

# Human Rights Considerations in South Pacific Village Buildings, Water Reticulation and Sanitation



Umi Community Health Building, Dei District, Papua New Guinea Highlands, constructed during 2020 for Western Highlands Health Services  
Design and funding by Partner Housing (with generous individual donations), Construction by Vision for Homes (PNG)



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Quasar Management Services is a not-for-profit multi-discipline consulting engineer and management consultancy (a wholly owned subsidiary of Partner Housing Australasia), providing pro bono and fee-for-service professional design and governance services, for village-based construction projects in the South Pacific.

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260327	1	27 March 2026	Update from P2080802-4 and publish with new reference

## Quasar Management Services

Quasar Management Services<sup>1</sup> is a not-for-profit multi-discipline consulting engineer and management consultancy (a wholly owned subsidiary of Partner Housing Australasia), providing pro bono and fee-for-service professional design and governance services, for village-based construction projects in the South Pacific.

## Partner Housing Australasia

Partner Housing Australasia<sup>2</sup> (Building) Incorporated is an entirely voluntary organisation, which aims to transform the lives of people living in Asia-Pacific villages by improving the cyclone, earthquake and tsunami resistance of their houses, clinics, schools and community buildings; and by providing clean water supplies and hygienic sanitation.

## Copyright

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## Disclaimer

This document represents a sample of the information available at the time of publication. It is periodically updated, but it must not be interpreted as being complete, comprehensive or necessarily the most recent information available from other sources. People referencing this information must assume responsibility for verifying the information before using it.

## Context

Quasar Management Services operates two program streams on behalf of Partner Housing Australasia –

- (i) Practical design and construction of South Pacific village buildings, water, and sanitation infrastructure; and
- (ii) High level research and advice to government agencies (and similar) relating to design standards and regulations for village buildings, water, and sanitation infrastructure.

To ensure that both streams are informed by human rights considerations (including [but not limited to] gender, disability, and health issues) Partner Housing Australasia shall conduct an on-going research program, augmented by regular site observations and discussions with Partner Organisations. The on-going research program shall include the following elements –

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<sup>1</sup> Quasar Management Services Pty Limited, trading as Quasar Management Services, also referred to herein as QMS.

<sup>2</sup> Partner Housing Australasia (Building) Incorporated, trading as Partner Housing Australasia, also referred to herein as PHA.

- (i) Human Rights Issues – Definition of the issues relevant to Partner Housing Australasia South Pacific village programs;
- (ii) Population Statistics – Collection and analysis of available gender, disability, health, and other statistics for each country serviced by Partner Housing Australasia.
- (iii) Building Regulations – Collection and analysis of building regulations (including those that relate to gender, disability, health, and other human right provisions) for each country serviced by Partner Housing Australasia.
- (iv) Collaborative Research - Partnerships with one or more Australian university, to research building practices (including consideration of human rights in village building).
- (v) Design Outcomes – Description of various design options resulting from the previous part of this research program.
- (vi) Partner Housing Australasia Analysis – Analysis of Partner Housing Australasia’s activities in the context of the human rights criteria and other key policies of the organisation.
- (vii) In-country monitoring of Human Rights – Partner Housing Australasia conducts on-going in-country monitoring to detect any obvious breaches of human rights.

## **Part 1 – Human Rights Issues**

### **Scope**

This Part provides definition and description of the human rights issues relevant to Partner Housing Australasia<sup>3</sup> South Pacific village programs.

### **Purpose**

This document serves as the source reference for the Partner Housing Australasia “Constitution, Policies and Code of Conduct” Policy No 98 “Human Rights in Aid Development”.

### **Location**

Partner Housing Australasia construction projects are in poor rural villages in the Asia-Pacific region, with the major focus on the South Pacific. Major work is concentrated in Papua New Guinea and Vanuatu, and there is a small latrine construction program in Philippines.

### **Context of Analyses**

The human rights issues considered here (and listed below) are considered within the context of these locations.

The assembly of statistical data and corresponding analyses are therefore limited to Papua New Guinea, Solomon Islands and Vanuatu.

### **Racial or ethnic discrimination**

Buildings, water reticulation and sanitary facilities constructed by Partner Housing Australasia are for use by all people, irrespective of race or ethnicity, and reflect culture of all potential users.

### **Religious or caste discrimination**

Buildings, water reticulation and sanitary facilities constructed by Partner Housing Australasia are for use by all people, irrespective of religion or caste, and reflect culture of all potential users.

### **Gender, gender identity, sexuality or sexual orientation discrimination**

Buildings, water reticulation and sanitary facilities constructed by Partner Housing Australasia are for use by all people, irrespective of gender, gender identity, sexuality or sexual orientation, and reflect culture of all potential users.

### **Poverty, class or socio-economic status**

Buildings, water reticulation and sanitary facilities constructed by Partner Housing Australasia are for use by all people, irrespective of poverty, class or socio-economic status, and reflect culture of all potential users.

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<sup>3</sup> Partner Housing Australasia (Building) Incorporated is referred herein as Partner Housing Australasia.

Notwithstanding, all Partner Housing Australasia construction projects are in poor rural villages in the Asia-Pacific region.

## **Genocide**

Partner Housing Australasia and its Partner Organisations do not tolerate genocide. There is no reported genocide in the places where Partner Housing Australasia operates.

## **Torture and cruelty**

Partner Housing Australasia and its Partner Organisations do not tolerate torture or cruelty. There is no reported torture or cruelty in the places where Partner Housing Australasia operates.

## **Statelessness**

Partner Housing Australasia and its Partner Organisations are compassionate to stateless people. There is no significant statelessness where Partner Housing Australasia operates.

## **Refugees**

Partner Housing Australasia and its Partner Organisations have a compassionate approach to refugees. There are no reported refugees in the places where Partner Housing Australasia operates.

## **Slavery**

Partner Housing Australasia and its Partner Organisations do not tolerate slavery. There is no reported slavery in the places where Partner Housing Australasia operates. This is notwithstanding some instances of exploitation.

## **Women's rights and discrimination against women**

Buildings and sanitary facilities include appropriate privacy for women. Some communal standpipes in remote parts of Solomon Islands do not provide privacy for women (or men), but only where this is culturally acceptable, all showering is carried out fully clothed, and in the presence of others of the same gender.

## **Disabilities**

It is recognised that in unpaved remote villages, people with disabilities are assisted to access buildings, communal standpipes and sanitary facilities.

## **Child protection**

Partner Housing Australasia and its Partner Organisations ensure that there is no risk to children, including risks related to images and sex exploitation.

## **Child rights**

Partner Housing Australasia and its Partner Organisations ensure that buildings are safely accessible to children.

## **Worker health & safety**

Partner Housing Australasia and its Partner Organisations minimise the risk of injury or death occurring during the execution of construction projects, including the travel to and from the sites.

## **Privacy**

Partner Housing Australasia and its Partner Organisations minimise the risk of private information being exposed as a result of Partner Housing activities.

## **Anti-terrorism and money laundering**

Partner Housing Australasia and its Partner Organisations minimise the risk of facilitating terrorism through money laundering or sponsoring inappropriate activity.

## **Complaints Handling**

Partner Housing Australasia and its Partner Organisations ensure that all complaints will be properly considered.

## **Non-development Activity**

Partner Housing Australasia and its Partner Organisations ensure that non-development activity will not be undertaken during the project execution.

## **Bullying, Sexual Harassment & Misconduct**

Partner Housing Australasia and its Partner Organisations ensure that there is no bullying, sexual harassment or misconduct.

## **Whistle Blowing**

Partner Housing Australasia and its Partner Organisations facilitate the exposure of wrong-doing in all associated organisations.

## Part 2 – Population Statistics

### Scope

This Part provides for the collection and analysis of statistics available for major country reports that include data on gender, disability, health and other statistics for each country serviced by Partner Housing Australasia.

### Purpose

The purpose of collecting and analysing this data is to provide human rights context to the design decisions for buildings, water and sanitation facilities.

### Statistics to be Considered

Based on the analysis in Part 1, the key statistics collected and analyses are –

- Women’s Empowerment and Domestic Violence
- Disabilities
- Child Labour and Child Discipline

in

- Papua New Guinea
- Solomon Islands
- Vanuatu

These key statistics provide the core information used to inform the design process, ensuring that decisions are made in the context of available data.

### Monitoring and Stakeholder Consultation

It must be emphasised that design informed by the data described above is only one tool in the armoury of the professional designer.

**Designs must be augmented by stakeholder consultation, including on-site discussion with residents** of the villages where buildings and infrastructure are to be constructed.

## Papua New Guinea

Source: Papua New Guinea Demographic and Health Survey 2016-18

### Empowerment of Women

#### Key Findings

Employment and control over earnings: Men are more likely to be employed than women in Papua New Guinea. Sixty-four percent of currently married men were employed in the past 12 months, as compared with only 36% of currently married women. Forty-six percent of currently married women with cash earnings decide independently on how their earnings are used. About half of women and men report that they make joint decisions regarding husbands' cash earnings.

Ownership of property: More men than women own a house (60% versus 49%) and land (65% versus 44%). Cumulatively, of women and of men own a house, while of women and of men own land.

Participation in decision making: More than 8 in 10 currently married women participate, either by themselves or jointly with their husband, in decisions regarding their own health care, while 70% decide alone or jointly on making major household purchases and 79% decide alone or jointly on visiting their family or relatives. Sixty-two percent participate in all three decisions, while 10% do not participate in any of the decisions.

Attitudes towards wife beating: 70% of women and 72% of men believe that a husband is justified in beating his wife in at least one of five specified situations.

Empowerment and health outcomes: Use of a contraceptive method is higher among women who participate in one or more household decisions. In most cases, women's participation in decision making is positively associated with reproductive health seeking behaviour related to antenatal care, delivery from a skilled provider, and postnatal checks.

For more information on women's empowerment, see the following tables:

- **Table 15.1**      **Employment and cash earnings of currently married women and men**
- **Table 15.2.1**    **Control over women's cash earnings and relative magnitude of women's cash earnings**
- **Table 15.2.2**    **Control over men's cash earnings**
- **Table 15.3**      **Women's control over their own earnings and over those of their husbands**
- **Table 15.4.1**    **Ownership of assets: Women**
- **Table 15.4.2**    **Ownership of assets: Men**
- **Table 15.5.1**    **Ownership of title or deed for house: Women**
- **Table 15.5.2**    **Ownership of title or deed for house: Men**
- **Table 15.6.1**    **Ownership of title or deed for land: Women**
- **Table 15.6.2**    **Ownership of title or deed for land: Men**
- **Table 15.7.1**    **Ownership and use of bank accounts and mobile phones: Women**
- **Table 15.7.2**    **Ownership and use of bank accounts and mobile phones: Men**
- **Table 15.8**      **Participation in decision making**
- **Table 15.9.1**    **Women's participation in decision making by background characteristics**
- **Table 15.9.2**    **Men's participation in decision making by background characteristics**
- **Table 15.10.1**   **Attitude toward wife beating: Women**
- **Table 15.10.2**   **Attitude toward wife beating: Men**
- **Table 15.11**     **Attitudes toward negotiating safer sexual relations with husband**
- **Table 15.12**     **Ability to negotiate sexual relations with husband**
- **Table 15.13**     **Indicators of women's empowerment**
- **Table 15.14**     **Current use of contraception by women's empowerment**
- **Table 15.15**     **Ideal number of children and unmet need for family planning by women's empowerment**
- **Table 15.16**     **Reproductive health care by women's empowerment**
- **Table 15.17**     **Early childhood mortality rates by indicators of women's empowerment**

**Table 15.5.1 Ownership of title or deed for house: Women**

Among women age 15-49 who own a house, percent distribution by whether the house owned has a title or deed and whether or not the woman's name appears on the title or deed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	House has a title or deed and:				Total	Number who own a house <sup>2</sup>
	Woman's name is on title/deed	Woman's name is not on title/deed	Does not have a title/deed	Don't know/missing <sup>1</sup>		
<b>Age</b>						
15-19	6.7	1.0	88.0	4.3	100.0	458
20-24	6.1	2.7	86.4	4.9	100.0	928
25-29	9.3	3.1	81.4	6.3	100.0	1,384
30-34	8.7	2.4	83.6	5.4	100.0	1,413
35-39	6.5	1.6	87.0	5.0	100.0	1,367
40-44	7.6	2.7	85.8	3.9	100.0	1,042
45-49	7.4	2.0	84.7	5.8	100.0	890
<b>Residence</b>						
Urban	14.5	6.8	74.2	4.5	100.0	559
Rural	7.1	1.9	85.7	5.3	100.0	6,924
<b>Region</b>						
Southern	7.8	3.2	85.2	3.8	100.0	1,206
Highlands	6.7	2.3	85.3	5.7	100.0	3,574
Momase	6.5	2.2	87.0	4.3	100.0	1,724
Islands	12.8	1.4	79.0	6.9	100.0	979
<b>Province</b>						
Western	3.6	4.3	87.9	4.2	100.0	162
Gulf	14.5	0.6	77.8	7.1	100.0	149
Central	3.7	2.7	87.1	6.5	100.0	216
National Capital District	23.1	14.4	57.7	4.7	100.0	100
Milne Bay	7.2	2.5	89.2	1.1	100.0	395
Northern	4.2	0.4	92.8	2.6	100.0	185
Southern Highlands	7.2	2.4	80.1	10.2	100.0	494
Enga	0.3	0.2	95.6	3.9	100.0	367
Western Highlands	5.1	2.1	82.3	10.6	100.0	338
Chimbu	0.7	1.0	95.4	3.0	100.0	460
Eastern Highlands	9.2	0.2	89.1	1.6	100.0	861
Morobe	15.1	1.7	74.8	8.5	100.0	434
Madang	6.8	4.5	84.9	3.8	100.0	482
East Sepik	1.9	1.1	95.1	1.9	100.0	521
West Sepik	1.7	0.8	94.5	3.1	100.0	287
Manus	12.6	5.1	69.9	12.3	100.0	62
New Ireland	7.8	0.5	90.1	1.6	100.0	206
East New Britain	9.3	1.4	84.2	5.1	100.0	231
West New Britain	13.7	1.3	74.6	10.4	100.0	196
Autonomous Region of Bougainville	18.6	1.4	71.6	8.4	100.0	284
Hela	13.0	6.6	74.0	6.4	100.0	650
Jiwaka	4.7	3.5	83.6	8.3	100.0	404
<b>Education</b>						
No education	5.3	2.3	86.3	6.2	100.0	2,367
Elementary	10.1	0.9	84.0	5.0	100.0	424
Primary	7.1	1.9	86.1	5.0	100.0	3,331
Secondary	11.7	3.8	80.4	4.1	100.0	1,227
Higher	18.6	5.0	72.6	3.7	100.0	134
<b>Wealth quintile</b>						
Lowest	5.2	2.5	87.3	5.0	100.0	1,788
Second	5.6	1.4	87.2	5.8	100.0	1,640
Middle	6.0	1.6	87.8	4.6	100.0	1,675
Fourth	9.1	1.8	83.8	5.3	100.0	1,477
Highest	16.9	5.7	71.9	5.5	100.0	903
<b>Total</b>	<b>7.6</b>	<b>2.3</b>	<b>84.9</b>	<b>5.2</b>	<b>100.0</b>	<b>7,483</b>

<sup>1</sup> Includes women who have a house with a title/deed, but they do not know if their name is on it (or this information is missing), and women who do not know if there is a title/deed for the house (or this information is missing)

<sup>2</sup> Includes sole, joint, or sole and joint ownership

**Table 15.5.2 Ownership of title or deed for house: Men**

Among men age 15-49 who own a house, percent distribution by whether the house owned has a title or deed and whether or not the man's name appears on the title or deed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	House has a title or deed and:				Total	Number who own a house <sup>2</sup>
	Man's name is on title/deed	Man's name is not on title/deed	Does not have a title/deed	Don't know/missing <sup>1</sup>		
<b>Age</b>						
15-19	4.3	1.9	87.9	6.0	100.0	343
20-24	7.2	1.0	82.7	9.2	100.0	557
25-29	7.6	1.1	85.5	5.8	100.0	696
30-34	10.1	1.1	83.5	5.3	100.0	787
35-39	8.8	0.9	87.9	2.4	100.0	779
40-44	9.8	0.6	82.1	7.5	100.0	653
45-49	7.5	0.6	89.4	2.4	100.0	548
<b>Residence</b>						
Urban	16.3	3.2	77.3	3.3	100.0	303
Rural	7.6	0.8	86.0	5.5	100.0	4,060
<b>Region</b>						
Southern	8.7	1.3	86.7	3.2	100.0	687
Highlands	5.8	0.8	85.7	7.7	100.0	2,036
Momase	9.0	0.9	86.9	3.1	100.0	1,100
Islands	15.3	1.4	79.4	3.8	100.0	540
<b>Province</b>						
Western	9.1	1.3	86.4	3.3	100.0	81
Gulf	11.0	1.3	81.7	6.0	100.0	77
Central	17.7	1.7	75.3	5.2	100.0	130
National Capital District	20.8	9.0	64.3	5.8	100.0	42
Milne Bay	2.8	0.3	96.9	0.0	100.0	249
Northern	5.1	0.2	89.6	5.0	100.0	108
Southern Highlands	6.0	0.5	81.6	11.9	100.0	398
Enga	3.7	1.4	94.3	0.6	100.0	228
Western Highlands	6.6	1.9	61.5	29.9	100.0	240
Chimbu	5.8	1.4	85.5	7.3	100.0	246
Eastern Highlands	3.7	0.0	96.1	0.2	100.0	400
Morobe	13.0	0.0	84.1	3.0	100.0	371
Madang	3.8	0.0	92.0	4.3	100.0	320
East Sepik	5.1	1.2	89.7	3.9	100.0	226
West Sepik	15.1	4.1	80.2	0.6	100.0	184
Manus	9.6	0.6	88.7	1.1	100.0	33
New Ireland	6.3	0.3	88.2	5.2	100.0	75
East New Britain	2.2	0.5	96.7	0.7	100.0	129
West New Britain	28.8	3.1	64.7	3.4	100.0	165
Autonomous Region of Bougainville	17.6	1.3	74.0	7.2	100.0	138
Hela	11.9	1.0	82.1	4.9	100.0	320
Jiwaka	1.1	0.0	97.7	1.2	100.0	203
<b>Education</b>						
No education	5.1	0.5	86.4	8.1	100.0	748
Elementary	15.0	0.3	80.5	4.3	100.0	174
Primary	6.9	1.0	87.9	4.2	100.0	2,191
Secondary	9.5	1.2	83.0	6.3	100.0	1,069
Higher	24.3	2.7	69.1	3.9	100.0	181
<b>Wealth quintile</b>						
Lowest	6.0	0.6	87.4	6.0	100.0	1,059
Second	6.4	0.9	86.1	6.7	100.0	1,003
Middle	6.1	0.9	87.5	5.5	100.0	1,034
Fourth	7.4	0.8	88.1	3.7	100.0	788
Highest	23.2	2.6	70.4	3.8	100.0	478
<b>Total</b>	<b>8.2</b>	<b>1.0</b>	<b>85.4</b>	<b>5.4</b>	<b>100.0</b>	<b>4,363</b>

