Member Fact Sheet*. Mandaluyong City. <https://www.adb.org/publications/kiribati-fact-sheet>
- Asian Development Bank ADB (2021b) *Review of Opportunities for the Pacific WASH Sector*. Mandaluyong City. <https://www.adb.org/publications/opportunities-pacific-wash-sector>
- Asian Development Bank ADB (2021c) *Pacific Energy Update 2020*. Mandaluyong City. <https://www.adb.org/sites/default/files/institutional-document/671701/pacific-energy-update-2020.pdf>
- Asian Development Bank ADB (2022) *Kiribati: South Tarawa Sanitation Improvement Sector Project*. Mandaluyong City. <https://www.adb.org/projects/43072-013/main>
- Australian Centre for International Agricultural Research ACIAR (2019) *Strengthening and Scaling Community-based Approaches to Pacific Coastal Fisheries Management in Support of the New Song*. Canberra. <https://www.aciar.gov.au/project/fis-2016-300>
- Australian Department of Foreign Affairs and Trade DFAT (2022) *Development Assistance in Kiribati*. Accessed 25 April 2022. <https://www.dfat.gov.au/geo/kiribati/development-assistance/development-assistance-in-kiribati>
- Beyond Essential Systems BES (2022). Tupaia: mapping healthcare facilities. Online resource. <https://beyondeessential.com.au/tupaia/>
- Data available at Pacific Data Hub, [https://stats.pacificdata.org/vis?lc=en&df\[ds\]=ds%3ASPC2&df\[id\]=DF_HEALTH_FACILITIES&df\[ag\]=SPC&df\[vs\]=1.0&pd=2021%2C2021&dq=A..T..NFAC&ly\[r-w\]=GEO_PICT&mdc\[GEO_PICT\]=KI&vw=md&fs\[0\]=Topic%2C0%7CHealth%23HEA%23&pg=0&f-c=Topic](https://stats.pacificdata.org/vis?lc=en&df[ds]=ds%3ASPC2&df[id]=DF_HEALTH_FACILITIES&df[ag]=SPC&df[vs]=1.0&pd=2021%2C2021&dq=A..T..NFAC&ly[r-w]=GEO_PICT&mdc[GEO_PICT]=KI&vw=md&fs[0]=Topic%2C0%7CHealth%23HEA%23&pg=0&f-c=Topic)
- Brewer, C. (2015) *Designing Better Maps: A Guide for GIS Users*. ESRI Press. Redbank. 2nd edition. <https://www.esri.com/en-us/esri-press/browse/designing-better-maps-a-guide-for-gis-users>

Bright, P., and Chutaro, E. (2007) *Marshall Island Population Atlas*. Secretariat of the Pacific Community. Noumea. https://sdd.spc.int/digital_library/marshall-islands-population-atlas

Brinkman, S., Sincovich, A., and Vu, BT. (2017) *The Status of Early Childhood Health and Development in Kiribati – Results from a Population Wide Census*. World Bank. Washington DC. <https://openknowledge.worldbank.org/handle/10986/32253>

Cauchi, J., Bambrick, H., Correa-Velez, I. & Moncada, S. (2021) 'White flour, white sugar, white rice, white salt': Barriers to achieving food and nutrition security in Kiribati. *Food Policy* Vol 101. <https://doi.org/10.1016/j.foodpol.2021.102075>

Clean Cooking Alliance (2022) *The Issues*. Online. <https://cleancooking.org/the-issues/>

Da Silva, E., Murukesan, VK., Nandwani, D., Taylor, M. & Josekutty, PC. (2004) *The Pacific Islands: a Biotechnology Resource Bank of Medicinal Plants and Traditional Intellectual Property*. World Journal of Microbiology & Biotechnology. Vol 20. pp 903-934. <https://doi.org/10.1007/s11274-004-3319-5>

Data Portal (2022) *Digital 2021: Kiribati*. Online. <https://datareportal.com/reports/digital-2021-kiribati>

De la Rúa, L., Bright, P., & Le Gall-Queguineur, G. (2020) *QGIS for Census and Survey Mapping: training manual*. SPC Statistics for Development Division. Noumea. http://www.spc.int/DigitalLibrary/Doc/SDD/GIS/QGIS_for_Census_and_Survey_Mapping_Manual.pdf

Edwards, J. (2014) *Phosphate mining and the relocation of the Banabans to northern Fiji in 1945: Lessons for climate change-forced displacement*. *Journal de la Société des Océanistes*. Vol 138-139 pp.121-136. <https://journals.openedition.org/jso/pdf/7100>

Englberger, L., Aalbersberg, W., Dolodolotawake, U., Schierle, J., Humphries, J., Iuta, T., Marks, G., Fitzgerald, M., Rimon, B. & Kaiririete, M. (2006) Carotenoid content of pandanus fruit cultivars and other foods of the Republic of Kiribati. *Public Health Nutrition* Vol 9 No 5 pp631-643. <https://doi.org/10.1079/PHN2005892>

Finnish Consulting Group Asia Pte Ltd FCG (2022) *Environmental and Social Impact Assessment (ESIA) –Desalination Facilities (Betio and McKenzie) Vol 1*. In association with Fraser Thomas. https://www.adb.org/sites/default/files/project-documents/49453/49453-002-iee-en_8.pdf

Fischer, S. (2017) *A History of the Pacific Islands*. 2nd edition. Palgrave Macmillan (Springer Nature). London. <https://www.bloomsbury.com/au/history-of-the-pacific-islands-9780230362697/>

Global Ministries (2022) *Kiribati Uniting Church*. Online. https://www.globalministries.org/partner/eap_partners_kiribati_protestant_church/

Government of Kiribati (2018) *Kiribati 20-year Vision 2016-2036*. Bairiki. Tarawa. <https://www.president.gov.ki/resources/kiribati-20-year-vision-kv20.html>

Government of Kiribati (2019) *Kiribati National ICT Policy 2019*. Bairiki. Tarawa. <https://www.mict.gov.ki/download/file/fid/295>

Government of Kiribati (2021) *Kiribati Development Plan 2020-2023*. Bairiki, Tarawa. <https://www.mfed.gov.ki/sites/default/files/KDP%2020%20-%202023.pdf>

Government of Kiribati (2022a) *Climate Change Issues*. Office of Te Beretienti. Bairiki, Tarawa. <https://www.president.gov.ki/office-of-te-beretienti/climate-change-issues.html>

Government of Kiribati (2022b) *Handwashing with Soap will Save Lives*.

<https://www.climate.gov.ki/2014/10/14/hand-washing-with-soap-will-save-lives/>

Graves, C., Powell, A., Stone, M., Redfern, F., Biko, T. & Devlin, M. (2021) *Marine water quality of a densely populated Pacific atoll (Tarawa, Kiribati): Cumulative pressures and resulting impacts on ecosystem and human health*. Marine Pollution Bulletin. Vol 163.

<https://doi.org/10.1016/j.marpolbul.2020.111951>

Haub, C. (2011) The Population Handbook. 6th edition. Population Reference Bureau. Washington DC. <https://www.prb.org/wp-content/uploads/2011/09/prb-population-handbook-2011.pdf>

Institute for Health Metrics and Evaluation IHME (2022) *Kiribati Population and Health Indicators*. Online resource. <https://www.healthdata.org/kiribati>

International Fund for Agricultural Development IFAD (2020) *Looking inward: I-Kiribati fight a double health crisis*.