<sup>1</sup> Includes men who have a house with a title/deed, but they do not know if their name is on it (or this information is missing), and men who do not know if there is a title/deed for the house (or this information is missing)

<sup>2</sup> Includes sole, joint, or sole and joint ownership

**Table 15.6.1 Ownership of title or deed for land: Women**

Among women age 15-49 who own land, percent distribution by whether the land owned has a title or deed and whether or not the woman's name appears on the title or deed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Land has a title or deed and:				Total	Number who own land <sup>2</sup>
	Woman's name is on title/deed	Woman's name is not on title/deed	Does not have a title/deed	Don't know/missing <sup>1</sup>		
<b>Age</b>						
15-19	7.2	2.0	83.8	7.0	100.0	587
20-24	7.7	4.3	85.0	3.1	100.0	921
25-29	10.5	1.8	81.9	5.7	100.0	1,240
30-34	10.4	3.0	81.9	4.7	100.0	1,179
35-39	8.8	2.0	82.7	6.5	100.0	1,144
40-44	11.1	2.3	81.2	5.4	100.0	843
45-49	9.1	2.3	82.9	5.7	100.0	751
<b>Residence</b>						
Urban	22.3	7.8	65.4	4.4	100.0	370
Rural	8.7	2.2	83.7	5.5	100.0	6,294
<b>Region</b>						
Southern Highlands	14.6	4.5	73.8	7.0	100.0	1,064
Momase	6.3	1.5	86.7	5.5	100.0	3,336
Islands	5.8	2.4	89.9	1.9	100.0	1,412
	21.2	4.2	65.9	8.7	100.0	852
<b>Province</b>						
Western Gulf	2.3	2.2	92.7	2.8	100.0	148
Central	28.3	0.9	55.2	15.6	100.0	85
National Capital District	4.4	1.9	86.1	7.6	100.0	185
Milne Bay	24.8	8.3	58.5	8.5	100.0	127
Northern	18.2	8.3	71.4	2.2	100.0	334
Southern Highlands	15.2	1.3	69.8	13.7	100.0	185
Erige	9.0	2.2	76.0	12.9	100.0	459
Western Highlands	0.5	0.0	95.5	3.9	100.0	400
Chimbu	1.5	1.4	83.0	14.1	100.0	236
Eastern Highlands	0.7	1.9	95.5	1.8	100.0	493
Morobe	7.3	1.0	89.8	1.9	100.0	836
Madang	8.8	2.9	84.7	3.6	100.0	276
East Sepik	11.5	6.0	80.0	2.5	100.0	344
West Sepik	2.5	0.7	96.4	0.4	100.0	518
Manus	1.6	0.9	95.3	2.1	100.0	274
New Ireland	26.6	7.8	55.9	9.6	100.0	25
East New Britain	16.4	3.5	76.9	3.2	100.0	190
West New Britain	21.1	7.4	58.3	13.2	100.0	230
Autonomous Region of Bougainville	20.4	3.6	69.0	7.0	100.0	171
Hela	25.1	1.9	63.2	9.8	100.0	236
Jiwaka	12.6	2.1	82.4	2.9	100.0	617
	7.1	2.1	79.0	11.9	100.0	287
<b>Education</b>						
No education	7.1	1.2	85.7	6.1	100.0	2,083
Elementary	4.5	2.4	88.7	4.4	100.0	363
Primary	10.0	2.9	81.5	5.7	100.0	2,953
Secondary	12.9	3.9	79.3	3.9	100.0	1,089
Higher	16.6	4.9	74.6	3.9	100.0	176
<b>Wealth quintile</b>						
Lowest	6.1	1.9	86.8	5.2	100.0	1,684
Second	8.0	2.1	83.8	6.0	100.0	1,504
Middle	8.5	2.0	85.7	3.8	100.0	1,375
Fourth	13.5	2.8	77.9	5.8	100.0	1,221
Highest	13.8	5.1	74.5	6.6	100.0	880
<b>Total</b>	<b>9.4</b>	<b>2.5</b>	<b>82.6</b>	<b>5.4</b>	<b>100.0</b>	<b>6,664</b>

<sup>1</sup> Includes women who have land with a title/deed, but they do not know if their name is on it (or this information is missing), and women who do not know if there is a title/deed for the land (or this information is missing)

<sup>2</sup> Includes sole, joint, or sole and joint ownership

**Table 15.6.2 Ownership of title or deed for land: Men**

Among men age 15-49 who own land, percent distribution by whether the land owned has a title or deed and whether or not the man's name appears on the title or deed, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Land has a title or deed and:				Total	Number who own land <sup>2</sup>
	Man's name is on title/deed	Man's name is not on title/deed	Does not have a title/deed	Don't know/missing <sup>1</sup>		
<b>Age</b>						
15-19	5.5	1.6	87.5	5.4	100.0	597
20-24	6.6	1.9	84.2	7.3	100.0	740
25-29	9.8	6.6	76.7	6.9	100.0	768
30-34	12.6	2.9	79.1	5.4	100.0	784
35-39	9.1	2.2	85.0	3.7	100.0	787
40-44	11.7	2.3	79.7	6.3	100.0	610
45-49	10.9	2.5	82.6	4.1	100.0	509
<b>Residence</b>						
Urban	22.5	4.4	68.6	4.5	100.0	344
Rural	8.5	2.8	83.0	5.7	100.0	4,452
<b>Region</b>						
Southern Highlands	13.2	2.9	79.2	4.7	100.0	902
Momase	6.2	2.3	84.2	7.3	100.0	2,193
Islands	9.7	3.8	82.8	3.7	100.0	1,197
	16.1	3.6	75.5	4.8	100.0	504
<b>Province</b>						
Western	11.6	2.6	84.3	1.5	100.0	87
Gulf	8.5	5.7	81.9	4.0	100.0	90
Central	14.1	5.7	75.8	4.4	100.0	150
National Capital District	29.0	4.4	58.3	8.3	100.0	82
Milne Bay	9.7	1.8	84.6	3.9	100.0	308
Northern	14.5	0.7	78.4	6.4	100.0	184
Southern Highlands	5.3	0.8	83.9	10.0	100.0	397
Enga	3.0	4.0	89.7	3.3	100.0	225
Western Highlands	7.8	2.2	63.6	26.4	100.0	235
Chimbu	4.2	5.6	83.5	6.7	100.0	300
Eastern Highlands	3.7	0.3	95.6	0.4	100.0	499
Morobe	13.1	7.2	77.2	2.6	100.0	413
Madang	5.3	1.9	87.5	5.3	100.0	323
East Sepik	3.9	2.3	88.2	5.7	100.0	245
West Sepik	16.6	1.9	80.2	1.3	100.0	216
Manus	10.9	0.9	80.9	7.3	100.0	41
New Ireland	9.5	1.4	82.9	6.2	100.0	80
East New Britain	8.6	4.4	84.5	2.5	100.0	119
West New Britain	25.4	5.5	63.1	6.0	100.0	137
Autonomous Region of Bougainville	19.0	3.2	74.0	3.8	100.0	128
Hela	14.3	2.4	75.3	8.1	100.0	321
Jiwaka	6.3	3.3	89.0	1.5	100.0	216
<b>Education</b>						
No education	6.7	2.1	83.1	8.1	100.0	751
Elementary	11.9	2.2	79.9	6.0	100.0	192
Primary	8.9	2.2	84.7	4.2	100.0	2,361
Secondary	9.6	4.9	78.4	7.2	100.0	1,259
Higher	21.4	3.0	71.7	3.8	100.0	232
<b>Wealth quintile</b>						
Lowest	6.8	1.3	86.2	5.7	100.0	1,140
Second	7.6	1.9	83.2	7.3	100.0	1,061
Middle	8.4	3.0	82.5	6.1	100.0	1,123
Fourth	9.6	2.9	83.2	4.4	100.0	796
Highest	18.4	7.2	70.6	3.9	100.0	677
<b>Total</b>	<b>9.5</b>	<b>2.9</b>	<b>82.0</b>	<b>5.7</b>	<b>100.0</b>	<b>4,796</b>

<sup>1</sup> Includes men who have land with a title/deed, but they do not know if their name is on it (or this information is missing), and men who do not know if there is a title/deed for the land (or this information is missing)

<sup>2</sup> Includes sole, joint, or sole and joint ownership

## Domestic Violence

Experience of violence: 56% of women age 15-49 in Papua New Guinea have experienced physical violence since age 15, and 28% have experienced sexual violence. Eighteen percent of women who have ever been pregnant have experienced violence during pregnancy.

Spousal violence: 63% of ever-married women have experienced spousal physical, sexual, or emotional violence. The most common type of spousal violence is physical violence (54%), followed by emotional violence (51%). Twenty-nine percent of women have experienced spousal sexual violence.

Injuries due to spousal violence: 57% of women who have experienced spousal physical or sexual violence have sustained injuries. Cuts, bruises, or aches are the most common types of injuries reported.

Help seeking: 35% of women who have ever experienced physical or sexual violence have sought help, while 13% have never sought help but have told someone about the violence. Thirty-nine percent of women who have experienced any type of physical or sexual violence have not sought help or told anyone about the violence.

For more information on domestic violence, see the following tables:

- **Table 16.1**      **Experience of physical violence**
- **Table 16.2**      **Experience of violence during pregnancy**
- **Table 16.3**      **Persons committing physical violence**
- **Table 16.4**      **Experience of sexual violence**
- **Table 16.5**      **Age at first experience of sexual violence**
- **Table 16.6**      **Persons committing sexual violence**
- **Table 16.7**      **Experience of different forms of violence**
- **Table 16.8**      **Marital control exercised by husbands**
- **Table 16.9**      **Forms of spousal violence**
- **Table 16.10**     **Spousal violence by background characteristics**
- **Table 16.11**     **Spousal violence by husband's characteristics and empowerment indicators**
- **Table 16.12**     **Violence by any husband/partner in the last 12 months**
- **Table 16.13**     **Experience of spousal violence by duration of marriage**
- **Table 16.14**     **Injuries to women due to spousal violence**
- **Table 16.15**     **Violence by women against their husband by women's background characteristics**
- **Table 16.16**     **Violence by women against their husband by husband's characteristics and empowerment indicators**
- **Table 16.17**     **Help seeking to stop violence**
- **Table 16.18**     **Sources for help to stop the violence**

**Table 16.1 Experience of physical violence**

Percentage of women age 15-49 who have experienced physical violence since age 15 and percentage who experienced physical violence during the 12 months preceding the survey, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Percentage who have experienced physical violence since age 15 <sup>1</sup>	Percentage who have experienced physical violence in the past 12 months			Number of women
		Often	Sometimes	Often or sometimes <sup>2</sup>	
<b>Age</b>					
15-19	38.4	3.4	22.1	25.5	881
20-24	54.5	5.9	31.1	37.0	939
25-29	60.5	6.0	40.3	46.3	783
30-39	62.4	9.1	35.5	44.5	1,379
40-49	57.9	4.4	28.9	33.3	891
<b>Residence</b>					
Urban	57.4	7.5	32.8	40.3	636
Rural	55.3	5.9	31.6	37.5	4,237
<b>Region</b>					
Southern	55.5	5.4	29.2	34.6	1,009
Highlands	57.3	7.3	32.5	39.8	1,794
Momase	51.3	5.9	33.1	39.0	1,350
Islands	59.3	4.6	31.0	35.6	720
<b>Province</b>					
Western	49.4	5.2	24.8	30.0	129
Gulf	46.4	5.8	30.3	36.1	94
Central	57.1	9.3	28.0	37.2	188
National Capital District	62.5	7.6	33.5	41.1	141
Milne Bay	63.7	3.0	32.1	35.0	273
Northern	45.2	3.4	25.5	28.8	184
Southern Highlands	49.4	8.3	27.3	35.6	310
Erga	61.1	1.1	42.8	43.9	125
Western Highlands	52.6	4.3	31.6	35.9	211
Chimbu	47.5	9.4	25.3	34.7	255
Eastern Highlands	66.9	9.6	30.1	39.7	417
Morobe	59.2	4.9	45.7	50.6	497
Madang	49.3	5.9	27.9	33.7	354
East Sepik	41.7	7.7	24.7	32.3	313
West Sepik	50.3	5.5	23.4	29.0	185
Manus	65.6	6.8	41.1	47.9	51
New Ireland	63.2	8.4	24.8	33.2	138
East New Britain	61.2	1.7	33.4	35.1	192
West New Britain	58.7	2.0	28.9	31.0	184
Autonomous Region of Bougainville	52.4	7.0	32.8	39.9	155
Hela	69.7	7.9	44.8	52.7	258
Jiwaka	49.5	4.6	33.4	37.9	218
<b>Marital status</b>					
Never married	30.1	1.2	11.8	13.1	1,172
Married or living together	63.1	7.2	39.3	46.5	3,375
Divorced/separated/widowed	69.7	11.9	25.8	37.7	326
<b>Number of living children</b>					
0	40.5	2.8	21.7	24.5	1,496
1-2	63.3	8.8	38.0	46.8	1,390
3-4	65.0	7.5	38.7	46.2	1,163
5+	56.8	5.7	29.7	35.5	824
<b>Employment</b>					
Employed for cash	60.4	7.0	30.2	37.2	719
Employed not for cash	62.0	8.2	35.0	43.2	877
Not employed	52.8	5.3	31.3	36.6	3,267
<b>Education</b>					
No education	55.4	6.9	29.8	36.7	1,166
Elementary	49.8	6.5	29.1	35.6	198
Primary	54.6	5.9	31.6	37.5	2,197
Secondary	57.7	4.8	33.3	38.1	1,101
Higher	61.5	10.3	38.5	48.8	211
<b>Wealth quintile</b>					
Lowest	51.9	4.8	31.8	36.7	898
Second	55.4	6.5	29.3	35.8	948
Middle	54.3	6.6	30.3	36.9	949
Fourth	57.2	7.2	29.8	37.0	968
Highest	58.3	5.4	36.7	42.2	1,111
<b>Total</b>	<b>55.6</b>	<b>6.1</b>	<b>31.8</b>	<b>37.9</b>	<b>4,673</b>

Note: Total includes 10 women with missing information on employment status.

<sup>1</sup> Includes violence in the past 12 months. For women who were married before age 15 and reported physical violence only by their husband/partner, the violence could have occurred before age 15.

<sup>2</sup> Includes women for whom frequency in the past 12 months is not known.