<https://www.ifad.org/en/web/latest/-/story/looking-inward-i-kiribati-fight-a-double-health-crisis>

International Labour Organization ILO (2022) *Concepts and Definitions: Labour Force Participation Rate*. Online resource. <https://ilostat ilo.org/resources/concepts-and-definitions/description-labour-force-participation-rate/>

International Renewable Energy Agency IRENA, Secretariat of the Pacific Community SPC and Pacific Power Association PPA (2017) *Kiribati Integrated Energy Roadmap: 2017-2025*.

https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Jul/Kiribati_Integrated_Energy_Roadmap_2017.pdf

International Telecommunications Union ITU (2022) *ITU Data Hub – Kiribati*. Online Resource.

<https://datahub.itu.int/data/?e=KIR>

Jacobs NZ Limited (2022) *Temaiku Land and Urban Development: Project overview*. Online.

<https://www.jacobs.com/projects/kiribati>

Kiribati National Statistics Office KINSO, UNICEF Pacific & the Pacific Community (2017) *Disability Monograph: From the 2015 Population and Housing Census*. Suva.

https://www.spc.int/DigitalLibrary/Doc/SDD/Disability/Kiribati_2015_Disability_Report_sml.pdf

Kiribati National Statistics Office (2019) *Kiribati Social Development Indicator Survey 2018-19: Snapshot of Key Findings*. Bairiki, Tarawa.

<http://microdata.pacificdata.org/index.php/catalog/741>

Kiribati National Statistics Office (2020) *International Trade Tables 2020 (Prelim)*.

<https://nso.gov.ki/download/31/trade/1912/international-trade-tables-2020-prelim>

Kiribati National Statistics Office (2021a) *2020 Population and Housing Census: General Reports and Tables*. Bairiki, Tarawa.

<https://nso.gov.ki/download/146/2020-census/1952/census-report-2020-book>

Kiribati National Statistics Office (2021b) *2020 Population and Housing Census: Questionnaire*. Bairiki.

Tarawa. https://nso.gov.ki/download/146/2020-census/1932/kircensus_2020-questionnaire

Kiribati National Statistics Office (2021c) *2020 Population and Housing Census: Island Profile Table*. Excel file. Bairiki, Tarawa.

<https://nso.gov.ki/download/146/2020-census/1931/island-profile-table-final>

Kiribati National Statistics Office (2021d) *Kiribati 2019-2020 Household Income and Expenditure Survey Report*. Bairiki, Tarawa. <https://nso.gov.ki/economy/kiribati-2019-2020-household-income-and-expenditure-survey-report/>

Kiribati National Statistics Office, Food and Agriculture Organization & the Pacific Community (2021) *Kiribati Food Security Profile*. KINSO. Bairiki, Tarawa. <https://www.fao.org/publications/card/en/c/CB3786EN/>

Kiribati Solar Energy Company KSEC (2022) *About Us*. Webpage. http://solar.com.ki/index.php?route=product/category&path=81_82

Kiribati Uniting Church KUC (2022) *Global Ministries – Pacific Islands*. Online. https://www.globalministries.org/partner/eap_partners_kiribati_protestant_church/

Live and Learn (2022) *Assessment of WASH in Schools programs in Fiji, Kiribati, Solomon Islands and Vanuatu*. <https://www.livelearn.org/what/resources/assessment-wash-schools-programs-fiji-kiribati-solomon-islands-and-vanuatu>

Loco, A., Kumar, A., Antoniou, A. & Sinclair, P. (2020) *Groundwater investigation on Onotoa Island Republic of Kiribati*. Pacific Community. Suva. <https://purl.org/spc/digilib/doc/mc58s>

Mahoney, M. (2022) *Gender Equality and Sustainable Energy: Lessons From Pacific Island Countries And Territories*. Pacific Community and UN Women Regional Office for Asia and the Pacific. Noumea. https://data.unwomen.org/sites/default/files/documents/Publications/Gender_Equality_and_Sustainable_Energy_Pacific.pdf

Miedema, S., Fulu, E., Warner, X., Leung, L. & Hardnett, F. (2019) *South Tarawa Healthy Living Study: An Impact Evaluation of the Strengthening Peaceful Villages Violence Prevention Intervention in Kiribati: Baseline Report*. UN Women (Fiji Multi-country Office) and Kiribati Ministry of Women, Youth, Sport and Social Affairs (MWYSSA). <https://asiapacific.unwomen.org/en/digital-library/publications/2020/07/south-tarawa-healthy-living-study>

Ministry of Education (2022) *Kiribati Education Statistics*. Unpublished. <https://www.moe.gov.ki/statistics>

Ministry of Environment, Lands and Agriculture Developments MELAD (2022) *Land Management Division*. Online resource. <https://www.melad.gov.ki/page/land-management-division/lands-property-valuation-unit.html>

Ministry of Health and Medical Services MHMS (2015) *Kiribati Annual Health Bulletin 2015*. Health Information Unit. Nowerewere, Tarawa. <https://reliefweb.int/report/kiribati/kiribati-annual-health-bulletin-2015>

Ministry of Information, Communications and Transport MICT (2021) *MICTTD Strategic Plan 2021-2024*. Betio, Tarawa. <https://www.mict.gov.ki/sites/default/files/MICTTD%20MSP%202021-2023.pdf>

Ministry of Infrastructure, Sustainable Energy MISE (2021) *Promoting Outer Islands Development Through the Integrated Energy Roadmap (POIDIER) project*. <https://www.mise.gov.ki/index.php/major-projects/ongoing-project/poidier>

Ministry of Infrastructure, Sustainable Energy MISE (2022) *South Tarawa Water Supply Project*. <https://www.mise.gov.ki/index.php/major-projects/ongoing-project/south-tarawa-water-supply-project>

Ministry of Line and Phoenix Island Development MLPID (2016) *Line and Phoenix Islands Integrated Development Strategy 2016-2036*. Tarawa. <https://www.mfed.gov.ki/sites/default/files/Line%20and%20Phoenix%20Islands%20Sustainable%2C%20Integrated%20Development%20Strategy%202016%20-%202036%20online%20version.pdf>

Ministry of Line and Phoenix Island Development MLPID (2020) *Ministry Strategic Plan. 2020-2023*. <https://www.mlpid.gov.ki/index.php>

Ministry of Women, Youth, Sport and Social Affairs MWYSSA (2018) *Kiribati National Disability Policy and Action Plan*. Bairiki, Tarawa. https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/10/Kiribati_Kiribati-National-Disability-Policy-and-Action-Plan-2018-%E2%80%93-2021.pdf

Ministry of Works and Public Utilities MWPU & the Secretariat of the Pacific Community SPC (2014) *Kiribati Cooking for Life Strategy*. Energy Planning Unit MWPU. Betio, Tarawa. <https://policy.asiapacificenergy.org/sites/default/files/Kiribati%20Cooking%20for%20Life%20Strategy.pdf>

New Zealand Ministry of Foreign Affairs and Trade MFAT (2022) *Our Development Co-operation with Kiribati*. <https://www.mfat.govt.nz/assets/Aid-Prog-docs/IATI-PDFs/PACMM/Kiribati.pdf>

Nussbaumer-Knaflitz, C. (2015) *Storytelling with Data: A Data Visualisation Guide for Business Professionals*. Wiley. Hoboken NJ. <https://www.storytellingwithdata.com/books>

Pacific Community (2015) *Guide to Gender Statistics and their Presentation*. Gender, Culture and Youth Section, Social Development Division. Noumea. https://www.spc.int/DigitalLibrary/Doc/HDP/Gender/Guide_to_gender_statistics_and_their_presentation.pdf

Pacific Community (2017) *Kiritimati Island Water Project and Kiritimati Island Energy Sector Programme construction commences*. <https://www.spc.int/updates/news/2017/03/kiritimati-island-water-project-and-kiritimati-island-energy-sector-programme>

Pacific Community (2019a) *Pacific Islands Literacy & Numeracy Assessment 2018 – Regional Report*. Education Quality and Assessment Programme (EQAP). Suva. <https://eqap.spc.int/sites/default/files/EQAP/Reports/PILNA%20Regional%20Report%202018.pdf>

Pacific Community (2019b) *Pacific High-level Dialogue on Water and Sanitation: A Call to Action*. Noumea. <https://purl.org/spc/digilib/doc/6uvpv>

Pacific Community (2020) *Pacific Population Poster*. Online resource. Statistics for Development Division. https://sdd.spc.int/digital_library/pacific-island-2020-populations-poster-les-populations-du-pacifique-2020

Pacific Community (2022a) *PopGIS3*. Online resource. <https://kiribati.popgis.spc.int/#c=home>

Pacific Community (2022b) *PDH.Stat: Development Indicator Database*. Online resource. <https://sdd.spc.int/indicators-stat>

Pacific Community (2022c) *Safe and Sustainable Drinking Water for Kiritimati Island/ Kateimatoakin Kamanoan Te Ran Ni Mooi laon Kiritimati*. GEM Division. <https://gem.spc.int/projects/safe-and-sustainable-drinking-water-for-kiritimati-island-kateimatoakin-kamanoan-te-ran-ni>

Pacific Community (2022d) *Water and Sanitation Programme*. GEM Division. <https://gem.spc.int/projects/water-and-sanitation-programme>

Pacific Community (2022e) *Atoll Water Inventory*.

<https://storymaps.arcgis.com/stories/9f34ad66403140a5b394fe26b1ebf696>

Secretariat of the Pacific Community SPC (2008) *Provincial Population Profile: Malaita Province – Discovering the Relevance*. Demography-Population Programme. Noumea.

<https://purl.org/spc/digilib/doc/94ykg>

Sloggett A (2015). Measuring fertility. In *Population Analysis for Policy and Programmes*. Paris: International Union for the Scientific Study of Population. Online resource.

Available at http://papp.iussp.org/sessions/papp101_s04/PAPP101_s04_010_010.html

SPREP (2020) *PacWastePlus Project Snapshot: Kiribati*. Secretariat of the Pacific Regional Environment Programme. Apia.

<https://pacwasteplus.org/wp-content/uploads/2021/05/PacWastePlus-country-profile-Kiribati.pdf>

SPREP (2021a) *Assessment of Legislative Frameworks Governing Waste Management in Kiribati*. Secretariat of the Pacific Regional Environment Programme. Apia.

<https://library.sprep.org/sites/default/files/2021-03/waste-legislation-Kiribati.pdf>

SPREP (2021b) *Waste to Energy Research Report*. Secretariat of the Pacific Regional Environment Programme. Apia. https://pacwasteplus.org/wp-content/uploads/2021/12/Waste-to-Energy-Research-Report-_Formatted_Final.pdf

Tabunga, T., Utiera, M., Tekoaau, R., Tibwe, T., Tira, T., Toatu, T., Duituturaga, S., Nilles, E. & Craig, A. (2014) *Response to a large rotavirus outbreak on South Tarawa, Kiribati, 2013*. Western Pacific Surveillance and Response Journal Vol 5 No 2. pp.9-14. WHO Western Pacific Office.

<https://ojs.wpro.who.int/ojs/index.php/wpsar/article/view/224>

Tourism Authority of Kiribati TAK (2022) *About Us*. Online.

<https://corporate.visitkiribati.travel/about-us/>

Troubat, N. and Sharp, M. (2021) *Food consumption in Kiribati – Based on analysis of the 2019/20 Household Income and Expenditure Survey*. Tarawa, FAO and SPC. <https://doi.org/10.4060/cb6579en>

UNECE (2009) *Making Data Meaningful: 4 part series*. UN Economic Commission for Europe. Online resource. <https://unece.org/statistics/making-data-meaningful>

UIS (2022) *Glossary of Education Statistics*. Online resource. UNESCO Institute for Statistics.

<http://uis.unesco.org/en/glossary>

UNICEF (2017) *Situation Analysis of Children in Kiribati*. Pacific Office. Suva.

<https://www.unicef.org/pacificislands/media/1131/file/Situation-Analysis-of-Children-Kiribati.pdf>

UNICEF (2020) *Scaling Up Efforts to Ensure Access to Clean Water and Sanitation in Kiribati*.

<https://www.unicef.org/pacificislands/press-releases/scaling-efforts-ensure-access-clean-water-and-sanitation-kiribati>

UNICEF (2021a) *Kiribati Education Fact Sheets: Analyses for Learning and Equity Using Data from Kiribati Development Indicator Survey 2018-2019*. Pacific Office. Suva. <https://www.unicef.org/pacificislands/media/2731/file/Kiribati%20Education%20Fact%20Sheets%202021.pdf>

UNICEF (2021b) *Progress on Household Drinking Water, Sanitation and Hygiene: Pacific Region and Pacific Islands 2000-2020. Joint Monitoring Report Regional Snapshot*. UNICEF East Asia and Pacific Regional Office. Bangkok. <https://www.unicef.org/eap/reports/jmp-snapshot-household-drinking-water-sanitation-hygiene-pacific-region-pacific-islands>

UNICEF (2021c) *JMP Snapshot of Household Drinking Water, Sanitation & Hygiene in Pacific Region & Pacific Islands*. <https://www.unicef.org/eap/reports/jmp-snapshot-household-drinking-water-sanitation-hygiene-pacific-region-pacific-islands>

UNICEF (2021d) *WASH in Schools (WinS) Three Star Approach (TSA) Multi-Country Evaluation*. <https://gdc.unicef.org/resource/wash-schools-wins-three-star-approach-tsa-multi-country-evaluation>

UN Environment Programme UNEP (2019) *Kiribati to Carry Out Considerable Efforts in Sound Management of Chemicals and Waste*. Online. <https://www.unep.org/news-and-stories/story/kiribati-carry-out-considerable-efforts-sound-management-chemicals-and-waste>

UNESCAP (2021) *Inequality of Opportunity: Who Are Those Left Behind? Kiribati*. Policy Brief. Social Development Division. Bangkok. <https://www.unescap.org/sites/default/d8files/knowledge-products/Kiribati.pdf>

UNFPA (2014) *Population and Development Profiles: Pacific Island Countries*. Pacific sub-Regional Office. Suva. https://pacific.unfpa.org/sites/default/files/pub-pdf/web__140414_UNFPAPopulationandDevelopmentProfiles-PacificSub-RegionExtendedv1LRv2_0.pdf

UNFPA (2022) *UNFPA Pacific Island Countries*. Website. Suva. <https://pacific.unfpa.org/>