**Table 16.3 Persons committing physical violence**

Among women age 15-49 who have experienced physical violence since age 15, percentage who report specific persons who committed the violence, by the respondent's current marital status, Papua New Guinea DHS 2016-18

Person	Marital status		Total
	Ever married	Never married	
Current husband/partner	77.8	na	67.7
Former husband/partner	15.4	na	13.4
Current boyfriend	1.2	2.4	1.4
Former boyfriend	1.5	1.3	1.5
Father/stepfather	17.5	49.3	21.7
Mother/stepmother	11.8	33.7	14.7
Sister/brother	12.6	20.7	13.7
Daughter/son	0.1	0.0	0.1
Other relative	6.8	19.4	8.4
Mother-in-law	0.9	na	0.8
Father-in-law	0.8	na	0.7
Other in-law	1.2	na	1.0
Teacher	1.9	8.5	2.7
Other	1.7	4.4	2.1
Number of women who have experienced physical violence since age 15	2,356	353	2,709

Note: Women can report more than one person who committed the violence.  
na = Not applicable

**Table 16.6 Persons committing sexual violence**

Among women age 15-49 who have experienced sexual violence, percentage who report specific persons who committed the violence, according to the respondent's current marital status, Papua New Guinea DHS 2016-18

Person	Marital status		Total
	Ever married	Never married	
Current husband/partner	77.0	na	70.0
Former husband/partner	19.0	na	17.3
Current/former boyfriend	6.0	65.9	11.4
Father/stepfather	0.5	0.0	0.4
Brother/stepbrother	0.1	5.2	0.6
Other relative	5.2	16.3	6.2
In-law	0.2	na	0.2
Own friend/acquaintance	1.2	4.6	1.5
Family friend	0.7	2.2	0.9
Teacher	0.0	0.0	0.0
Employer/someone at work	0.0	0.0	0.0
Stranger	3.7	5.8	3.9
Other	0.1	0.0	0.1
Missing	0.2	0.0	0.2
Number of women who have experienced sexual violence	1,250	124	1,374

Note: Ever-married women can report up to three perpetrators: a current husband, former husband, or one other person who is not a current or former husband. Never-married women can report only the person who was the first to commit the violence.  
na = Not applicable

**Table 16.4 Experience of sexual violence**

Percentage of women age 15-49 who have ever experienced sexual violence and percentage who experienced sexual violence in the 12 months preceding the survey, according to background characteristics, Papua New Guinea DHS 2016-18

Background characteristic	Percentage who have experienced sexual violence:		Number of women
	Ever <sup>1</sup>	In the past 12 months	
<b>Age</b>			
15-19	14.8	7.8	681
20-24	24.2	18.0	939
25-29	34.2	25.8	783
30-39	36.0	27.6	1,379
40-49	28.2	16.2	891
<b>Residence</b>			
Urban	30.0	20.7	636
Rural	27.9	19.7	4,237
<b>Region</b>			
Southern	24.4	16.7	1,009
Highlands	31.8	21.2	1,794
Momasa	27.6	22.2	1,350
Islands	25.5	16.4	720
<b>Province</b>			
Western	26.8	17.1	129
Gulf	21.1	15.0	94
Central	28.4	23.4	188
National Capital District	25.5	13.4	141
Milne Bay	25.1	17.9	273
Northern	18.4	11.4	184
Southern Highlands	26.0	19.2	310
Enga	27.8	14.2	125
Western Highlands	21.2	12.8	211
Chimbu	31.2	25.3	255
Eastern Highlands	37.3	22.4	417
Morobe	29.4	23.1	497
Madang	23.8	19.0	354
East Sepik	31.7	26.2	313
West Sepik	23.1	18.8	185
Manus	25.5	19.4	51
New Ireland	37.5	20.6	138
East New Britain	20.1	11.7	192
West New Britain	21.6	14.2	184
Autonomous Region of Bougainville	26.0	20.5	155
Hela	41.3	24.9	258
Jiwaka	31.8	24.2	218
<b>Marital status</b>			
Never married	10.6	4.7	1,172
Married or living together	32.8	24.5	3,375
Divorced/separated/widowed	44.7	25.7	326
<b>Number of living children</b>			
0	18.7	11.0	1,496
1-2	31.7	23.4	1,390
3-4	32.8	24.9	1,163
5+	32.9	22.7	824
<b>Employment</b>			
Employed for cash	32.4	22.9	719
Employed not for cash	38.4	27.4	877
Not employed	24.5	17.1	3,257
<b>Education</b>			
No education	30.0	21.2	1,166
Elementary	31.4	23.7	198
Primary	26.9	19.4	2,197
Secondary	29.2	19.1	1,101
Higher	23.6	16.6	211
<b>Wealth quintile</b>			
Lowest	30.2	19.0	896
Second	25.3	19.0	948
Middle	28.7	21.7	949
Fourth	32.0	22.0	966
Highest	25.4	17.2	1,111
<b>Total</b>	<b>28.2</b>	<b>19.8</b>	<b>4,873</b>

Note: Total includes 10 women with missing information on employment status.

<sup>1</sup> Includes violence in the past 12 months

Source: PAPUA NEW GUINEA'S VOLUNTARY NATIONAL REVIEW 2020 – Progress of Implementing the Sustainable Development Goals

Indicator	Baseline		Actual	
	Value	Year & source	Value	Year & source
<b>Rural Sanitation and Hygiene</b>				
Proportion of rural population using safely managed sanitation	No data	No data	24.8%	2019 (Micro data UNICEF KAP survey)
Proportion of rural population using basic sanitation	8%	2017 (JMP)	20.4%	2018 (DHS)
Proportion of rural population using limited sanitation	1%	2017 (JMP)	5.3%	2018 (DHS)
Proportion of rural population using unimproved sanitation	74%	2017 (JMP)	55.8%	2018 (DHS)
Proportion of rural population practicing open defecation	17%	2017 (JMP)	18.2%	2018 (DHS)
Proportion of rural population with access to an improved toilet	9.1%	2017 (JMP)	26%	2018 (DHS)
Proportion of the rural population with access to basic hygiene	No data	No data	28.6%	2018 (DHS)
Proportion of the rural population with access to limited hygiene	No data	No data	34.5%	2018 (DHS)
Proportion of the rural population with access to no service hygiene	No data	No data	36.9%	2018 (DHS)

**Table 6: Status of Goal 6.1 - Water Supply**

Indicator	Baseline		Actual	
	Value	Year & source	Value	Year & source
<b>Rural Water Supply</b>				
Proportion of rural population using safely managed drinking water	No Data	2015	0%	2019 (UNICEF KAP survey 2019)
Proportion of rural population using basic drinking water	33.4%	2015 (JMP)	39.3%	2018 (DHS)
Proportion of rural population using limited drinking water	1%	2017 (JMP)	2.3%	2018 (DHS)
Proportion of rural population using unimproved water for drinking	6%	2017 (JMP)	57.5%	2018 (DHS)
Proportion of rural population using surface water for drinking	58%	2017 (JMP)	16.1%	2018 (DHS)
Proportion of rural population with access to an improved drinking water source	34.8%	2015 (JMP)	41.5%	2018 (DHS)

## Disabilities

The government has demonstrated commitment to improving the quality of education through its investment in basic education, policy changes and institutional reforms, by providing adequate inclusive education infrastructure, quality teaching and learning materials in mathematics and science, up-skill teachers through training and the roll out of the standard based education. This includes scaling up the re-establishment of schools of excellence to promote a higher quality curriculum for students who possess very high intelligence.

Education for children living with **disabilities** and special needs is underdeveloped. The government passed the National **Disability** Policy 2015-2020 which provides a framework for more support in this area. Most schools and centres supporting children with **disabilities** and special needs are based in urban areas, making accessibility difficult for people in these groups who live in rural areas. As early childhood education is not formalised, those schools are currently run by private operators and are unaffordable for many families. The government, in partnership with private operators, is now focusing on Early Childhood Development as part of its priorities to deliver quality education for all beginning at an early age.

The focus for the education sector over the next five years and into the 2030 Agenda will be to:

- improve quality of education and continue to improve access and affordability
- provide quality education at all levels from basic elementary, primary and secondary education leading to TVET institutions, colleges and the universities
- provide better opportunities for students leaving school (alternate pathways - Flexible Open and Distance Education, TVET).

The economy of PNG is divided into two segments, formal and informal. In the formal economy, the market is dominated by large-scale resource projects, particularly extractives - mining, oil and gas. These have accounted for an average 30 percent GDP since 2010, and their employment conditions are guided by legislations, policies, corporate plans and employment contracts.

The informal economy accounts for the vast majority of all jobs. It generates income for families, women, young people and persons living with **disabilities**. It helps to reduce poverty and crime and contributes to the long-term development of PNG. However, working conditions in the informal economy are typically poor and incomes are low and volatile. Initiatives to promote better working conditions in the informal economy would help to improve the livelihoods of disadvantaged groups including women, youths and persons living with **disabilities** to enhance inclusive and sustainable economic growth that benefits all.

lenging development context and chronic resource shortage, the Government has been responding to the COVID-19 pandemic. PNG confirmed its first COVID-19 case on 20 March 2020 in Morobe Province and the Government declared a state of emergency (SOE) three days later. National restrictions were imposed, including limitations on travel and the closure of schools, non-essential businesses and services. The Government developed its Emergency Response Plan, known as 'Niupela Pasin' or New Normal, which seeks to embed basic hygiene and physical distancing as part of a new way of living. It champions behaviour change to reduce the transmission of COVID-19 and other infectious diseases and stresses individuals' responsibility for their own and their families' health. A Risk Communications and Community Engagement plan has also been drafted to guide this critical element of the response. After the COVID-19 outbreak, the situation for children remains bleak. Although research focusing on children is not yet available, a socio-economic impact study commission by the World Bank suggests that the situation is worsening.[6] Since the pandemic began in March, more than half of households indicate that the number of children attending school has dropped, particularly among younger heads Page 2 of 11 Page 2 of 11 of households (aged 18–25) and in the Islands. There is limited evidence that COVID-19 is preventing people from accessing the health care system. Financial reasons were reported as the biggest barriers, while 80% of respondents said they could access care if necessary. Before the pandemic, domestic violence was widespread in both rural and urban areas of PNG, but in recent months the situation has worsened, with the survey indicating that youth in rural areas reported that social relations within the community have deteriorated, including intimidation and violence by police and domestic abuse). In a rapid assessment conducted by UNICEF PNG in June 2020, over a quarter of respondents (27%) said that there had been an increase in domestic violence in their communities during the SOE, specifically physical (45%), emotional (36%) and sexual violence (11%) against women and children. Similarly, 37% of respondents answered that there had been an increase in physical discipline during the SOE. More women and girls cited an increase in domestic violence during the SOE than men and boys (m: 20%; f: 33%). Although faced with these challenges, the COVID-19 response has brought about substantive changes for some sectors, including:

- Health and nutrition: The country's limited health system resources have been channelled into the response. COVID-19 has provided a space for health system advocates to champion equitable access to quality services and a stronger health system as the response is implemented across all 22 provinces. For example, COVID-19 has been an opportunity to mobilise resources to address critical gaps in nutrition service delivery, while the vaccine roll-out is an opportunity to strengthen the vaccine cold chain system.
- Education: The National Education Emergency Response and Recovery Plan was endorsed to sustain learning and inclusion during and after the pandemic through safe remote learning and the safe return of teachers, as well as ensuring that students remain safe and are able to learn, and that the education system becomes more resilient. With US\$22,440,360 required, a total of US\$12 million was made available to implement the plan, leaving only US\$10 million to be funded.
- Water, sanitation and hygiene (WASH): The COVID-19 pandemic has provided a unique opportunity to strengthen the WASH sector. As hygiene advocacy received unprecedented attention and priority from all sectors, new funding was made available and new partnerships established to improve hygiene services in schools, health care facilities, homes and communities.
- Child Protection: The National Executive Council approved the National Child Protection in Emergency Preparedness and Response Strategy, paving the way for a strengthened operational framework for the protection of the lives and well-being of children during the current COVID19 pandemic and beyond, with emergency preparedness for child protection. These developments demonstrate the small but available and growing space to advance the well-being and advocate for the rights of all youth in PNG. [1] NSO [Papua New Guinea] and ICF, Papua New Guinea Demographic and Health Survey 2016–18, NSO and ICF, Port Moresby, Papua New Guinea, and Rockville, Maryland, USA, 2019. [2] Ibid. [3] <https://data.unicef.org/> Page 3 of 11 Page 3 of 11 [4] Ibid. [5] NSO, 2011. [6] <https://openknowledge.worldbank.org/handle/10986/34907>.

Major contributions and drivers of results In 2020, UNICEF PNG made notable progress in improving programme relevance, influence and strategic contributions to equitable results for children, while adapting to a volatile external environment. The pandemic provided new opportunities for UNICEF's high-level advocacy for childcentred policies and systems strengthening at the national level and the need for integrated replicable service delivery models at the sub-national level and timely humanitarian response nationwide. UNICEF PNG continued as a 'partner of choice' as reflected in the significant expansion of the partnership base (e.g. UNICEF PNG as an Administrative Agency for the Global Partnership for Education; as an Implementing Agency for the Government–World Bank Financing Facility for COVID-19 response; partnerships

with UNICEF National Committees; and private sector partnerships) and the UN joint programmes for peacebuilding efforts and humanitarian response. Key UNICEF donors responded promptly to the humanitarian action for children appeal, enabling UNICEF PNG to support the Government in its response to the COVID-19 emergency. UNICEF PNG re-prioritized programming to deliver workplan interventions towards system strengthening, enhancing/continuing access to services and contributing to the Government's efforts to deliver the COVID-19 response. Highlights and key achievements through critical partnerships with Government, civil society organizations (CSOs), faith-based organizations, international financial institutions, academia and the private sector include:

- 1.3 million children aged 0–5 years received the polio vaccine (90% coverage)
- 91% of children aged 6–59 months received a dose of vitamin A supplementation
- 193,000+ newborn babies and their mothers received essential early newborn care
- 510 newborns were resuscitated
- 80% of children admitted with severe acute malnutrition were cured
- 300,000+ students continued their education remotely
- 92,934 students have access to clean water and practise daily group handwashing in schools
- 43,470 more people gained access to basic sanitation
- 5,000+ parents/caregivers received care strategies and messages
- 2,600+ children who have experienced or are at risk of violence received support
- Nearly 6 million people received 171,000+ information, education and communication materials and critical messages to promote healthy behaviours, including prevention of COVID-19 and of violence against women and children
- 5,000+ frontline workers were protected in 750 health facilities
- 3,200+ service providers/duty bearers developed capacities to advance children's well-being
- 500+ volunteers supported the delivery of critical programmes and promoted essential services
- 2 million+ critical materials and equipment were procured
- 1,200+ health, education and justice institutions were supported to provide essential services for children and women.

UNICEF PNG intensified efforts to trigger new partnerships and capitalize on new financing mechanisms (e.g. World Bank) to advance development programming, the basis for reimagining and rebuilding systems, as well as the immediate pandemic response. This led to increased Other Resources for UNICEF PNG regular programming of US\$107.8 million for 2018–2022, an increase of US\$41 million. Other Resources contributions for the COVID-19 response amount to approximately US\$26 million. DEVELOPMENT PROGRAMMING Amidst volatility, UNICEF PNG contributed significantly to enriching the enabling environment to reduce child disparities with child-centred policies, key normative and strategic frameworks and enhancing demand for and access to improved services. Technical and financial contributions enabled the finalization and adoption of numerous policies and plans: the Inclusive Education Policy; National Literacy Policy; the Rehabilitation and Reintegration Policy for Children in Conflict with the Law; a National Out-of-School Children Strategy; National Child Protection in Emergency Preparedness and Response Strategy; and the national costed implementation plan for Maternal, Newborn, Child and Adolescent Health. Significant progress was made towards the country's reporting on human rights conventions with the establishment of a Government Taskforce on Convention on the Rights of the Child reporting. Led by the Office for Child and Family Services, the Taskforce was adopted by the National Executive Council. The Government's commitment to CRC reporting is a major accomplishment considering the last report was made 16 years ago. Further, the PNG policy framework continues to be closely aligned to international standards. For example, the updated ODF verification protocols, approved by the Government, led 102 communities to verify their ODF status against the updated criteria. In addition, the domestication of the international Code on Marketing of Breastmilk Substitutes Act was finalized. Similar progress was seen in the sub-national policy space with increased domestic planning, financing and the delivery of services for children. In the nutrition sector, six provinces<sup>[1]</sup> included nutrition-specific services in their provincial plans. This is in line with the National Nutrition Action Plan, which now has a nationally allocated budget and government-procured supplies for severe acute malnutrition and micronutrient deficiencies. Similar achievements have been seen in the child protection sector with costed plans for Provincial Juvenile Justice Committees in Manus and West New Britain, a critical step in the implementation of the National Juvenile Justice Action Plan 2018–2022. Additionally, in the WASH sector, the District Development Authorities of Goroka, Nawaeb, Hagen Central and Central Bougainville rolled out four WASH service delivery arrangements. Noting the significance, stakeholders in Goroka and Nawaeb planned their own investments to meet their targets. As COVID-19 brought the world to a seeming pause, UNICEF PNG worked with duty bearers and communities to ensure essential services continued. More than 1 million children received the polio vaccine (90% coverage) and 91% of children aged 6–59 months received a dose of vitamin A supplementation, sustaining the battle against preventable diseases. More than 193,000 newborn babies and their mothers received high-impact early essential newborn care (EENC) packages of interventions, as UNICEF PNG scaled up the Saving Lives, Spreading Smiles programme. This enabled nearly 70% of all health

facilities to provide critical EENC services. Further, UNICEF PNG demonstrated its responsiveness, from supporting the education sector adoption of online learning to delivering a total of 486,000 personal protective equipment (PPE) items to schools. This ensured 300,000 students (45% girls) continued learning, including more than 100,000 Grade 8, 10 and 12 students (48% girls) who sat final examinations safely. The continuation of essential services was only possible through reinforcing national capacities to expand the number of duty bearers. UNICEF PNG continued efforts to adopt sustainable capacity development initiatives. For example, 18 Seventh Day Adventist Church members were appointed as Volunteer Juvenile Justice Officers by the Juvenile Justice Officers Director, after they had participated in UNICEF training that used the handbooks for juvenile volunteer court officers and the case management handbook and standards. Recognizing the benefits, the Church, justice intuitions and the Government's training institute signed MOUs to ensure the integration of the material into existing training programmes and expand the minimal child protection workforce. UNICEF PNG has also continued to strengthen rights holders through community engagement, with notable advancements in development engagement strategies, capacity strengthening of community members, and mechanisms for community organization. UNICEF PNG invested significantly in developing frameworks to institutionalize community engagement to promote behaviour change and generate demand for services. The first ever National Immunization Advocacy Communication and Social Mobilization plan and the first National WASH Advocacy and Communication Strategy were both endorsed. With this work, 1.3 million children aged 0–5 (90% coverage) were vaccinated against polio and a total of 115,968 schoolchildren (48% girls) in 250 schools received information on improved hygiene practices. UNICEF PNG continued to work with community members to alleviate the strain of limited services and providers across the country. To promote the uptake of lifesaving interventions, trained community volunteers were critical to disseminating health, hygiene and positive parenting messages. Community members are active on school boards of management and lead on community mobilization for early childhood education. A total of 169 village health volunteers (VHVs) in five rural districts[2] supported 1,501 women to have supervised births in health facilities, provided EENC and kangaroo care to 1,478 newborns and conducted more than 1,000 post-delivery home visits after participating in UNICEF training, where they received VHV and kangaroo care kits. Similarly, 159 active social mobilizers triggered 318 communities to end open defecation practices and 141 communities to self-declare ODF status, benefitting 43,470 people. After taking part in UNICEFled training, 83 community mobilizers became members of district WASH committees, with 87 government and CSO functionaries. So far, they have verified the ODF status of 102 communities per the approved ODF Definition (2019) and certified 34 ODF communities. UNICEF PNG also supported creating community platforms to demand accountability and drive progress for children. With support from 92 UNICEF-trained VHVs (76% females), 30 new mother support groups in WHP, EHP and Western provinces were established, in addition to the 60 existing groups. These groups provide critical platforms for pregnant and breastfeeding women to support each other on childcare and feeding issues. Likewise, the established 230 school hygiene clubs support a total of 92,934 students in 142 schools to practise daily group handwashing by promoting good hygiene and quality maintenance of gender sensitive WASH facilities. Another youth engagement mechanism is U-Report. As part of the Spotlight Initiative, U-Report has been a crucial element of UNICEF PNG's flagship gender-responsive programme. By the end of 2020, 6,000 U-Reporters initiated dialogues with young people on issues related to violence, gender and social norms to create a social movement that embraces positive cultural norms, attitudes and beliefs that do not condone violence against women and girls. U-Reporters informed the outcomes of the first national summit on GBV. U-Report is also part of UNICEF PNG's repository of mobile technology. RapidPro and KoboToolbox are used for real-time monitoring. And taking advantage of the increasing online presence (e.g. meetings, trainings/workshops), UNICEF PNG recently expanded its use of the online space to conduct a virtual field visit with donors to continue programme and operational support during the pandemic. UNICEF PNG advanced strengthening administrative data to identify the children at greatest risk and in greatest need. The WASH management information system expanded to 357 communities, 662 schools and 114 health care facilities in 12 districts across seven provinces. In the health sector, UNICEF PNG supported the Immunization Coverage and Equity Analysis based on administrative health system data. This led to the development of the equity focused micro-plan to complete an immunization catch-up in two districts that had less than 4% routine vaccination coverage. Similarly, with successful advocacy, the State Solicitor provided legal clearance to roll out the national child protection case management system, using Primero/CPIMS+. A national case management curriculum was developed supported by UNICEF and the Pacific Institute for Leadership and Governance. UNICEF PNG played a key role in the UN Cooperation Framework 2023–2028. UNICEF led the

drafting of the Common Country Analysis, and its integration with the Situation Analysis on Women and Children and the WHO Common Country Strategy with WHO and the National Research Institute, a new strategic partner. Also, UNICEF led the UNCT Operations Management Team in the development and adoption of the UNCT Business Operations Strategy for efficient joint operations.