UN-Habitat (2015a) *Urbanization and Climate Change in Small Island Developing States*. UN Human Settlements Programme. Nairobi. https://unhabitat.org/sites/default/files/download-manager-files/SIDS_Updated.pdf

UN-Habitat (2015b) *Housing at the Centre of the New Urban Agenda*. Position Paper. UN Human Settlements Programme. Nairobi. https://unhabitat.org/sites/default/files/download-manager-files/Housing_at_the_centre.pdf

UN-Habitat (2018). *SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading*. UN Human Settlements Programme. Nairobi. https://unhabitat.org/sites/default/files/2020/06/indicator_11.1.1_training_module_adequate_housing_and_slum_upgrading.pdf

UN-Habitat (2020). *Metadata on SDGs Indicator 11.1.1*. UN Human Settlements Programme. Nairobi. <https://data.unhabitat.org/documents/GUO-UN-Habitat::metadata-on-sdg-indicator-11-1-1/explore>

UN Office for the Co-ordination of Humanitarian Affairs OCHA (2022) *Kiribati*. Online. <https://www.unocha.org/office-pacific-islands/kiribati>

Vollset, S., Goren, E., Yuan, C., Cao, J., Smith, A., Hsiao, T., Bisignano, C., Azhar, G., Castro, E., Chalek, J., Dolgert, A., Frank, T., Fukutaki, K., Hay, S., Lozano, R., Mokdad, A., Nandakumar, V., Pierce, M., Pletcher, M., Robalik, T., Steuben, K., Wunrow, H., Zlavog, B., & Murray, C. (2020) *Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study*. The Lancet. Vol 396 pp.1285-1306. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30677-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30677-2/fulltext)

The Washington Group on Disability Statistics WGDS (2022) *Resources for Data Users*. Online resource. <https://www.washingtongroup-disability.com/resources/resources-for-data-users/>

Whincup, T. (2010) *Te Mwaneaba Ni Kiribati*. Shima: The International Journal of Research Into Island Cultures. Vol 4 No 1 pp113-130.

<https://shimajournal.org/issues/v4n1/k.-Whincup-Shima-v4n1-113-130.pdf>

World Bank (2016) *Kiribati Grid Connected Solar PV Project*.

<https://projects.worldbank.org/en/projects-operations/project-detail/P121878>

World Bank (2017) *Remote Pacific Regions Set for Broadband Internet Under New World Bank Projects*. Press Release. <https://www.worldbank.org/en/news/press-release/2017/06/01/remote-pacific-regions-set-for-broadband-internet-under-new-world-bank-projects>

World Bank (2019) *South Tarawa Water Supply Project (P162938)*. Washington DC.

<https://projects.worldbank.org/en/projects-operations/project-detail/P162938>

World Bank (2022) *\$20m Climate Adaption support for Kiribati's Outer Islands*. Press Release May 15, 2022. Washington DC. <https://www.worldbank.org/en/news/press-release/2022/05/15/-20m-climate-adaption-support-for-kiribati-s-outer-islands>

World Bank Group & the Asian Development Bank WBG & ADB (2021) *Climate Risk Country Profile: Kiribati*. Washington DC. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15816-WB_Kiribati%20Country%20Profile-WEB.pdf

World Health Organisation WHO (2017) *Kiribati-WHO Country Co-operation Strategy 2018-2022*.

World Health Organisation Western Pacific Regional Office. Manila. WPR/2017/DPM/011.

<https://www.who.int/publications/i/item/WPR-2017-DPM-011>

World Health Organisation WHO (2018) *Drinking Water, Sanitation and Hygiene in the Western Pacific Region*. World Health Organisation Western Pacific Regional Office. Manila.

<https://www.who.int/publications/i/item/9789290618614>

World Health Organisation WHO (2021) *Malnutrition: Fact Sheet*. World Health Organisation. Online.

<https://www.who.int/news-room/fact-sheets/detail/malnutrition>

World Health Organisation WHO & UNICEF (2021) *Progress on Household Drinking Water, Sanitation and Hygiene 2000-2020: five years into the SDGs*. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene. Geneva.

<https://washdata.org/report/jmp-2021-wash-households>

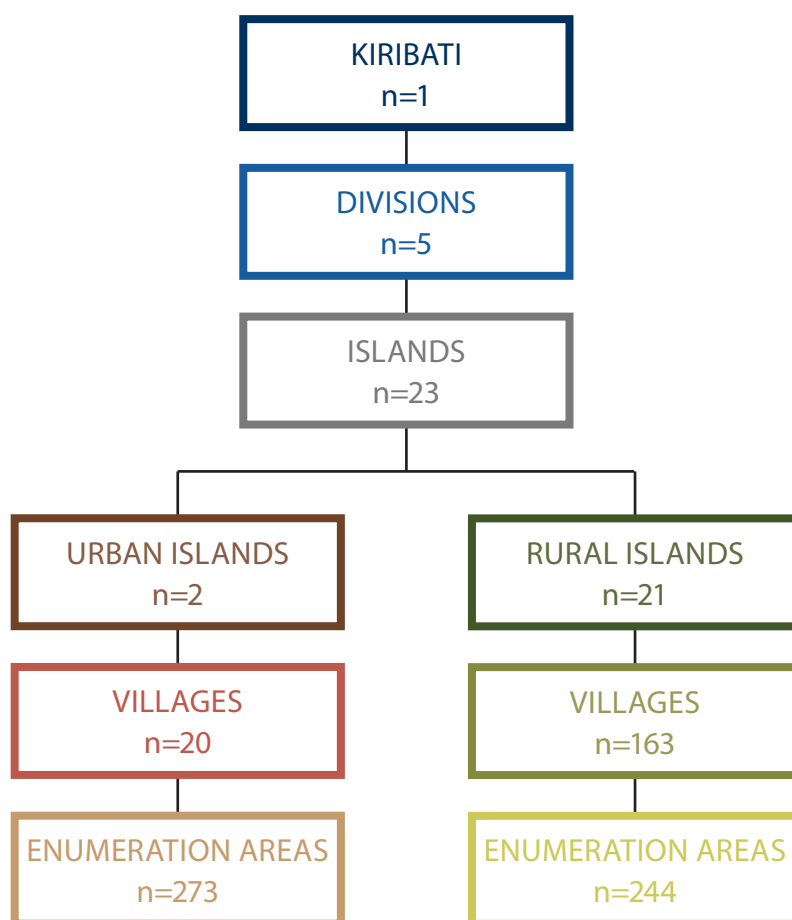
Zendejas-Heredia, P., Crawley, A., Byrnes, H., Traub, R., and Colella, V. (2021) *Zoonotic Soil-Transmitted Helminths in Free-Roaming Dogs, Kiribati*. *Emerging Infectious Diseases*. Vol 27 No.8. pp.2163-2165. <https://stacks.cdc.gov/view/cdc/108791>

ANNEX

KIRIBATI CENSUS GEOGRAPHY

The Kiribati Census of Population and Housing requires every island and village to be divided into a number of geographic units to facilitate enumeration and provide a logical structure for reporting results. This is known as the Census Geography.

As shown in the diagram below, EAs are the smallest geographic unit. EAs essentially delineate the boundary for a census enumerator's workload and contain an average of 39 HHs with 230 people. For the 2020 census there were 517 EAs. EA level data are aggregated to build Villages (n=183), Islands (n=23), Divisions (n=5) and ultimately National level (n=1) census data.



KIRIBATI 2020 POPULATION AND HOUSING CENSUS NOTES

THE FOLLOWING NOTES ARE A SUMMARY FROM THE CENSUS REPORT (KINSO 2021A).

The PHC is a major activity by the KINSO and is carried out at every five years. It was a defacto Census, i.e. counting of every person who resided in Kiribati on the Census night. The Census Night for PHC 2020 was the 7th November 2020. The Census Commissioner, the Republic Statistician, was assisted by a Steering Committee to organise and conduct the administration of the Census. More than 700 people were employed including Enumerators, Supervisors and Data Validators in addition to the KINSO staff. SPC-SDD team provided technical support for mapping, editing, documentation and analysis.

METHODOLOGY:

The Kiribati PHC 2020 was the first time that KINSO utilised the CAPI tools and methodology for data collection, in-field editing and processing of results. It was based on Android tablets and Survey Solutions CAPI software. This is well recognised as having significantly improved data quality.

KINSO adopted the Pacific model census questionnaire provided by SPC. The questionnaire was contextualised inserting some specific national questions and translated into I-Kiribati language for use on the CAPI tablets. Key stakeholders were consulted to review the census questions and provide input into Government priorities such as KV20 national planning and development indicators, environment, health and major policy areas.

Pre-census Pilot testing was undertaken with a sample of HHs on Abaiang, North Tarawa and South Tarawa resulting in some modifications to the questionnaire to improve responses and assist census enumerators interpretation and recording work.

Household listing, map demarcation and Enumeration Area (EA) boundary delineation used GPS and GIS technology for accurate recording and reporting of geo co-ordinates. EA maps were produced using aerial imagery to assist enumerators and supervisors field work.

With the Census Day reference period of the 7th November, 2020, the enumeration was carried out smoothly over a period of three weeks. From day 1, all data collected were synchronized to the server based at SPC in Noumea, where all results could be viewed, validated and then synchronized back for editing by SPC and KINSO.

Challenges faced and overcome during the census enumeration included travel to distant remote islands, intermittent internet issues and interruptions due to COVID-19 circumstances. The final total cost of the PHC 2020 enumeration was AUD\$1.9 million with the majority of these funds sourced from the Government of Kiribati.

Post enumeration work i.e. data cleaning and quality assurance, was undertaken by SPC and KINSO with data becoming available in the public domain from April 2021.

Full PHC 2020 documentation including Questionnaire and results is available from:

KINSO website:

<https://nso.gov.ki/census/kiribati-2020-2021-population-and-housing-census-data/>

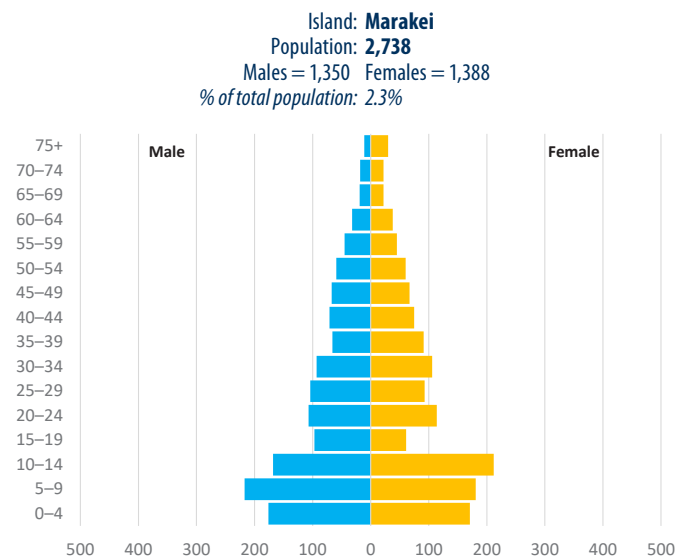
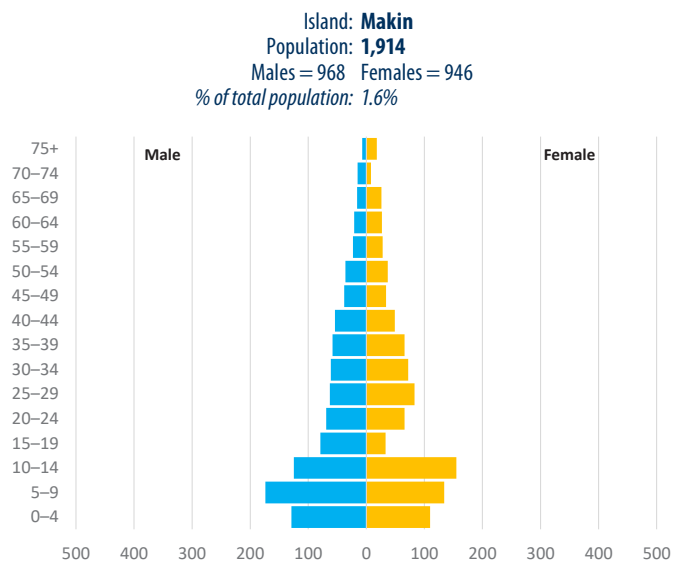
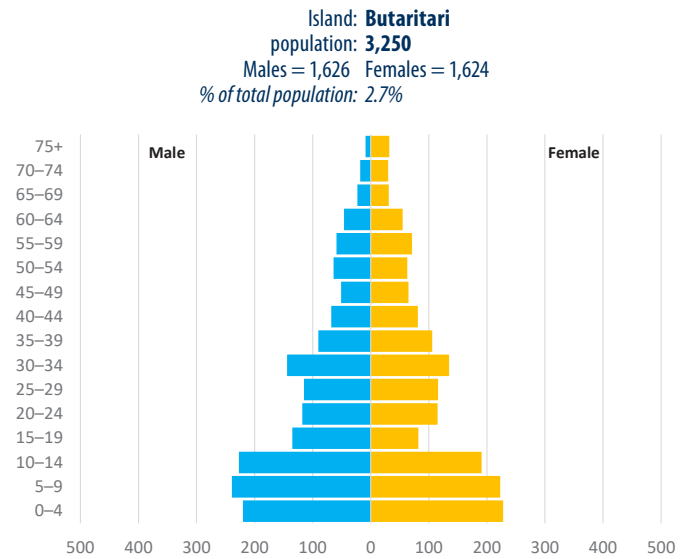
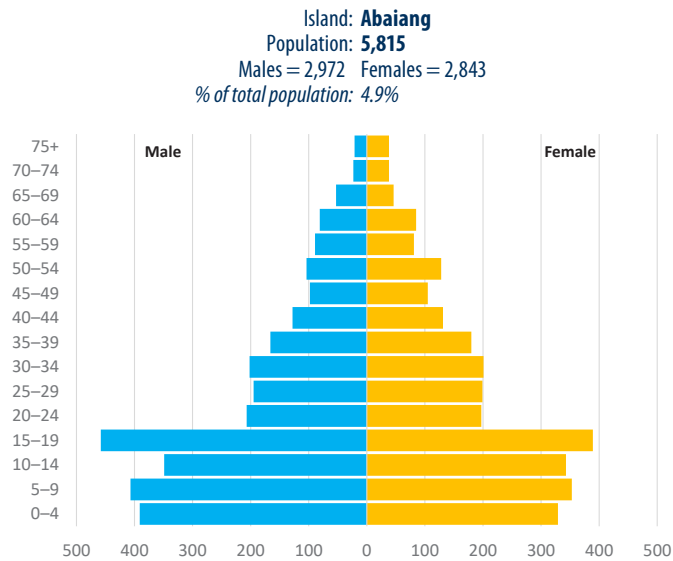
and the Pacific Data Hub Microdata library:

<https://microdata.pacificdata.org/index.php/catalog/767/study-description>

KIRIBATI 2020 POPULATION PYRAMIDS

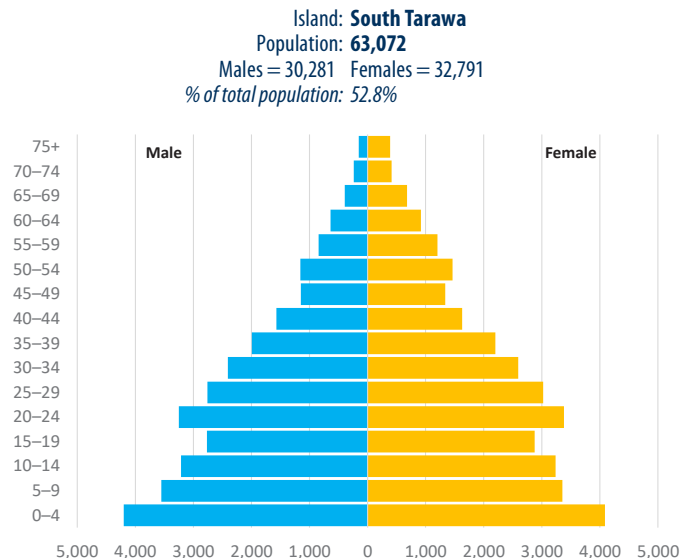
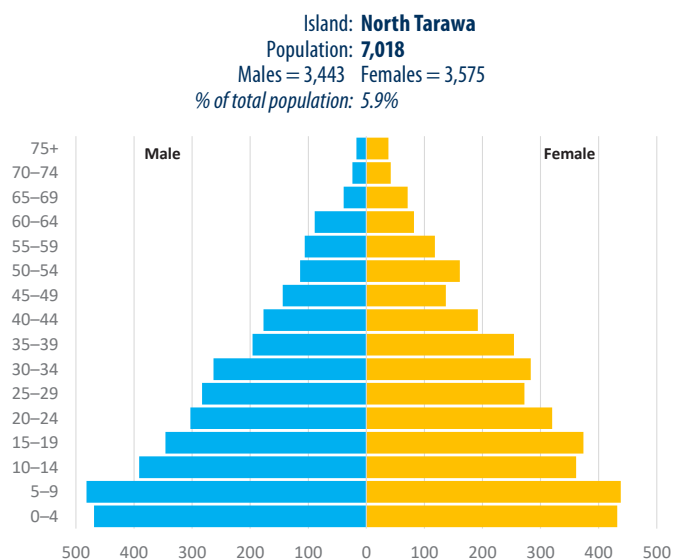
Northern Division

Source: KINSO PHC 2020



South Tarawa Division

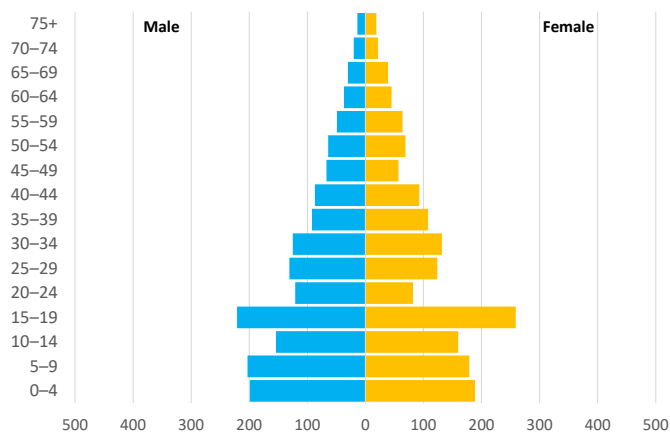
Source: KINSO PHC 2020



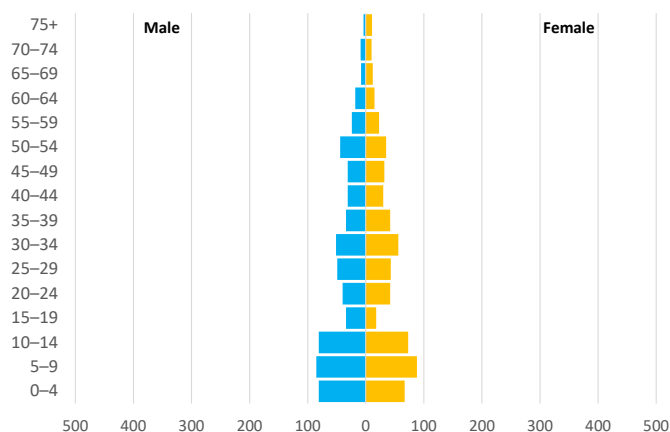
Central Division

Source: KINSO PHC 2020

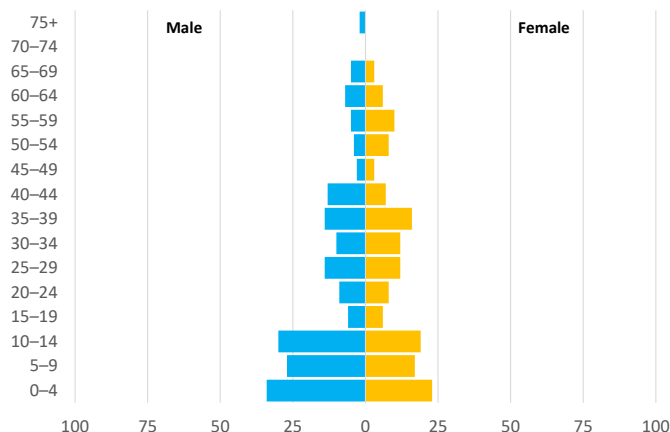
Island: **Abemama**
Population: **3,255**
Males = 1,614 Females = 1,641
% of total population: 2.7%



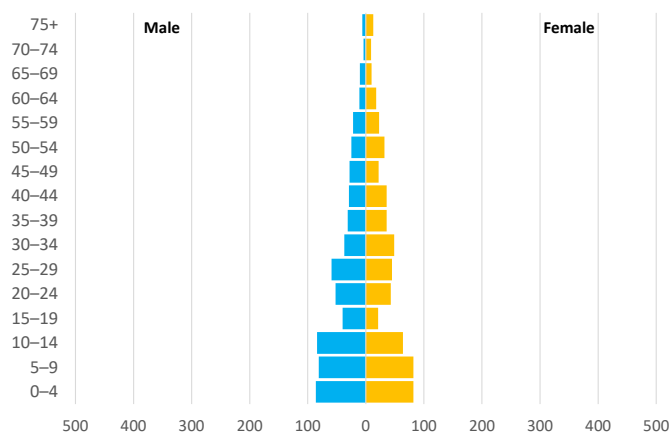
Island: **Aranuka**
Population: **1,221**
Males = 624 Females = 597
% of total population: 1.0%