**HUMANITARIAN/EMERGENCY PROGRAMMING** As communities protected themselves from coronavirus, UNICEF PNG ensured a steady pipeline of 1+ million lifesaving supplies to communities in need; reached over 5 million people with information and tools to stay safe; and protected more than 5,000 frontline workers and responders in 750 health facilities across the country. UNICEF PNG joined other actors, led by the Controller of the PNG COVID-19 National Pandemic Response, to develop the National Response Strategy and the National Coordinating Centre Blueprint. To strengthen the evidence base for the response, UNICEF PNG partnered with the World Bank on a socio-economic impact study with a focus on children. A qualitative study on COVID-19 hygiene and risk perception is ongoing. UNICEF PNG delivered risk communication and community engagement (RCCE), health and nutrition, education, water and sanitation, and child protection interventions to families, communities and duty bearers. Reaching more than 5 million people with messages reiterating the well-being of children and critical life-saving messages on COVID-19 was only possible with the partnership of 16 media companies. This enabled more than 1,443 television spots on three stations, 1,968 spots on four radio stations, and 56 COVID-19 messages in two newspaper and the only Tok-Pisin newspaper, Wantok Niuspepa. And through a partnership with the National Capital District Authority, an estimated Page 7 of 11 Page 7 of 11 100,000 people in Port Moresby were exposed to COVID-19 outdoor advertising. Health and nutrition As demands on the health system surged, UNICEF PNG ensured a supply of 700,000 items of PPE, 130,000 infection prevention and control (IPC) materials, 150,000 IEC materials and 74 pre-triage tents to protect frontline workers. And faced with new skill requirements, 740 health workers participated in 35 batches of UNICEF training for 50 districts in 13 provinces on IPC, clinical management, surveillance and RCCE. In addition, 21 ICU staff from five provincial hospitals were trained on ventilator usage for critically ill COVID-19 patients after 10 ventilators, 20 sets of ventilator accessories and 20 oxygen concentrators were procured and distributed by UNICEF. A total of 62 VHV and 43 health care workers (22 females) were trained. These capacity-building efforts ensured a total of 2,053 traced contacts in National Capital District, Central, Morobe, Eastern Highland, Enga, Hela and West New Britain and the distribution of more than 4 million nutrition promotion messages. Education As schools were shut down, UNICEF PNG found new ways to support remote learning – through nationwide daily television and radio broadcasts – reaching more than 300,000 children (45% girls). With new partners, 102 teachers are able to educate children on the COVID-19 context after participating in UNICEF training. And more than 100,000 Grade 8, 10 and 12 students (48% girls) took their final examinations safely through the provision of 486,000 PPE items, including masks. A total of 725 young children (49% girls) and their teachers continued to safely access early childhood education services in 29 centres, which included UNICEF-installed water tanks and handwashing facilities. Water and sanitation As communities tried to protect themselves by practising good hygiene, UNICEF PNG provided clean water and handwashing facilities for 73,808 students (48% girls) in 57 schools. To support schools in implementing new COVID-19 mitigation measures, 102 teachers participated in training and 57 student hygiene clubs were established, reaching 115,986 schoolchildren. Additionally, 30,000 more people were reached with information products and 6,000 family hygiene kits; and 15,500 more people participated in community engagement initiatives after 56 health workers, 22 pastors and 21 market committee representatives (45% female) were trained to facilitate community awareness on mitigating the effects of COVID-19. Child protection As more families face increasing burdens, 3,300+ children and adults received MHPSS and 840 child/adolescent victims of violence or those at risk received referrals through the Child Fund telephone helpline, the only national MHPSS mechanism. After partnering with UNICEF, the helpline became fully functional 24 hours, seven days a week and 10 counsellors attained new MHPSS skills required during COVID-19. Finally, to raise awareness on COVID-19 among children, an eight-episode radio play based on the My Hero Is You children’s book was produced and broadcast on the main radio stations. The book was also translated in Tok-Pisin and disseminated as part of UNICEF WASH hygiene kits, reaching an estimated 18,000 children. [1] SHP/WHP/Simbu/EHP/NCD Page 8 of 11 Page 8 of 11 [2] Pomio, East New Britain Province; Koroba-Kopiago and Tari Pori, Hela Province, and; Ialibu, Southern Highlands Province. UN Collaboration and Other Partnerships The achievements towards addressing the increasing multiple vulnerabilities of children are only possible with the support of the Government, donors, the private sector, faith-based organizations and CSOs in both development and humanitarian contexts. This is demonstrated by the examples below.

**DEVELOPMENT Spotlight Initiative (UNWOMEN, UNDP AND UNFPA):** UNICEF supported the adoption of a

system approach that promotes the protection of women and children from violence, abuse and neglect. Under this initiative, National Department of Education finalised the Behaviour Management Policy school guide to eliminate violence against women and girls in schools and communities. Also, the first national GBV summit was held, which established a Special Parliamentary Committee on GBV with a focus on violence against women and children. Acceleration of routine immunization: Under the WHO and PNG Partnership Fund/PATH (joint platform of Gavi, DFAT and MFAT), the ongoing partnership between UNICEF and Gavi has been further expanded (US\$4.5 million grant) to strengthen immunization supply chain management and accelerate routine immunization and demand generation. Highlands Peacebuilding Joint Programme: The 2020–2022 programme has been established with seven UN agencies, building upon UNICEF activities including immunization (Gavi), Vitamin A supplementation (French NatCom), nutrition (Consolidated NatComs Funds), and capacity-building of village courts (DFAT). One UN coordination leadership: Throughout the year, the UNICEF Head of Office acted as the UN Resident Coordinator. In addition, UNICEF is the chair of the People Priority Working Group, an UNDAF coordination group, as well as the Operations Management Team, along with two sub-groups, HR and Finance. Alliance for Early Childhood Development: This platform, co-chaired by the Office of the Prime Minister, National Executive Council and National Office of Child and Family Services, continues to contribute to results for children. The Alliance is revising the 2007 early childhood care and development policy to meet international ECD standards and set up integrated education, health, nutrition, and protection services for children. HUMANITARIAN/EMERGENCY: Secretary-General's COVID-19 Response Fund: Together with NDoH, Western Provincial Health Authority, Catholic Church Health Services, IOM and UNFPA, 62 VHVs and 43 health care workers (51% female) are now providing nutrition services after participating in UNICEF training (treatment of SAM, micronutrient supplementation and IYCF promotion). COVID-19 and the World Bank: UNICEF PNG is implementing response activities (US\$8,294,910.77) under a signed agreement with NDoH, financed by the World Bank. Activities include infection prevention control and risk communications and community engagement. Additionally, UNICEF PNG, the World Bank and Digicel are conducting a socio-economic impact Page 9 of 11 Page 9 of 11 study with a focus on children. Private sector/media: The expansive COVID-19 RCCE reach was only possible by working with 16 service providers, including TV and radio broadcasts, publishing, outdoor advertising, creative and mobile operators' services. Cluster leadership: UNICEF continued as the Child Protection Sub-Cluster lead and the co-lead for the WASH and Education clusters. In this role, UNICEF coordinated more than 40 organizations to ensure coherence and standardization of the response. Data/evidence: Seventeen rapid polls/assessments for handwashing and child protection and a chatbot reached more than 5,252 respondents; this informed the joint UN COVID-19 socio-economic impact assessment. Lessons Learned and Innovations Through UNICEF PNG's ongoing monitoring work, such as meetings, reports and other documentation, numerous lessons have been identified in all areas of work. A synopsis of these lessons learned is captured below. PROGRAMME EFFECTIVENESS • COVID-19 as an opportunity: Faced with implementing the polio vaccine with the already stretched health system, UNICEF PNG combined COVID-19 RCCE and the polio campaign in Eastern Highlands. • Matrix management: UNICEF PNG has already been implementing matrix management. For example, the multi-country evaluation specialist is currently supporting both PNG and Fiji Offices. • Extended benefits of local partnerships: Local partnerships continue to have wide-reaching positive effects; not only through strengthening local civil society, but also through programme efficiencies. For example, Ginigoada, a local partner, negotiated with a local hardware store to reduce the cost of materials for community-built water tanks and handwashing facilities. • Virtual field visits: The innovative use of virtual field visits opens new and exciting ways to engage with donors to promote advocacy opportunities. • Remote monitoring: Due to COVID-19 restrictions, regular monitoring was not possible. Instead, UNICEF PNG uses U-Report/RapidPro and KoboToolbox (including COVID-19 response) and has launched the Partner Reporting Portal on eTools. For example, implementing partners collected data on early childhood education using KoboToolbox on tablets and telephones. This innovative way to collect data is paperless and allows for real-time monitoring and analysis of the IECD project. • Regional/global partnership frameworks with other key development actors (i.e. NFIs): There is a need for partnership frameworks with other key development actors to facilitate partnerships at the national level. Negotiating the World Bank Partnership took unexpected effort. As this partnership was so unique, the partnership and legal frameworks as well as the payment were all new to UNICEF and required consultation across several different regional Page 10 of 11 Page 10 of 11 and HQ UNICEF offices to gain approval (legal, partnership, statistics), all while concurrently being progressed through the World Bank mechanisms. • Limited space for qualitative initiatives: COVID-19 restrictions had a considerable negative impact on data and evidence initiatives. Although UNICEF PNG was able to transition to

remote data collection (i.e. Kobo Toolbox and U-Report), this meant limited space for qualitative initiatives to directly engage with participants/communities.

- Integrating the situation analysis as part of the Common Country Assessment: As the Chair for the Inter-Agency People Priority Working Group, UNICEF PNG led the integration of the UNSDF Common Country Assessment and the Situation Analysis along with WHO's Country Cooperation Strategy. Through this integration, the different agencies can further streamline and complement programming with the same analysis.
- Inter-agency implementation vs. programme design: One challenge of joint programming is the coherence of implementation. Although the programme uses the UNDAF/UNSDCF results framework, there is divergence at the inter-agency implementation level. For example, limited field visits were coordinated for implementation or monitoring.
- Cross-sectoral opportunities: A cross-sectoral hygiene kit was developed to improve hygiene practices and disseminate social messages on GBV to rural communities. PNG has some of the highest rates of violence against children and women. The hygiene kits were locally procured, making them more cost-effective and with a lower CO2 emission footprint, compared to the kits available at Supply Division.
- Expanding mental health psychosocial support with U-Report: In a country with limited MHPSS during a time where the need is increasing, UNICEF PNG expanded the only national MHPSS response service in PNG, the Child Fund telephone hotline using U-Report.
- Training duty bearers vs. external suppliers: As UNICEF PNG continues to support the health system, the installation of new cold chain equipment will now be done by national and provincial biomedical technicians after they complete a UNICEF-supported training programme. This is more cost-effective than engaging a supplier that provides a service bundle, including supervision, and will support COVID vaccine cold chain needs.
- Cold Chain Monitoring: To ensure no break to the cold chain for vaccines, temperature alarms and continuous temperature monitoring systems are being installed across the country, this will support the COVID-19 vaccinations.
- Value-for-money process in supplies: In the WASH sector, value-for-money processes led to the establishment of local long-term arrangements for supplying hygiene kits, which reduced costs and ensured timely availability during the COVID-19 response. A total of 6,000 hygiene kits were procured at US\$53.58 per kit, including delivery at distribution points.
- WASH sub-national investment: The UNICEF-supported WASH service delivery arrangement endorsement meetings in focus districts were successful. Stakeholders in Goroka and Nawaeb planned their own investments to meet WASH plan targets.
- WASH ODF external verification teams: Now that the teams have been endorsed by district WASH committees, the rate of ODF verification has greatly improved. In Goroka, the total number of ODF-verified communities increased from 9 to 35 in less than two weeks.

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One key lesson to highlight has been community engagement to support communities/rights holders to become duty bearers. UNICEF PNG continues to emphasize that the involvement of community members is critical for expanding access to and increasing demand for quality services with appropriate administration, capacity development and supervision. In each sector, community members are supported to be meaningfully engaged in mechanisms – from joining education boards of management to WASH community mobilizers participating on district administration teams. This approach continues to yield long-lasting results in the health sector. In the very remote Koroba Kopiago district, VHVs saw for themselves that women who live two or three days' walk from the nearest health facility were giving birth along the way. Following UNICEF training, the VHVs led an initiative to build three maternity waiting homes where women who live at a distance from health facilities can stay to await the birth of their child. The local community contributed cash and in-kind donations and built the homes, which are managed by the VHVs and the community. Oil Search Foundation demonstrated their commitment by partnering with the community and VHVs to upgrade and build a modern maternity waiting home and a maternity ward in their health facility. This will greatly improve access to maternal, newborn and child health services in this very remote district

## Solomon Islands

Source: Solomon Islands Demographic and Health Survey 2015 Final Report

### Empowerment of Women

#### KEY FINDINGS

- Nearly 52% of currently married women and 91% of currently married men are employed. The percentage of currently employed married women and men increased from 42% and 87% respectively in the SIDHS 2006–2007.
- About 39% of women are engaged in paid (cash) employment (versus 33% in 2006–2007) compared with 50% of men (versus 52% in 2006–2007).
- The percentage of unpaid working women declined slightly from 56% in 2006–2007 to 50% in 2015. Only 27% of women who earn cash decide on how their own earnings are spent. The majority of women (56%) who earn cash make joint decisions with their husband or partner about the use of their earnings.
- About 66% of currently married women participate in all three decisions regarding: their own health care, making household purchases, and visits to their family or relatives. This is an improvement from 57% in 2006–2007.
- About six in ten women own a house and about four in ten women own land, mostly in joint ownership with their husbands. Ownership of assets is less influenced by background demographic characteristics.
- Close to eight in ten women agree with at least one of the specified justifications for wife beating, an increase from about seven in ten women in 2006–2007. This indicates that the majority of women still believe that violence against women is justified under certain circumstances. Close to six in ten men agree with at least one specified justification for wife beating.
- The use of contraception is lower among women who do not participate in any household decisions than those who do. A similar finding was observed in 2006–2007.