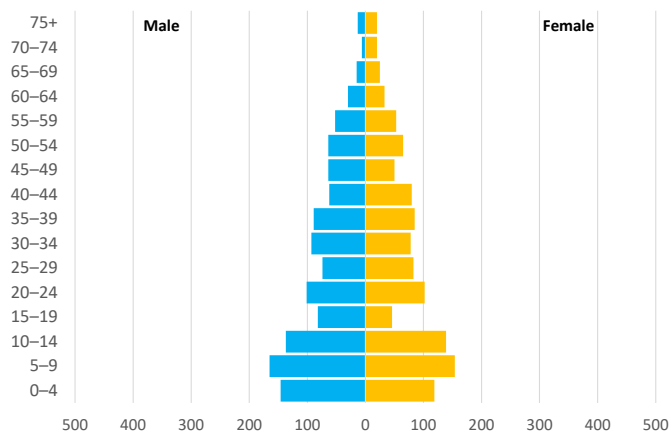
Island: **Banaba**
Population: **333**
Males = 183 Females = 150
% of total population: 0.3%



Island: **Kuria**
Population: **1,190**
Males = 605 Females = 585
% of total population: 1.0%



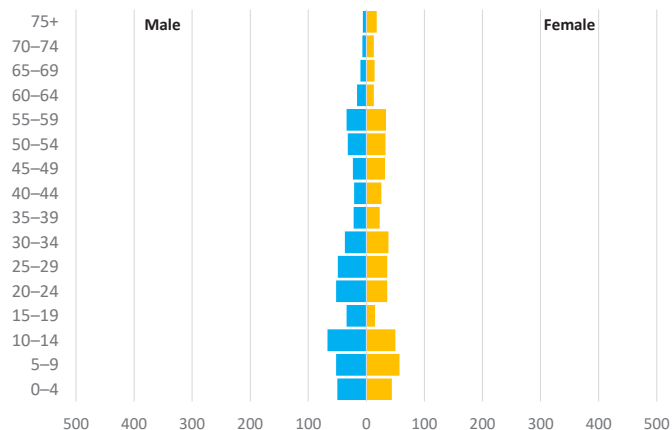
Island: **Maiana**
Population: **2,345**
Males = 1,193 Females = 1,152
% of total population: 2.0%



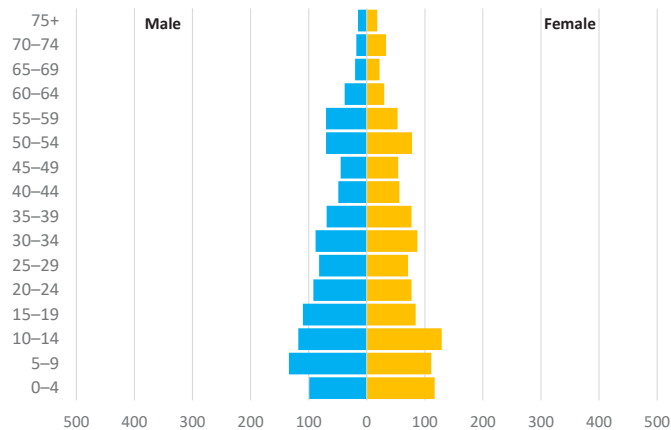
Southern Division

Source: KINSO PHC 2020

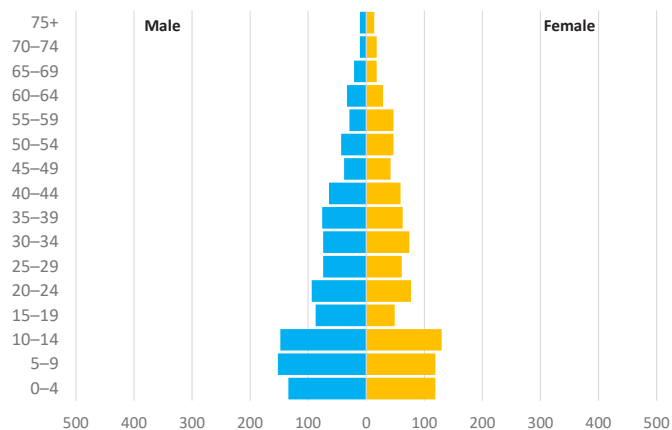
Island: **Arorae**
Population: **994**
Males = 512 Females = 482
% of total population: 0.8%



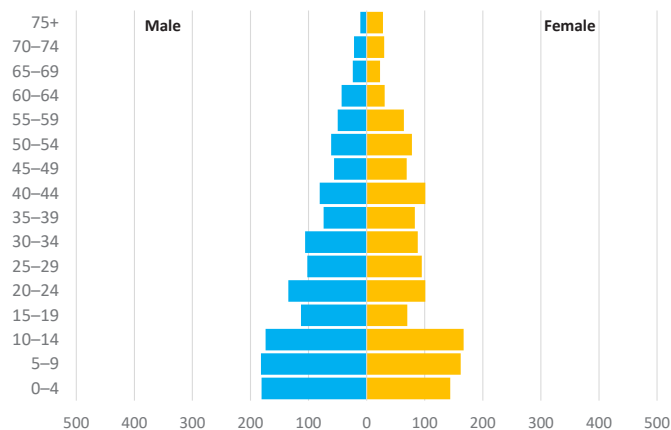
Island: **Beru**
Population: **2,214**
Males = 1,117 Females = 1,097
% of total population: 1.9%



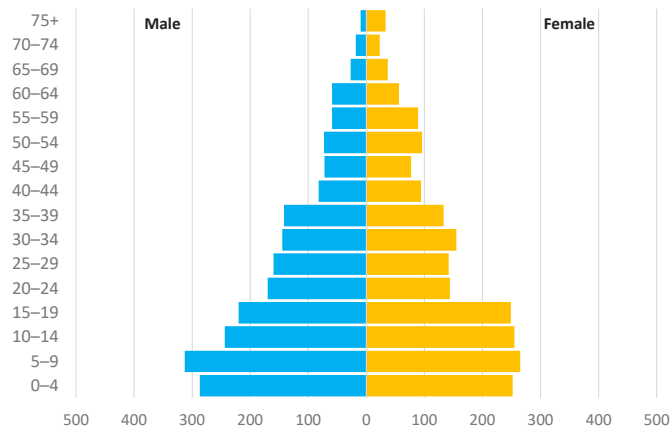
Island: **Nikunau**
Population: **2,055**
Males = 1,089 Females = 966
% of total population: 1.7%



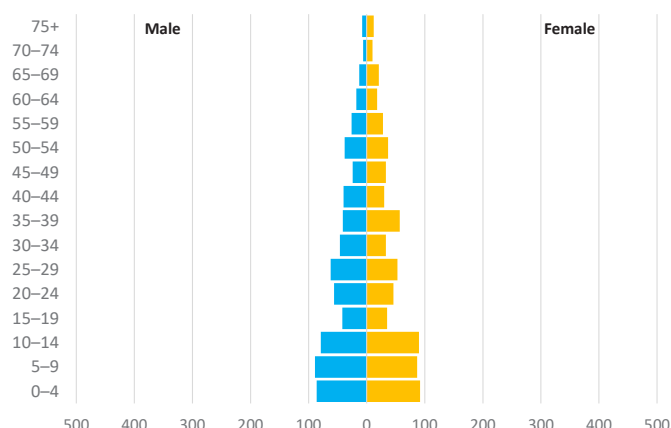
Island: **Nonouti**
Population: **2,749**
Males = 1,415 Females = 1,334
% of total population: 2.3%