**Table 15.4.1: Ownership of assets – Women**

Percent distribution of women aged 15–49 by ownership of housing and land, according to background characteristics, Solomon Islands 2015

Background characteristic	Percentage who own a house:						Percentage who own a land:						
	Alone	Jointly	Alone and jointly	Percentage who do not own a house	Missing	Total	Alone	Jointly	Alone and jointly	Percentage who do not own land	Missing	Total	Number
<b>Age</b>													
15–19	5.2	18.7	6.4	69.5	0.2	100	2.4	23.1	6.8	66.5	1.1	100	1,241
20–24	8.1	21	15.3	55.5	0.1	100	6.2	22.4	11.8	59.2	0.4	100	1,146
25–29	13	29.2	15	42	0.8	100	8.3	26.9	13.5	50.1	1.2	100	1,091
30–34	16.8	32.2	19.4	31.3	0.3	100	10.1	28.9	15.3	44.5	1.2	100	933
35–39	19.1	32.8	22.9	24.8	0.4	100	14.8	28.2	19.4	37.2	0.4	100	803
40–44	19.8	34.9	21.8	23.3	0.2	100	14.7	33.2	15.2	36	0.9	100	576
45–49	23.1	35.1	22.1	19.4	0.3	100	15.5	31.2	21.8	30.7	0.9	100	476
<b>Residence</b>													
Urban	10	13.3	10	66.4	0.4	100	7.9	18.2	9	63.9	1	100	1,427
Rural	14.3	31.7	18	35.7	0.3	100	9.3	29.7	15	45.6	0.8	100	4,819
<b>Region</b>													
Honiara	8.4	9.9	9.5	71.9	0.4	100	8.1	13.1	8.1	69.9	0.8	100	925
Guadalcanal	18.6	25.8	19.5	35.8	0.3	100	8.6	37.5	15.8	36.3	1.9	100	1,140
Malaita	10.4	27.9	22	39.5	0.2	100	5.2	18.3	10.8	65	0.7	100	1,608
Western	14.4	36	11.3	37.9	0.4	100	11	34.6	14.7	38.9	0.8	100	902
Other provinces	14.6	33.4	14.7	36.9	0.5	100	12.3	30.7	17.4	39.1	0.5	100	1,690
<b>Education</b>													
No education	17.4	32.9	24.4	25.3	0	100	9	29.8	14.2	46.4	0.4	100	576
Primary	15.2	31	17.7	35.7	0.4	100	10.1	27.7	15.2	46	0.9	100	2,820
Secondary	11	24.1	12.9	51.6	0.3	100	7.6	25.8	12.2	53.3	1	100	2,476
More than secondary	8.3	16	13.4	61.9	0.5	100	9.3	20.6	10.9	58.8	0.4	100	394
<b>Wealth quintile</b>													
Lowest	15.2	36.8	19.8	27.8	0.4	100	9.5	32.4	14.4	42.8	0.9	100	1,158
Second	14	34.1	17	34.7	0.2	100	8.3	29.3	14.9	46.3	1.2	100	1,172
Middle	15.4	29.4	18.3	36.5	0.4	100	9.4	26.3	14.2	49.2	0.9	100	1,223
Fourth	14.9	27	17.8	40.1	0.2	100	10.6	27.6	16.4	44.6	0.8	100	1,253
Highest	8	13.7	9.5	68.3	0.5	100	7.4	19.7	9.2	63	0.7	100	1,460
<b>Total</b>	<b>13.3</b>	<b>27.5</b>	<b>16.2</b>	<b>42.7</b>	<b>0.3</b>	<b>100</b>	<b>9</b>	<b>26.7</b>	<b>13.7</b>	<b>49.8</b>	<b>0.9</b>	<b>100</b>	<b>6,266</b>

**Table 15.4.2: Ownership of assets – Men**

Percent distribution of men aged 15–49 by ownership of housing and land, according to background characteristics, Solomon Islands 2015

Background characteristic	Percentage who own a house:						Percentage who own a land:						
	Alone	Jointly	Alone and jointly	Percentage who do not own a house	Missing	Total	Alone	Jointly	Alone and jointly	Percentage who do not own land	Missing	Total	Number
<b>Age</b>													
15–19	9.7	28	7.5	54.4	0.3	100	5.7	36.4	10.6	45.9	1.4	100	605
20–24	19.9	25.5	10	44.6	0	100	8.1	35.7	13.4	40.7	2.1	100	519
25–29	33.8	25.5	8.3	31.9	0.6	100	11.4	42.5	12.6	31.1	2.4	100	479
30–34	51	16.8	6.5	25.8	0	100	16.5	40.2	14.6	25.4	3.3	100	436
35–39	52	11.9	9.9	25.8	0.4	100	15.2	35.3	17.7	29.8	2	100	394
40–44	49.6	16.4	11.4	21.2	1.3	100	17.5	35.4	17.5	24.5	5	100	280
45–49	60.8	12.8	6.7	19.3	0.4	100	22.1	34.4	15.9	25.2	2.4	100	236
<b>Residence</b>													
Urban	15.9	7.1	5.9	71	0	100	8.9	10.9	4.9	73.1	2.2	100	720
Rural	41.2	25.5	9.4	23.4	0.5	100	13.5	46	17	21	2.6	100	2,229
<b>Region</b>													
Honiara	7.4	6.4	7.4	78.8	0	100	3.8	7.7	3.1	84.7	0.7	100	475
Guadalcanal	50.3	22.7	4.4	22	0.6	100	23.3	42.2	4	27.4	3	100	547
Malaita	44.7	28.3	18.4	8.6	0	100	12.4	52.8	22.8	9.8	2.2	100	710
Western	25.5	19.1	1.5	53.9	0	100	15.9	33.4	5.2	45.1	0.4	100	451
Other provinces	37.9	23.3	7.3	30.5	1	100	7.7	40.6	25.1	22	4.7	100	765
<b>Education</b>													
No education	39.3	22.2	12.7	25.8	0	100	10.5	37.8	13.4	38.4	0	100	92
Primary	42.6	23	8.6	25.3	0.5	100	14.4	43.4	14	25.5	2.7	100	1,202
Secondary	29.1	21.6	8.4	40.5	0.4	100	10.2	36.1	14.3	37.1	2.3	100	1,348
More than secondary	30.2	10.4	8	51.5	0	100	14.2	20.1	13	49.6	3.2	100	307
<b>Wealth quintile</b>													
Lowest	44.6	29.8	11.9	12.8	0.9	100	9.7	51.2	20.4	14.8	3.9	100	529
Second	40.3	32.7	9.9	17.1	0	100	12.4	51.4	17.4	17.6	1.1	100	565
Middle	44.6	17.9	9.9	27.4	0.3	100	15.2	40.2	18.2	22.8	3.6	100	528
Fourth	35.4	20.1	6.6	37.4	0.5	100	16.3	37.6	11.7	31.7	2.6	100	621
Highest	16.3	8.3	5.6	69.6	0.2	100	8.6	13.7	5.5	70.7	1.5	100	706
<b>Total 15–49</b>	<b>35</b>	<b>21</b>	<b>8.6</b>	<b>35</b>	<b>0.4</b>	<b>100</b>	<b>12.3</b>	<b>37.4</b>	<b>14</b>	<b>33.7</b>	<b>2.5</b>	<b>100</b>	<b>2,948</b>
50+	60.1	13.9	11.8	13.9	0.4	100	23.2	38.2	21.5	14.9	2.2	100	643
<b>Total 15+</b>	<b>39.5</b>	<b>19.7</b>	<b>9.1</b>	<b>31.2</b>	<b>0.4</b>	<b>100</b>	<b>14.3</b>	<b>37.6</b>	<b>15.4</b>	<b>30.3</b>	<b>2.4</b>	<b>100</b>	<b>3,591</b>

## Disabilities

### KEY FINDINGS

- Difficulties in seeing, hearing, walking, or climbing stairs were the most common types of disabilities reported during the SIDHS 2015.
- About 10% of all people aged 5 years and older have some difficulties in seeing, 6% reported having some difficulties in hearing, the same percentage (6%) reported having some difficulties in walking, 7% reported having some difficulties in climbing stairs, 8.4% reported having some difficulties in cognition (remembering or concentrating), 4% reported having some difficulties in self-care (washing or dressing), and 3% reported having some difficulties in communication.
- The prevalence of disability increases with age, with those aged 60 and over showing higher percentages of disabilities compared with those aged 5–59.
- The prevalence of disability is higher among rural populations than urban populations.
- About 16% of males and 17% of females have a mild to severe disability.
- One-half of people aged 60 and older reported having a mild to severe disability, with about 24% within the same age group indicating that they have a moderate to severe disability.
- Nearly 17% of people living in rural areas have a mild to severe disability, compared with 15% of people in urban areas.
- Of those with a mild to severe disability, about 54% have primary level education; those with moderate to severe disability, 46% have primary level and from those with severe disability only 28% claimed to have primary level of education.
- Secondary level among the population with mild to severe disability accounted for 6% while only 3% among the population with severe disability.
- 66% of the population with a mild to severe disability are legally married; of those with severe disability only 28% are in the same married status.

**Table 14.1: Disability by functional domain**

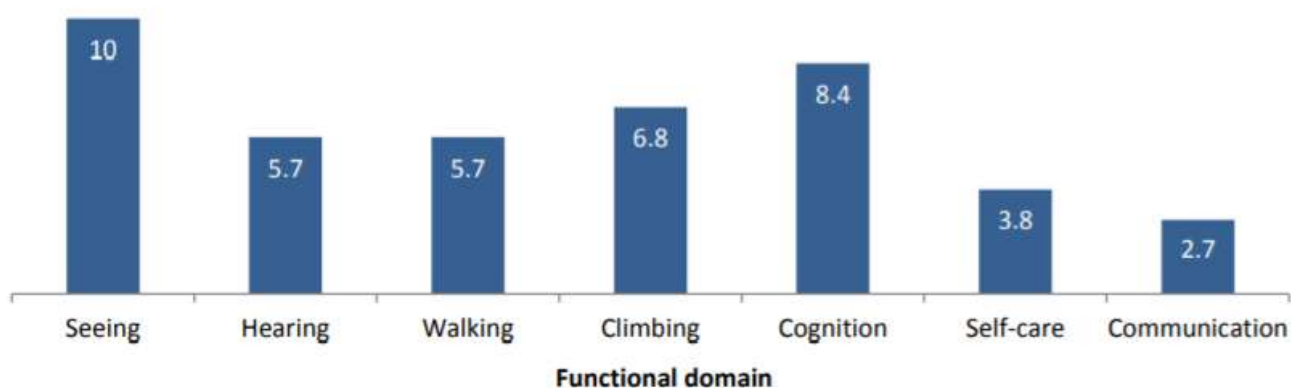
Percentage distribution of the population aged 5 years and older with disabilities by functional domain and degree of difficulty, Solomon 2015

Functional domain / Severity	Sex		Residence		Age group			Total
	Male	Female	Urban	Rural	5-17 years	18-59 years	60+ years	
<b>Seeing</b>								
Some difficulty (mild)	8.3	8.5	6.1	9	0.8	9.7	42.8	8.4
A lot of difficulty (moderate)	1.4	1.6	0.7	1.7	0.1	0.9	14.5	1.5
Cannot do at all (severe)	0.1	0.1	0	0.1	0	0	0.8	0.1
<b>Total</b>	<b>9.8</b>	<b>10.2</b>	<b>6.8</b>	<b>10.8</b>	<b>0.9</b>	<b>10.6</b>	<b>58</b>	<b>10</b>
<b>Hearing</b>								
Some difficulty (mild)	4.5	4.8	3	5.1	2.4	3.8	24.5	4.6
A lot of difficulty (moderate)	1	0.9	0.5	1.1	0.3	0.5	8	0.9
Cannot do at all (severe)	0.1	0.1	0	0.1	0	0.1	0.6	0.1
<b>Total</b>	<b>5.6</b>	<b>5.8</b>	<b>3.5</b>	<b>6.2</b>	<b>2.7</b>	<b>4.4</b>	<b>33.1</b>	<b>5.7</b>
<b>Walking</b>								
Some difficulty (mild)	4.1	5	3.4	4.9	0.6	4.3	30.6	4.6
A lot of difficulty (moderate)	0.9	0.9	0.5	1	0.1	0.4	9.6	0.9
Cannot do at all (severe)	0.3	0.2	0.1	0.3	0.1	0.1	1.8	0.2
<b>Total</b>	<b>5.3</b>	<b>6.1</b>	<b>4</b>	<b>6.1</b>	<b>0.8</b>	<b>4.8</b>	<b>42</b>	<b>5.7</b>
<b>Climbing</b>								
Some difficulty (mild)	4.5	6	3.9	5.6	0.8	5.2	31.8	5.3
A lot of difficulty (moderate)	1.2	1.3	0.9	1.3	0.2	0.6	12.7	1.2
Cannot do at all (severe)	0.3	0.3	0.1	0.4	0.1	0.1	3.2	0.3
<b>Total</b>	<b>6</b>	<b>7.7</b>	<b>5</b>	<b>7.3</b>	<b>1.1</b>	<b>6</b>	<b>47.7</b>	<b>6.8</b>
<b>Cognition (Remembering or Concentrating)</b>								
Some difficulty (mild)	6.8	7.6	5.4	7.7	2.6	7.4	33	7.2
A lot of difficulty (moderate)	1	1.1	0.5	1.2	0.3	0.8	7.9	1.1
Cannot do at all (severe)	0.1	0.1	0	0.1	0.1	0	0.7	0.1
<b>Total</b>	<b>7.9</b>	<b>8.8</b>	<b>6</b>	<b>9</b>	<b>2.9</b>	<b>8.2</b>	<b>41.6</b>	<b>8.4</b>
<b>Self-care (washing or dressing)</b>								
Some difficulty (mild)	3	2.6	3.5	2.6	2.5	1.7	13.2	2.8
A lot of difficulty (moderate)	0.7	0.5	0.9	0.5	0.7	0.3	2.7	0.6
Cannot do at all (severe)	0.6	0.3	0.4	0.5	0.6	0.2	1.7	0.4
<b>Total</b>	<b>4.2</b>	<b>3.4</b>	<b>4.8</b>	<b>3.6</b>	<b>3.8</b>	<b>2.1</b>	<b>17.6</b>	<b>3.8</b>
<b>Communication</b>								
Some difficulty (mild)	1.9	1.9	4	1.4	2.2	1.3	5	1.9
A lot of difficulty (moderate)	0.5	0.4	0.8	0.4	0.6	0.2	1.7	0.5
Cannot do at all (severe)	0.4	0.3	0.3	0.3	0.4	0.2	0.5	0.3
<b>Total</b>	<b>2.8</b>	<b>2.6</b>	<b>5.1</b>	<b>2.1</b>	<b>3.1</b>	<b>1.8</b>	<b>7.2</b>	<b>2.7</b>
<b>Total</b>	<b>11,395</b>	<b>11,627</b>	<b>4,632</b>	<b>18,390</b>	<b>9,039</b>	<b>12,450</b>	<b>1,533</b>	<b>23,022</b>

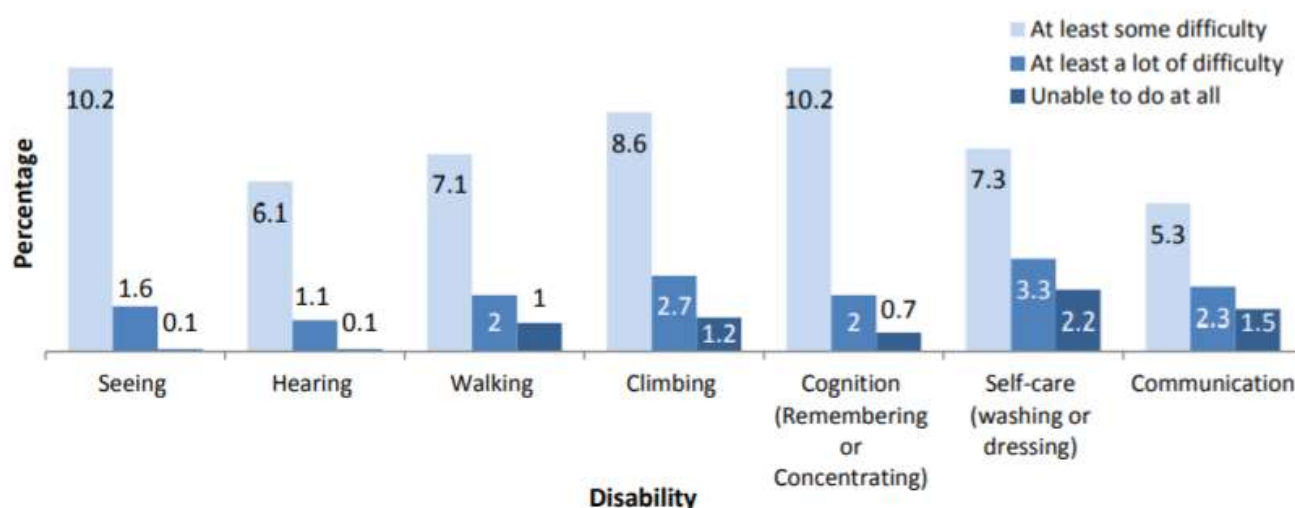
Table 14.2 shows the prevalence of disabilities for those aged 5 years and older having 'at least some difficulty, a lot of difficulty and unable to do at all'. The prevalence rate of disability among the population aged 5 years and above is calculated as follows:

- **at least some difficulty** – scores at least one in mild to severe difficult in each different domain;
- **at least a lot of difficulty** – scores at least one in moderate and severe difficulty in each different domain; and
- **unable to do all** – scores at least one in severe difficulty only for each domain.

**Figure 14.1: Percent distribution of all people aged 5 and above with difficulties, by functional domain, Solomon Islands 2015**



**Figure 14.2: Prevalence of disabilities among the population aged 5 years and older by functional domain, Solomon Islands 2015**



**Table 14.2: Disability by functional domain and degree of difficulty**

Prevalence of disability among the population aged 5 years and older by domain and degree of difficulty, Solomon 2015

Background characteristic	At least some difficulty (%)	At least a lot of difficulty (%)	Unable to do at all (%)
<b>Functional domain</b>			
Seeing	10.2	1.6	0.1
Hearing	6.1	1.1	0.1
Walking	7.1	2	1
Climbing	8.6	2.7	1.2
Cognition (Remembering or Concentrating)	10.2	2	0.7
Self-care (washing or dressing)	7.3	3.3	2.2
Communication	5.3	2.3	1.5

## Child Labour and Child Discipline

### KEY FINDINGS

- Over 3 out of 5 children (62%) aged 5–11 in Solomon Islands are involved in child labour activities; this percentage is higher than that of its neighboring country, Vanuatu, at 50%.
- The majority of children aged 5–11 who are involved in child labour activities work for a family business for at least 1 hour per week and do household chores for less than 28 hours per week.
- Children aged 5–11 are more likely to be involved in child labour activities if they reside in rural areas; and, more female children are involved in child labour activities than male children. The percentage of children engaged in labour declines with the mother's increasing level of education and wealth.
- About 12% of children aged 12–14 are involved in child labour activities in Solomon Islands, with the majority working for a family business, followed by doing household chores for less than 28 hours per week.
- Child labour among children aged 12–14 is more common among female children, children living in rural areas, and children whose mother has no education.
- The majority of children (86%) aged 2–14 receive some form of violent discipline, with children living in rural areas, those living in lower wealth quintile households, and those whose mother or caretaker has very little education, are more likely to experience this type of disciplinary method.
- The most common method of child discipline is psychological aggression, with 78% of children aged 2–14 having received this type of discipline in the month prior to the survey.

**Table 16.1: Child labour**

Percentage of children who are involvement in an economic activity and household chores during the week prior to the survey, according to age groups and the percentage of children aged 5–14 who are involved in child labour, Solomon Islands 2015

Background characteristic	Percentage of children aged 5–11 involved in:								Percentage of children aged 12–14 involved in:								Total child labour <sup>4</sup>	Number of children aged 5–14	
	Paid work outside household (HH)				HH chores				Paid work outside HH	Unpaid work outside HH	Working for family business	Economic activity less than 14 hours/week		HH chores for 28 hours or more/week		Number of children aged 12–14			
	Unpaid work outside HH	Working for family business	Economic activity for at least one hour/week <sup>2</sup>	HH chores for less than 28 hours/week	HH chores for 28 hours or more/week	Child labour <sup>3</sup>	Number of children aged 5–11	14 hours/week				Economic activity for 14 hours or more/week	less than 28 hours/week	HH chores for 28 hours or more/week	Child labour <sup>3</sup>				
<b>Sex</b>																			
Male	2.2	7.8	66.2	59.6	47.1	0.5	59.6	2,787	5.9	13.5	84	74.5	10.2	67.8	1.1	10.4	1,006	46.6	3,793
Female	2.3	8.5	71.2	63.7	62.1	0.8	63.8	2,560	3.1	9.8	85.3	73.4	12.8	82.1	1.9	13	1,046	49	3,606
<b>Residence</b>																			
Urban	1	7.5	42.2	35.3	39.1	0.5	35.4	797	1.9	9.9	56.2	54.1	3.8	64.8	1.6	4.5	329	26.4	1,126
Rural	2.5	8.3	73.3	66.2	56.9	0.7	66.2	4,550	5	12	90.1	77.8	13	77	1.5	13.1	1,723	51.6	6,273
<b>Region</b>																			
Honiara	0.7	8.5	31.5	25	35.4	0.1	25	488	2.2	11.2	44.4	46.3	0.7	63.4	0.7	1.1	192	18.2	681
Guadalcanal	1.5	8	66	57.6	46.5	0.1	57.6	959	4	13.3	87	78.8	8.8	69	0.5	8.8	337	44.9	1,296
Malaita	2.8	3.6	69.9	63.5	57	0.3	63.5	1,500	5.4	6.9	89.7	74.8	15.9	77.3	1.4	15.9	633	49.3	2,133
Western	3.3	7	73.4	61.5	56.1	0.2	61.5	775	5.1	7.8	87.1	80.7	6.5	72.1	0.9	6.7	288	46.7	1,063
Other provinces	2.1	12.9	77.9	73.2	61.2	1.6	73.3	1,625	4.2	17.7	89.8	76	14.3	81.2	2.6	14.8	601	57.5	2,226
<b>School attendance</b>																			
Yes	2.6	8.6	72.2	65.5	57.8	0.6	65.5	4,114	4.5	11.8	85.3	75	11.2	75.7	1.4	11.3	1,861	48.6	5,976
No	1.1	6.8	56.5	48.6	42.3	0.7	48.6	1,210	4.8	10.7	78.4	64.1	14.9	69	2.7	15.6	185	44.2	1,395
Don't know/Missing	0	2.3	66.8	47.7	51.8	0	47.7	23	0	0	95.2	66.8	28.3	56.7	0	28.3	5	44.1	28
<b>Mother's education</b>																			
No education	3.5	8.1	70.1	63.3	54.9	1	63.3	613	6.3	15.3	88.5	70.3	19.2	77.5	2.4	19.2	307	48.6	919
Primary	2.1	8.1	71.4	64.2	55.7	0.2	64.2	2,403	4.8	11.9	88.9	79	10.3	76.2	0.5	10.5	902	49.6	3,305
Secondary	2.9	11.6	60.5	54.4	48.7	1	54.6	983	4.3	15.2	77.2	71.2	8.4	75.9	1.1	8.4	207	46.5	1,190
More than secondary	1.1	5.6	49.2	38.8	48.7	0.7	38.8	209	3.9	4	62.3	56.9	5.4	55.8	2.4	5.9	74	30.2	283
Missing	0	0	35.4	15.2	45.5	0	15.2	3	0	15.8	42.9	27	15.8	58.3	0	15.8	5	15.6	8
<b>Wealth quintile</b>																			
Lowest	2.1	8.8	72	65.4	53.7	0.8	65.4	1,216	4.8	14	88.5	78.4	10.3	79.3	0.7	10.3	424	51.2	1,639
Second	3.4	7	74.7	68.5	58	0.6	68.5	1,172	6.9	13.7	92.1	77.5	15.2	75.4	1.6	15.2	433	54.1	1,605
Middle	2.1	9.5	73.8	66	54.8	0.4	66	1,094	4.9	11.3	90.5	79.3	11.9	75.3	2.2	12.2	427	50.9	1,521
Fourth	1.6	8.5	69.6	62.8	56	0.8	62.9	1,032	3.9	9.1	89	74.9	14.8	77.1	1.6	15	389	49.8	1,421
Highest	1.8	6.7	47.2	38.8	47.1	0.6	38.9	834	1.3	9.6	61	57.8	4.9	67.6	1.2	5.4	378	28.4	1,212
<b>Total</b>	<b>2.3</b>	<b>8.2</b>	<b>68.6</b>	<b>61.6</b>	<b>54.3</b>	<b>0.6</b>	<b>61.6</b>	<b>5,348</b>	<b>4.5</b>	<b>11.6</b>	<b>84.7</b>	<b>74</b>	<b>11.5</b>	<b>75.1</b>	<b>1.5</b>	<b>11.7</b>	<b>2,052</b>	<b>47.8</b>	<b>7,399</b>

**Table 16.2: Child labour and school attendance**

Percentage of children aged 5–14 who are involved in child labour and who are attending school, and the percentage of children aged 5–14 years attending school who are involved in child labour, Solomon Islands 2015

Background characteristic	All children aged 5–14			Children aged 5–14 involved in labour		Children aged 5–14 attending school	
	Percentage of children involved in child labour	Percentage of children attending school	Number of children aged 5–14	Percentage of child labourers who are attending school	Number of children aged 5–14 involved in child labour	Percentage of children attending school who are involved in child labour	Number of children aged 5–14 attending school
<b>Sex</b>							
Male	46.6	80.6	3,793	82.2	1,767	47.4	3,059
Female	49	80.9	3,606	82.2	1,769	49.9	2,917
<b>Residence</b>							
Urban	26.4	83.1	1,126	84.7	298	26.9	936
Rural	51.6	80.3	6,273	82	3,238	52.7	5,040
<b>Region</b>							
Honiara	18.2	82.3	681	82.7	124	18.3	560
Guadalcanal	44.9	85.7	1,296	89.2	582	46.8	1,111
Malaita	49.3	77	2,133	79.7	1,053	51.1	1,642
Western	46.7	78.6	1,063	80	496	47.5	835
Other provinces	57.5	82.1	2,226	81.8	1,280	57.3	1,828
<b>Age</b>							
5–11	61.6	76.9	5,348	81.8	3,295	65.5	4,114
12–14	11.7	90.7	2,052	87.4	241	11.3	1,861
<b>Mother's education</b>							
No education	48.6	76.8	919	81	447	51.2	706
Primary	49.6	80.4	3,305	82.4	1,638	50.8	2,658
Secondary	46.5	83	1,190	84.7	554	47.5	987
More than secondary	30.2	87.5	283	90	85	31	248
Missing	15.6	69.6	8	42.3	1	9.5	6
<b>Wealth quintile</b>							
Lowest	51.2	74.5	1,639	74.9	839	51.4	1,221
Second	54.1	79.9	1,605	81.9	869	55.5	1,283
Middle	50.9	82.3	1,521	84	775	52	1,252
Fourth	49.8	82	1,421	86	708	52.2	1,166
Highest	28.4	87	1,212	88.7	345	29	1,054
<b>Total</b>	<b>47.8</b>	<b>80.8</b>	<b>7,399</b>	<b>82.2</b>	<b>3,535</b>	<b>48.6</b>	<b>5,976</b>

**Table 16.3: Child discipline***Percentage of children aged 2–14, according to method of disciplining the child, Solomon Islands 2015*

Background characteristic	Only non-violent discipline	Psychological aggression	Any physical punishment	Severe physical punishment	Any violent discipline method	Number of children aged 2–14	Respondent believes that the child needs to be physically punished	Number of respondents to the child discipline module (2–14)
<b>Sex</b>								
Male	11.8	78.3	70.2	23	86.2	5,141	2,338	4,985
Female	13.3	77.3	66.2	21	84.7	4,862	2,157	4,555
<b>Residence</b>								
Urban	19.9	65.7	59.5	15.2	75.7	1,540	536	1,475
Rural	11.2	80.1	69.9	23.3	87.3	8,462	3,958	8,065
<b>Child's age</b>								
2–4 years	12.6	74	72.7	22.4	84.6	2,514	1,107	2,321
5–9 years	10.5	79.9	73.1	25.1	87.8	3,912	1,882	3,867
10–14 years	14.8	78.1	59.7	18.2	83.6	3,575	1,505	3,352
<b>Caretaker education</b>								
No education/ Pre-school/ Other	12.2	80.7	66.9	18.2	86.8	1,474	704	1,425
Primary	11.3	79.3	69.7	24.2	86.8	5,563	2,559	5,288
Secondary	12.3	76.2	69.8	20.3	85.4	2,324	1,022	2,252
More than secondary (Tertiary/Vocational)	24.8	63.7	51.1	15.3	71.4	530	186	522
Caretaker not in household	–	–	–	–	–	47	0	0
Missing	28.3	67.9	67.9	47.8	67.9	64	22	53
<b>Wealth index quintile</b>								
Lowest	10.7	83.4	71.4	26	87.8	2,246	1,113	2,124
Middle	10	81.1	71.7	22	88.5	2,076	988	2,009
Fourth	14.4	73.8	66.3	20.1	83.7	1,919	805	1,836
Highest	19.5	65.9	58.7	13.3	76.1	1,616	544	1,552
<b>Total</b>	<b>12.5</b>	<b>77.9</b>	<b>68.3</b>	<b>22</b>	<b>85.5</b>	<b>10,002</b>	<b>4,494</b>	<b>9,540</b>

# Solomon Islands Rural Water, Sanitation, and Hygiene (WASH)

## Western Province



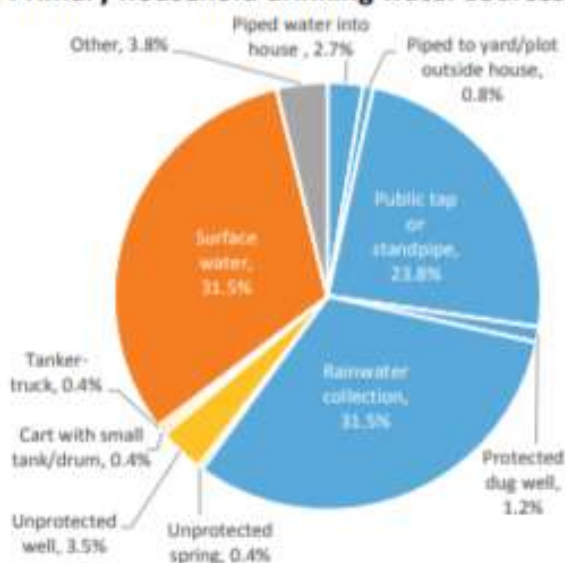
## Snapshot

	Western	National		Western	National				
<b>Drinking Water</b>	<b>56%</b>	<b>54%</b>	<b>Hygiene</b>	<b>44%</b>	<b>16%</b>				
Access to basic drinking water sources (improved source available within 30min)			Appropriate hand washing facilities (with water and soap)						
<b>Sanitation</b>	<b>16%</b>	<b>13%</b>	<b>Management</b>	<b>7%</b>	<b>13%</b>				
Access to a basic sanitation facility (improved type facility not shared with other households)			Households reporting that their drinking water source (improved or unimproved) is managed by an active WASH committee						
<b>SUMMARY</b> (Population*)	<b>Central</b> (24,567)	<b>Choiseul</b> (25,133)	<b>Guadalcanal</b> (73,886)	<b>Isabel</b> (23,706)	<b>Makira</b> (36,532)	<b>Malaita</b> (117,211)	<b>Ren-Bell</b> (5,895)	<b>Temotu</b> (16,025)	<b>Western</b> (63,532)
Water	57%	63%	43%	90%	63%	48%	100%	44%	56%
Sanitation	3%	6%	14%	6%	11%	15%	45%	10%	16%
Hygiene	8%	6%	9%	3%	21%	11%	5%	12%	44%
Management	24%	3%	6%	32%	19%	18%	3%	4%	7%

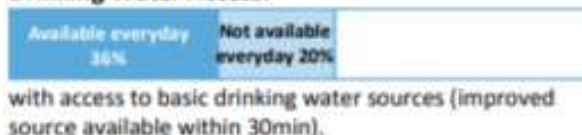
\*population numbers from 2009 census

### DRINKING WATER

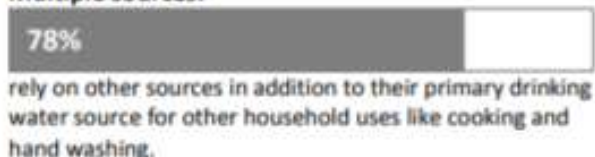
#### Primary household drinking water sources



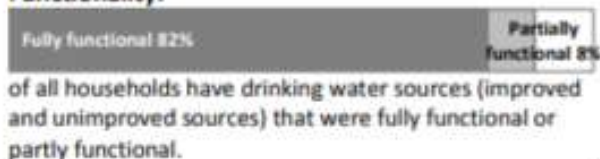
#### Drinking Water Access:



#### Multiple sources:

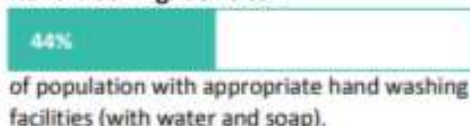


#### Functionality:

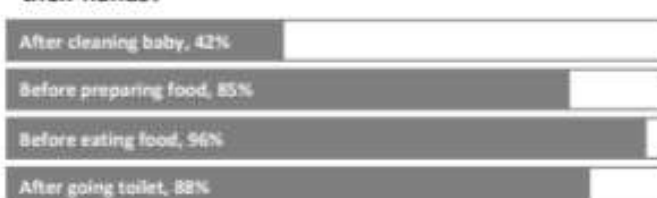


### HYGIENE

#### Hand washing facilities:



#### What knowledge do people have about when to wash their hands?



70% of the people reported that some of the time they wash their hands before eating and after toilet. Only about 20% of people reported that they always wash their hands before eating and after toilet.

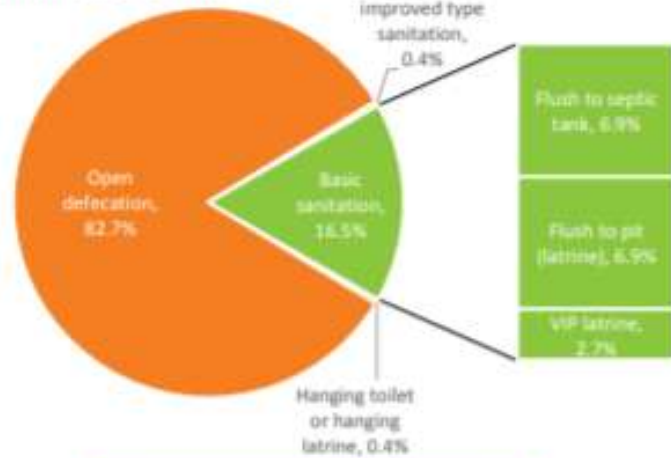
PreEminary analysis of the Solomon Islands Rural WASH Baseline (conducted December 2015). For further details contact the Solomon Islands Ministry of Health and Medical Services Environmental Health Division. Water and sanitation type definitions available at [wssinfo.org](http://wssinfo.org)

Western Province Snapshot

**SANITATION**



**Household sanitation**



**Access to toilets:**

17%

access to a basic sanitation facility (improved type facility not shared with other households).

**0% of communities declared No Open Defecation (NOD)**



**MANAGEMENT**

**Active WASH committee:**



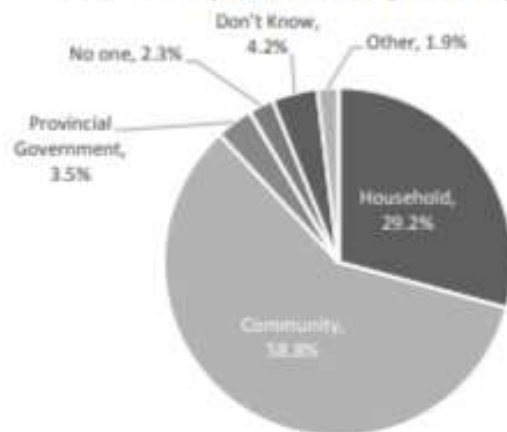
of all households reported that their drinking water source (using both improved and unimproved source types) is managed by a WASH committee. Seven percent of households report committees are active and 21% report committees are inactive.

**Technical Support:**

30%

feel there is technical support to maintain the water supply.