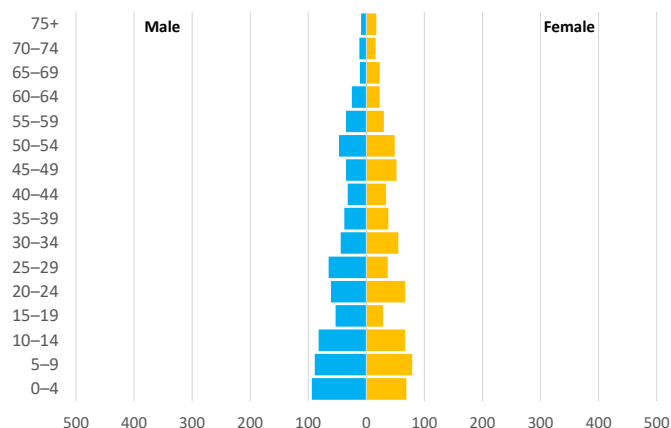
Island: **North Tabiteuea**
Population: **4,181**
Males = 2,081 Females = 2,100
% of total population: 3.5%



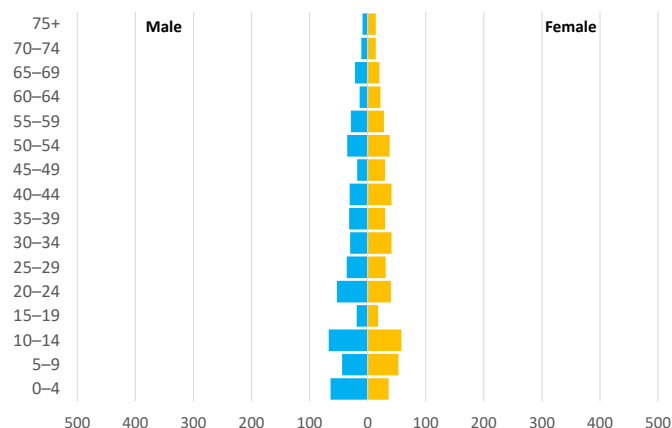
Island: **South Tabiteuea**
Population: **1,356**
Males = 674 Females = 682
% of total population: 1.1%



Island: **Onotoa**
Population: **1,417**
Males = 732 Females = 685
% of total population: 1.2%



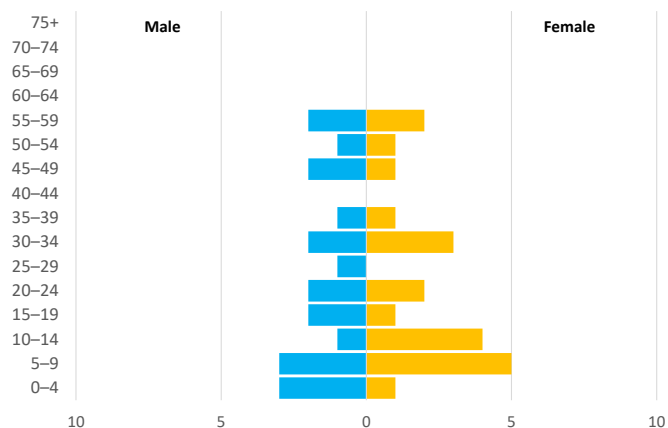
Island: **Tamana**
Population: **1,028**
Males = 514 Females = 514
% of total population: 0.9%



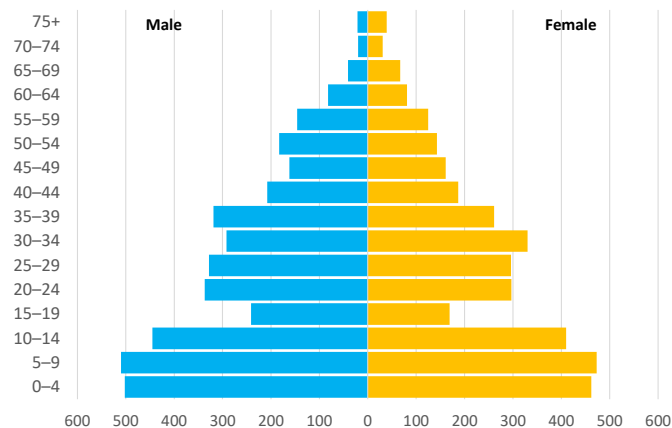
Line & Phoenix Division

Source: KINSO PHC 2020

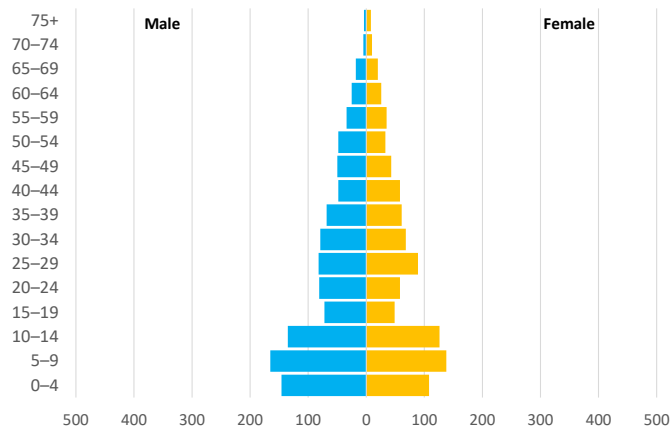
Island: **Kanton**
Population: **41**
Males = 20 Females = 21
% of total population: 0.0%



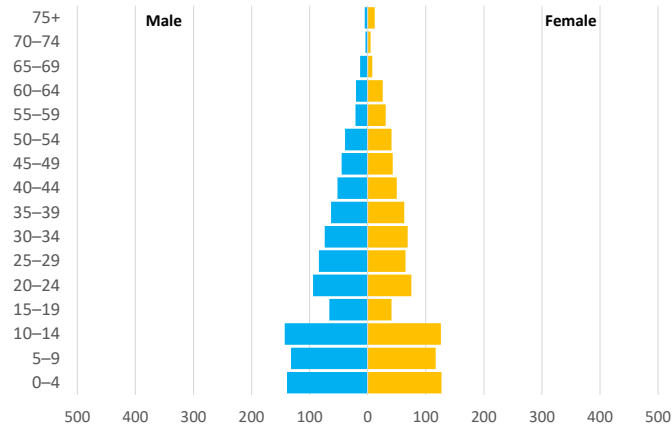
Island: **Kiritimati**
Population: **7,369**
Males = 3,837 Females = 3,532
% of total population: 6.2%



Island: **Tabuaeran**
Population: **1,990**
Males = 1,060 Females = 930
% of total population: 1.7%



Island: **Teraina**
Population: **1,893**
Males = 994 Females = 899
% of total population: 1.6%





Produced by the Pacific Community (SPC)

Pacific Community

B. P. D5 - 98 848 Noumea Cedex, New Caledonia

Telephone: + 687 26 20 00

Email: spc@spc.int - sdd@spc.int

Website: <https://www.spc.int> - <https://sdd.spc.int>

© Pacific Community (SPC), the Kiribati National Statistics Office (KINSO) 2022