**Responsibility for maintaining water supply**



## Vanuatu

Source: Vanuatu Demographic and Health Survey 2013 Final Report

### Disabilities

#### Key Findings

- About 11% of all people aged 5 and over reported having some form of disability.
- Difficulties in seeing, hearing, and walking or climbing were the most common types of disabilities reported during the survey.
- The prevalence of disability increases with age, from about 4% among children aged 5–17, to 9% among people aged 18–59, and 61% among those aged 60 and above.
- The prevalence of disability was higher among rural population compared to urban population (12% and 9%)
- Nearly 4% of men and 3% of women reported having a mild to severe disability.
- Over 14% of people 60 years and older reported having a mild to severe disability compared with 11% with those indicating a moderate to severe disability.
- About 4% of people living in rural areas reported having a mild to severe disability, as compared with nearly 3% of people in urban areas.
- Among those with a primary level education, 66% reported having a mild to severe disability, 62% reported having a moderate to severe disability, and 31% had a severe disability.
- Among those having attained the highest education level, 9% reported having a mild to severe disability, and 3% a moderate to severe disability.
- Among the population who are legally married, 64% had a mild to severe disability, 52% had a moderate to severe disability, and 28% had a severe disability.
- Among the never married, 37% had a severe disability.

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**Table 14.1: Disabilities among the population by functional domain and difficulty***Population aged 5 years and older with disabilities by functional domain and degree of difficulty, Vanuatu 2013*

Functional domain / Severity	Sex		Residence				Age group			Total
	Male	Female	Urban	Rural	..Rural 1	..Rural 2	5-17	18-59	60+	
<b>Functional domain Seeing</b>										
Some difficulty (mild)	2.8	2.6	2.0	3.0	3.0	3.0	0.3	2.9	13.6	2.7
A lot of difficulty (moderate)	0.7	0.6	0.3	0.8	1.4	0.7	0.1	0.6	4.4	0.7
Cannot do at all (severe)	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.4	0.1
<b>Total</b>	<b>3.5</b>	<b>3.3</b>	<b>2.3</b>	<b>3.9</b>	<b>4.4</b>	<b>3.8</b>	<b>0.4</b>	<b>3.4</b>	<b>18.3</b>	<b>3.4</b>
<b>Functional domain Hearing</b>										
Some difficulty (mild)	1.7	1.1	0.9	1.6	1.4	1.7	0.7	1.0	8.9	1.4
A lot of difficulty (moderate)	0.5	0.6	0.2	0.8	0.4	0.8	0.5	0.3	3.6	0.6
Cannot do at all (severe)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1
<b>Total</b>	<b>2.3</b>	<b>1.8</b>	<b>1.2</b>	<b>2.5</b>	<b>1.9</b>	<b>2.6</b>	<b>1.1</b>	<b>1.4</b>	<b>12.7</b>	<b>2.1</b>
<b>Functional domain Walking</b>										
Some difficulty (mild)	1.1	1.8	1.3	1.5	1.5	1.5	0.3	1.4	7.4	1.4
A lot of difficulty (moderate)	0.4	0.9	0.6	0.7	0.8	0.7	0.1	0.4	5.7	0.7
Cannot do at all (severe)	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.4	0.1
<b>Total</b>	<b>1.7</b>	<b>2.8</b>	<b>2.0</b>	<b>2.4</b>	<b>2.7</b>	<b>2.3</b>	<b>0.5</b>	<b>2.0</b>	<b>13.5</b>	<b>2.2</b>
<b>Functional domain Cognition (remembering or concentrating)</b>										
Some difficulty (mild)	1.1	1.1	1.2	1.1	1.0	1.1	0.3	0.9	7.2	1.1
A lot of difficulty (moderate)	0.3	0.4	0.3	0.3	0.6	0.3	0.2	0.3	1.2	0.3
Cannot do at all (severe)	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
<b>Total</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.4</b>	<b>1.8</b>	<b>1.4</b>	<b>0.6</b>	<b>1.2</b>	<b>8.4</b>	<b>1.5</b>
<b>Functional domain Self-care (washing or dressing)</b>										
Some difficulty (mild)	0.6	0.6	0.5	0.6	0.8	0.6	0.2	0.4	4.1	0.6
A lot of difficulty (moderate)	0.3	0.2	0.2	0.2	0.4	0.2	0.1	0.2	0.8	0.2
Cannot do at all (severe)	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3	0.1
<b>Total</b>	<b>1.0</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>1.5</b>	<b>0.8</b>	<b>0.4</b>	<b>0.7</b>	<b>5.2</b>	<b>0.9</b>
<b>Functional domain Communication</b>										
Some difficulty (mild)	0.5	0.3	0.4	0.4	0.4	0.4	0.3	0.2	1.8	0.4
A lot of difficulty (moderate)	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.9	0.2
Cannot do at all (severe)	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.3	0.1
<b>Total</b>	<b>0.8</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>0.5</b>	<b>2.9</b>	<b>0.7</b>
<b>Total</b>	<b>10.7</b>	<b>10.8</b>	<b>8.6</b>	<b>11.8</b>	<b>13.0</b>	<b>11.6</b>	<b>3.5</b>	<b>9.2</b>	<b>61</b>	<b>10.8</b>
<b>Total</b>	<b>4,607</b>	<b>4,638</b>	<b>3,047</b>	<b>6,198</b>	<b>974</b>	<b>5,224</b>	<b>3,302</b>	<b>5,297</b>	<b>645</b>	<b>9,245</b>

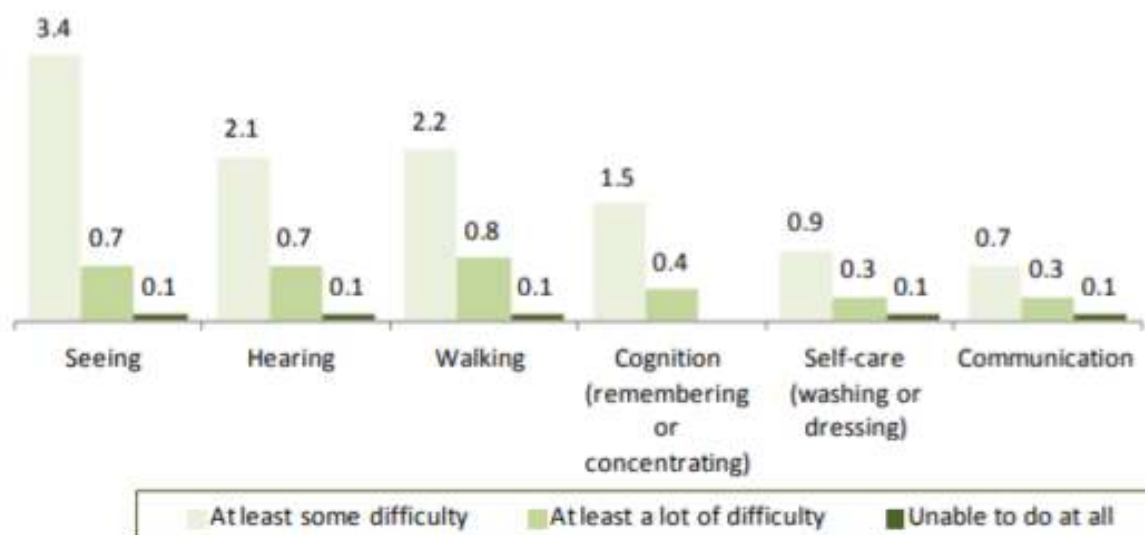
**Table 14.2: Disabilities among the population by prevalence**

*Prevalence of disabilities among the population aged 5 years and older by domain and degree of difficulty, Vanuatu 2013*

Background characteristic	At least some difficulty (%)	At least a lot of difficulty (%)	Unable to do at all (%)
<b>Functional domain</b>			
Seeing	3.4	0.7	0.1
Hearing	2.1	0.7	0.1
Walking	2.2	0.8	0.1
Cognition (remembering or concentrating)	1.5	0.4	0.0
Self-care (washing or dressing)	0.9	0.3	0.1
Communication	0.7	0.3	0.1

The highest rate of prevalence among disabilities in the category “at least some difficulty” was “seeing” at 3.4%; the lowest rate of prevalence in the category “at least some difficulty” was 0.7% for “communication. The result shows very low rate of prevalence among disabilities in the category ‘unable to do at all’ in all of the functional domain expect remembering or concentrating where there is no one at all.

**Figure 14.1: Prevalence of disabilities among the population aged 5 years and older by functional domain, Vanuatu 2013**



## Women's Empowerment

- 63% of men believe that a wife alone, or jointly with her husband, should participate in all five specified decisions: 1) major household purchases, 2) household purchases for daily needs, 3) visits to wife's family or relatives, 4) what to do with the money the wife earns, and 5) how many children to have.
- About 6% of men in rural areas are not in favour of women making or being part of household decision-making, although this percentage declines with education level.
- A greater proportion of men in higher wealth quintiles feel that woman should be part of household decision-making.
- 91% of men agreed that both men and women should make decisions on how many kids to have and how to spend cash earned by women.
- 60% of women feel that wife beating is justified in certain circumstances.
- The most widely accepted reason for wife beating is neglecting the children (49%).
- 63% of women believe that a woman has the right to refuse sex with her husband for all three specific reasons: 1) she knows the husband has a sexually transmitted infection (STI), 2) she knows the husband has intercourse with other women, and 3) she is tired or not in the mood.
- 66% of men believe that a woman has the right to refuse sex with her husband for all the specific reasons: 1) she knows the husband has a sexually transmitted infection (STI), 2) she knows the husband has intercourse with other women, and 3) she is tired or not in the mood.
- 16% of men believe that the most acceptable response if a wife refuses to have sex with her husband is for the husband to get angry and reprimand her.
- 79% of men disagree with any action a man would take against his wife for refusing to have sex.

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## Child Labour and Discipline

- About 20% of children aged 5-11 and less than one percent (0.7%) children aged 12-14 in Vanuatu are involved with child labour activities.
- Just over 3% of children aged of 5–11 years engage in paid or economic work; of these, most are females in rural areas.
- 21% of young children aged 5–11 years engage in child labour activities.
- The number of children who attend school and who are involved in labour activities decreases with a household’s wealth status.
- 77% of children aged 2–14 years are subjected to at least one form of psychological punishment by their mother or caretaker or other household member.
- Children aged 5–9 years in rural areas are vulnerable to severe physical punishment.
- Violent discipline is high in both rural areas (experienced by 72% of children) and urban areas (70%).
- 90% of households have water only and no cleansing agents for washing hands.
- 74% of households in urban areas have soap and water for hand washing compared with only 45% in rural areas.

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**Table 16.1: Child labour by economic activity and by background characteristics**

Percentage of children by involvement in economic activity and household chores during the past Week according to age group, and percentage of children age 5-14 involved in child labor, Vanuatu 2013

Background characteristic	Percentage of children age 5-11 involved in:							Percentage of children age 12-14 involved in:							Children age 5-14 years involved in child labor	Children age 5-14 years			
	Paid work	Unpaid work	Work for family	Economic Activity 1+ hours	Household chores < 28 hours	Household chores 28+ hours	Child Labor	Total	Paid work	Unpaid work	Work for family	Economic Activity <14 hours	Economic Activity 14+ hours	Household chores < 28 hours			Household chores 28+ hours	Child Labor	Total
<b>Sex</b>																			
Male	3.8	9.3	11.0	19.6	73.6	0.2	19.7	1,029	4.3	12.4	14.4	25.2	0.8	75.8	0.5	1.3	381	208	1,410
Female	2.4	11.2	12.0	21.3	74.3	0.3	21.6	964	4.7	11.8	16.2	27.4	0.1	81.5	0.1	0.1	371	209	1,334
<b>Residence</b>																			
Urban	2.3	10.7	7.1	15.7	65.2	0.2	15.9	527	4.0	7.5	9.5	15.9	0.5	76.1	0.0	0.5	202	85	729
Rural	3.4	10.0	13.1	22.1	77.1	0.3	22.4	1,467	4.6	13.8	17.4	30.1	0.4	79.5	0.4	0.8	549	333	2,016
..Rural 1	2.4	9.7	14.7	22.5	78.9	2.0	24.4	199	3.6	14.4	14.0	28.2	0.6	85.9	0.7	1.4	85	50	284
..Rural 2	3.6	10.1	12.8	22.0	76.8	0.0	22.0	1,267	4.8	13.7	18.0	30.4	0.4	78.3	0.3	0.7	464	283	1,731
<b>Attend School or preschool in 2013</b>																			
Yes	3.1	10.4	12.4	21.1	75.5	0.3	21.4	1,697	4.8	12.5	16.0	27.4	0.4	78.1	0.3	0.8	648	368	2,345
No	3.0	8.6	6.2	15.9	64.9	0.1	16.0	289	2.2	10.0	10.6	19.6	0.5	82.9	0.0	0.5	102	47	391
Missing	*	*	*	*	*	*	*	7	*	*	*	*	*	*	*	*	1	3	8
<b>Mother's education</b>																			
No education	8.1	8.3	12.8	22.7	75.7	0.0	22.7	152	11.8	12.3	20.3	32.3	0.0	78.8	0.0	0.0	74	35	226
Primary	3.5	12.2	12.1	22.5	75.7	0.4	22.8	990	3.9	12.7	13.9	24.5	0.5	78.4	0.5	1.0	378	230	1,368
Secondary	1.6	9.3	9.7	16.3	70.2	0.1	16.5	359	3.6	14.9	9.5	23.7	0.3	72.0	0.3	0.6	92	60	451
More than secondary	0.8	15.3	10.7	20.9	64.7	0.5	21.5	67	0.0	14.2	20.0	30.6	3.6	73.2	0.0	3.6	28	15	96
Missing	*	*	*	*	*	*	*	1	*	*	*	*	*	*	*	*	3	1	4
<b>Wealth index quintile</b>																			
Poorest	4.6	12.1	13.9	25.7	74.3	0.0	25.7	446	3.4	14.3	25.4	33.8	0.0	75.5	0.0	0.0	148	114	594
Poorer	3.9	8.6	11.6	19.9	80.9	0.1	19.9	439	2.2	12.8	11.3	25.0	0.0	81.0	1.1	1.1	149	89	588
Middle	1.8	10.1	10.6	19.6	77.4	0.6	20.3	404	6.2	14.7	15.2	29.8	1.1	84.4	0.4	1.5	176	85	581
Richer	2.4	9.4	12.1	19.5	69.1	0.3	19.8	371	8.5	9.7	13.4	25.1	0.2	79.7	0.0	0.2	153	74	523
Richest	2.4	10.8	8.5	16.0	65.4	0.4	16.3	333	1.0	8.0	10.3	15.3	0.8	69.8	0.0	0.8	126	55	459
<b>Total</b>	<b>3.1</b>	<b>10.2</b>	<b>11.5</b>	<b>20.4</b>	<b>73.9</b>	<b>0.3</b>	<b>20.6</b>	<b>1,993</b>	<b>4.5</b>	<b>12.1</b>	<b>15.3</b>	<b>26.3</b>	<b>0.4</b>	<b>78.6</b>	<b>0.3</b>	<b>0.7</b>	<b>752</b>	<b>417</b>	<b>2,745</b>

Note: Total groupings may not add up to TOTAL due to rounding off.

An asterisk indicates that the figure is based on fewer than 25 unweighted cases and has been suppressed.

**Table 16.2: Child labour and school attendance**

Percentage of children aged 5–14 years involved in child labour who attend school, and the percentage of children attending school who are also involved in child labor activities, Vanuatu 2013

Background characteristic	Children aged 5–14	Children aged 5–14 involved in child labour activities	Children aged 5–14 attending school	Children attending school who are involved in child labour activities
<b>Sex</b>				
Male	1,410	14.8	85.5	12.9
Female	1,334	15.7	85.4	13.9
<b>Residence</b>				
Urban	729	11.6	86.1	10.5
Rural	2,016	16.5	85.2	14.4
..Rural 1	284	17.5	86.8	15.9
..Rural 2	1,731	16.3	85.0	14.2
<b>Wealth quintile</b>				
Lowest	594	19.3	80.4	16.4
Second	588	15.1	84.7	13.5
Middle	581	14.6	87.1	12.4
Fourth	523	14.1	86.6	12.7
Highest	459	12.1	89.6	11.4

## Part 3 – Building Regulations

### Scope

This Part provides examines the building regulations for regulations related to human rights in village building and infrastructure (including those that relate to gender, disability, health and other human right provisions) for each country serviced by Partner Housing Australasia.

### Background

In cities of the South Pacific region, building design and construction generally follow established building regulations and design standards. However, remote village housing and infrastructure in these countries often incorporate traditional materials and detailing, which do not necessarily provide the reliability implicit in modern regulations.

### Countries Covered by this Manual

The following countries are covered by this Manual – American Samoa, Cook Islands, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Wallis and Futuna.

### Locations Where Building Regulations are Enforced

In those locations where building regulations are enacted and routinely enforced, all new construction should adhere to those regulations. For example, construction in cities and in developed countries should adhere to local building regulations.

The following clause appears in the National Building Codes for Cook Islands, Fiji, Niue, Solomon Islands, Tuvalu and Vanuatu.

*Schedule of Referenced Documents - The Standards and other documents listed in Table 1 are referred to in this Code. In order to reduce possible confusion/conflict, the Standards produced by the Standards Association of Australia or by the Standards Association of New Zealand as seen to be particularly relevant, have been called up. However, Code users are free to use any suitable mix of Australian and New Zealand Standards provided care is taken to follow consistent technical principles and prevalent practices. Where Standards from either Australia or New Zealand do not cover any specific area, the relevant Standards issued by the British Standards Institution or the American Society for Testing Materials may be used.*

### Village Buildings where Building Regulations are Not Enforced




This applies only to small detached village buildings (such as houses and small community buildings), presenting a low degree of hazard to life and other property in case of failure. The following clause (from the National Building Codes for Cook Islands, Fiji, Niue, Solomon Islands, Tuvalu and Vanuatu) is considered applicable.

*Schedule of Referenced Documents - The Standards and other documents listed in Table 1 are referred to in this Code. In order to reduce possible confusion/conflict, the Standards produced by the Standards Association of Australia or by the Standards Association of New Zealand as seen to be particularly relevant, have been called up. However, Code, users are free to use any suitable mix of Australian and New Zealand Standards provided care is taken to follow consistent technical principles and prevalent practices. Where Standards from either Australia or New Zealand do not cover any specific area, the relevant Standards issued by the British Standards Institution or the American Society for Testing Materials may be used.*

## Papua New Guinea Building Regulations

The following regulatory documents and commentaries are available to Partner Housing Australasia from the Quasar technical library.

In electronic format –

-  Building Regulations Web Site
-  PNG Building Act & Regulations br1994182
-  PNG Wind Zones 2013-11-22 14.40.58

Building Regulation 1994 [100%]

(From Papua New Guinea Consolidated Legislation; 1 January 1994)

Building Act 1971 [51%]

(From Papua New Guinea Consolidated Legislation; 1 January 1971)

Public Health Ordinance 1932-1938 - Building Regulations

(From Laws of the Territory of New Guinea 1921-1945 (Annotated))

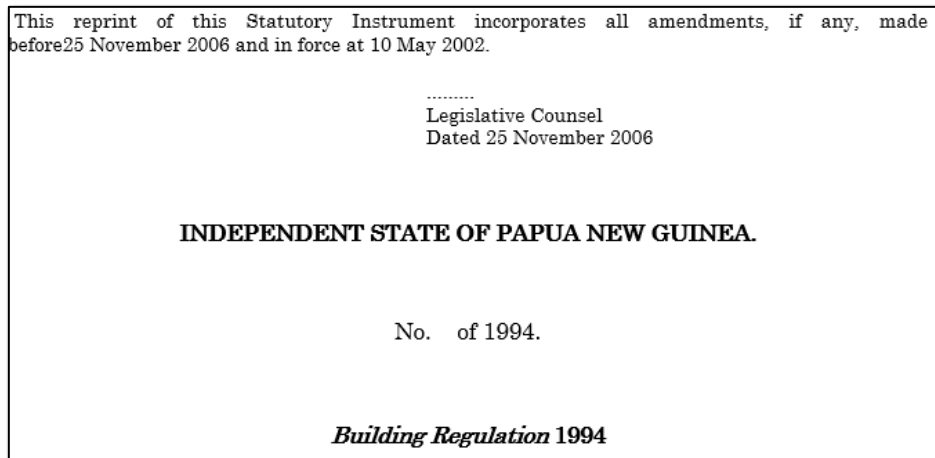
Building Ordinance, 1929

(From Laws of the Territory of Papua 1888-1945 (Annotated))

Building Regulations URL: [http://www.paclii.org/pg/legis/consol\\_act/br1994182](http://www.paclii.org/pg/legis/consol_act/br1994182)

The issues covered in this document are additional to the normal architectural and engineering design practices, which are also regulated by the building regulations.

Following are extracts from the Papua New Guinea Building Regulations that are relevant to design and construction of buildings to cater specifically for disability and/or gender issues.



The buildings designed and funded by Partner Housing Australasia are Class I, Class IXa or IXb.

*Class I residences which may comprise one or more buildings including any habitable outbuildings which in association constitute— (i) a single dwelling-house, terrace house, townhouse, row house, villa house, or the like, which may be detached or separated by a common wall; or ....*

*Class IX Buildings of a public nature, comprising— (i) schools and institutional buildings as defined in Section 25 being of Class IXa; and (ii) assembly buildings as defined in Section 25 being of Class IXb, but excluding portions of such buildings that are of Class III or used as laboratories;*

The PNG Building Regulation requirements for “Access for Persons with Disabilities” are set out below.

Class I dwellings are excluded from the provisions,

The following concessions for Class IXa and IXb buildings mean that the relatively small community health buildings, educational buildings and community buildings built by Partner Housing Australasia and its Partner Organisation (Vision for Homes) in remote locations are also exempt.

*Class IXa To all areas normally accessible to patients/ residents - Applies to buildings of this class other than prisons, and only to buildings located in provincial cities or outside the capitals if they contain more than 100 beds.*

*Class IXb and IXc*

*To all areas normally accessible to patients/ residents – Applies to buildings in provincial capital cities only and buildings designed to seat/ cater for more than 50 persons.*

Given the lack of regulation covering disability and gender issues for the relatively small community health buildings, educational buildings and community buildings in remote locations, Partner Housing Australasia and its Partner Organisation (Vision for Homes) shall consult closely with the relevant local health and education authorities to determine their specific requirements to cater for disability and gender issues.

**PART XV. – ACCESS FOR PERSONS WITH DISABILITIES.**

**294. APPLICATION OF PART.**

Subject to Section 297, this Part applies to buildings of Classes III, V, VI, VII, VIII and IX occupancy.

**295. ACCESS TO BUILDINGS.**

Access for persons with disabilities shall be provided to buildings as set out in the following Table by means of a continuous path of travel in accordance with AS 1428.1.–

- (a) from a road boundary of the allotment; and
- (b) from any carpark space on the allotment (whether within or outside the building)–
  - (i) that is set aside for people with disabilities using the building; or
  - (ii) if there are no carpark spaces set aside for them, from any carpark area that serves the building; and
- (c) from any other building on the allotment to which access for people with disabilities is required.

TABLE (SECTION 295) – REQUIREMENTS FOR ACCESS FOR PEOPLE WITH DISABILITIES

<b>Class of Building</b>	<b>Access Requirements</b>
<b>Class 3</b>	
(a) Common areas of buildings that are required to be accessible.	The entrance floor and to all public areas on every floor.
(b) If the building contains– More than 20 units. More than 49 but not more than 99 units. More than 99 units.	To and within– One sole-occupancy unit 2 sole-occupancy units 3 sole-occupancy units
(c) If accommodation is provided for more than 20 persons other than in sole-occupancy units– up to 49 beds more than 49 but not more than 99 beds more than 99 beds Note that for the purposes of this Table, a double bed counts as 1 bed.	2 beds 4 beds 6 beds 6 beds
<b>Class V and VII</b>	To and within the entrance floor if its floor area is more than 500m <sup>2</sup> .

<b>Class of Building</b>	<b>Access Requirements</b>
Class VII	To and within the entrance floor if the total floor area of the building is more than 3000m <sup>2</sup> .
Class VIII	To and within the entrance floor if the total floor area of the building, excluding any part used as a laboratory, is more than 1000m <sup>2</sup> .
and	
Class V, VI, VII and VIII	To and within any floor if irrespective of floor area, the floor is not more than 190mm at the point of entrance above or below the adjacent finished ground level; and  within any other floor to which vertical access by way of a ramp, step ramp or kerb ramp complying with AS 1428.1 or a passenger lift is provided.
<b>Class IXa</b>	<b>Applies to buildings of this class other than prisons, and only to buildings located in provincial cities or outside the capitals if they contain more than 100 beds.</b>
To all areas normally accessible to patients/ residents	
<b>Class IXb and IXc</b>	<b>Applies to buildings in provincial capital cities only and buildings designed to seat/ cater for more than 50 persons.</b>
To all areas normally accessible to patients/ residents	
Class IXd	Applies to buildings designed to seat/ cater for more than 50 persons.
To all areas normally accessible to patients/ residents	

## **296. PARTS OF BUILDINGS TO BE ACCESSIBLE.**

(1) Access for persons with disabilities shall be provided–

- (a) from the doorway at the entrance floor providing access to any sanitary compartment required for the use of people with disabilities; and
- (b) to areas normally used by the occupants, excluding any plantroom, commercial kitchen, cleaners' store room, maintenance accessway, rigging loft, or the like.

(2) A path of travel providing required access must not include a stairway, turnstile, revolving door, escalator or other impediment which would prevent a person in a wheelchair using it.

(3) Access, finishes and fittings, including passageways, ramps, steps ramps or kerb ramps, passenger lifts, signs, doorways and other parts of the building required by this Part shall comply at least with the provisions of AS 1428.1, excluding any references within the Standard to AS 1735.12.

**297. CONCESSIONS.**

*It is not necessary to provide access for persons with disabilities to—*

- (a) more than 30% of the public space in a restaurant, cafe, bar, function room, or the like, in building of a Class VI or Class IXb occupancy; or*
- (b) a mezzanine; or*
- (c) a space not regarded as a storey by definition; or*
- (d) more than one car parking space for each 100 spaces in a public carpark; or*
- (e) any area if access would be inappropriate because of the particular purpose for which the area is used.*

**57. GENERAL.**

*(1) In a building of Class I, II or IV occupancy a bathroom or shower room may include clothes washing facilities or a water closet, or both, if the floor area is increased in accordance with Section 67.*

*(2) Facilities for the washing of clothes shall not be installed in a kitchen or any room for the preparation, cooking or consumption of food.*

*(3) A bathroom shall have installed a plunge bath or alternatively a shower and access shall be provided to a water supply suitable for personal washing.*












*(4) Closets constructed in a group shall be separated by means of partitions extending to a height of not less than 1,800mm and each closet shall be provided with a door.*

*(5) Water closets for the different sexes, where adjoining, shall be separated by full height walls and conveniences for each sex shall be properly designated by conspicuous lettering or by other approved means. ....*

## **Solomon Islands Building Regulations**

The following regulatory documents and commentaries are available to Partner Housing Australasia from the Quasar technical library.

In electronic format –

-  01 Solomon Islands Western Province Building Act & Regulations
-  02 161123 Solomons rwash\_policy\_-\_final
-  03 161123 Solomons si\_rwash\_engineering\_manual\_-\_v2.1\_nov\_2015\_
-  04 161123 Solomons si\_rwash\_strategic\_plan\_final\_march\_2015
-  05 161123 Solomons wash\_snap\_shot\_-\_western\_-\_final
-  06 161123 Solomons wash\_snap\_shot\_-\_solomon\_islands\_-\_final
-  151125\_handwashing\_communication\_plan
-  161123 Solomons request\_form\_-\_rwash\_supply
-  161123 Solomons request\_form\_-\_sanitation
-  161123 Solomons rural\_wash\_baseline\_-\_national
-  161123 Solomons template\_-\_design\_report

To be copied on request from hard copy documents –

National Building Code for Solomon Islands

Partial Commentary of the National Building Code Solomon Islands

Building Standards Ordinance 1991

(From Solomon Islands Western Province Consolidated Legislation 1999; 1 January 1991

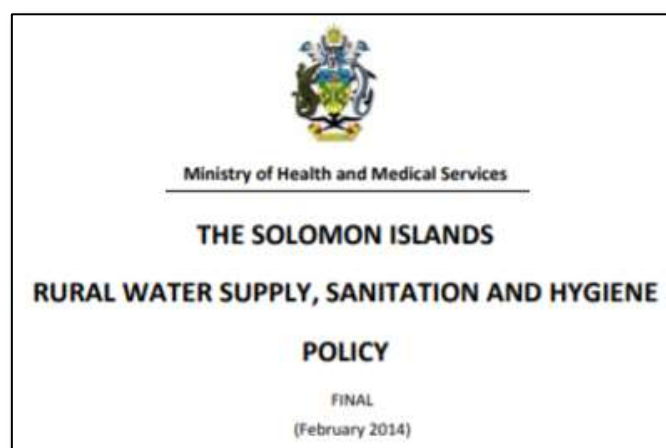
Solomon Islands Western Province Building Act & Regulations

Local Government Act - Subsidiary

(From Solomon Islands Consolidated Legislation

The issues covered in this document are additional to the normal architectural and engineering design practices, which are also regulated by the building regulations.

Following are extracts from the Papua New Guinea Building Regulations that are relevant to design and construction of buildings to cater specifically for disability and/or gender issues.



## 7. Cross-cutting issues

### 7.1 Climate change

The *National Water and Sanitation Sector Plan* states that while global evidence of climate change (CC) is increasing, there remain uncertainties regarding the magnitude and timing of climate change, its impacts and details of impact on ecosystems in Pacific Islands Countries (PICs). The best adaptation strategy therefore is to develop the general capacity of a society by building up its institutional structures and human resources while maintaining and enhancing the integrity of ecosystems.

There is considerable capacity to adapt to climate change in PIC communities with their well-developed local institutions, resilient social systems, sensitivity to environmental change, their high degree of equity, and their kinship-based transnational networks.

This mainstreaming of climate change adaption links well with the Integrated Water Resource Management (IWRM) approach, which is based on recognition of the interconnectedness of the hydrogeological, geographical, health, economic, social, cultural, governance, legal and political aspects of water and the importance of an integrated, collaborative approach to achieving sustainable, equitable and fair outcomes. The MMEWR is leading the IWRM approach and its more PIC-relevant “ridge-to-reef” concept, which includes all of Solomon Islands its environments and all levels of society, from community to cabinet.

As changes in climate are amplified in the water environment, the rural WASH sector needs to:

1. Closely collaborate with national and international stakeholders in climate change adaptation. This includes broadening the WASH Stakeholders Group (WSG), a sector coordination committee consisting of sector stakeholders, with representatives from relevant ministries (MMEWR, MECDM, MID) involved in CC, and EHD being the leading representative for the rural WASH sector in CC discussions and collaboration;
2. Incorporate climate change references in the *Solomon Islands Rural Water Supply & Sanitation Design and Construction Standards* and adopt a flexible approach to technical design and construction standards, acknowledging that simple technical fixes do not exist and technical standards may require adjustments;
3. Make us of the opportunity to create awareness at community level on climate change and related subjects such as water security, water use efficiency and disaster preparedness, by including in the *Solomon Islands Rural WASH Community Engagement Guidelines* training modules to this effect;
4. Include climate change in M&E of all aspects of the sector’s activities, including technical standards, community engagement practices, and management;

### 7.2 Gender

In the Solomon Islands, as in many parts in the world, collecting water is traditionally the role of women and children (girls). Many household tasks, such as cleaning, cooking, laundry, and looking after young children is also commonly the responsibility of women. Women are therefore the prime users of WASH facilities.

However, equally traditionally, women are often not involved in the decision making process or in management activities. Consequently, WASH projects and facilities may not be best suited to those who use it the most, and women may not have adequate access to those managing the facilities or scheme when issues arise. Thus the sustainability and impact (improved health and livelihood) of the WASH scheme are adversely affected.

Recent studies in Melanesia on gender in rural WASH programs, showed that participatory planning processes (explicitly involving women and men) and advocacy of gender equity in water and sanitation committees resulted in increased rights to, space for and trust in women's involvement in decision making. Together with an increased appreciation and acknowledgement of women's tasks in a community, this may lead to increased sustainability of the WASH scheme.

The sector stakeholders must ensure that gender is a key component of every WASH project and program. Through participatory approaches, the involvement of women must be encouraged and promoted at every stage of a project and for all activities and roles, from survey & design to implementation and (financial) management and O&M. Women's participation in WASH committees should be encouraged but should be seen as more of an indicator of effective gender approaches than an objective or a criteria for assistance.

### **7.3 People living with disability**

A survey conducted in 2005 recorded 14,400 people with a disability of which approximately 85% (12,240 people) live in the rural areas. Thirty percent of the people with disability are physically impaired (3,672 persons), 80% of which (2,938 persons) have a wheel chair.

People with special needs are often overlooked in projects. With a significant portion of the physically disabled population using wheelchairs, and a policy to provide more, access to appropriate WASH infrastructure is of great importance.

For rural WASH projects, the following applies:

1. People living with disabilities in the target community must be identified at the initial stages of the project, and the type of disability recorded so that appropriate measures can be included in the project design;
2. Appropriate WASH facilities must be constructed for the person living with a disability. The MHMS will take the lead on the development of appropriate technical standards;
3. The no-subsidy rule for sanitation does not apply to most, if not all, toilet facilities for persons with special needs, as the cost of adapted facilities quickly fall outside the financial and technical means of the average family;
4. Clear discussions and understanding between the project implementer/designer and the disabled person, his/her household *and* community must take place. Often specially constructed facilities for disabled people may be of higher standard or be more convenient and as a result are being used extensively by others in the community or household. This may lead to the disabled person in question not having the access to the facility as required.

## **8.5 Aid Donors and Non-State Actors**

Aid Donors/funding agencies and Non-State Actors (NGOs, CBOs and FBOs) involved with the delivery of WASH development shall comply with the intent of this policy.

Aid donors shall:

1. Seek written endorsement from relevant PEHD offices for any direct requests for WASH support;
2. Report all direct WASH support activities to the national and provincial EHD/RWASH office in the formats as stipulated by RWASH for its record keeping and WASH database entry;
3. Closely coordinate with RWASH in the planning, designing and implementation of any rural WASH Program;
4. Actively participate in the WASH Stakeholder Committee to contribute to sector development and coordination;
5. Ensure compliance with the minimum (technical and community preparation) standards as adopted by the Solomon Islands Government;








Non-State Actors shall:

- 1) Ensure compliance with minimum (technical and community preparation) standards as adopted by the Solomon Islands Government;
- 2) Where involved in construction be responsible for the procurement and logistics of the construction materials;
- 3) Coordinate with the RWASH on planned investment strategies and/or areas of investment;
- 4) Report all WASH project activities to the national and provincial EHD/RWASH office in the formats as stipulated by RWASH for its record keeping and WASH database entry;
- 5) Actively participate in the WASH Stakeholder Committee to contribute to sector development and coordination;
- 6) Obtain relevant MoUs with EHD/RWASH and provincial authorities;
- 7) Closely collaborate with EHD in case of disasters;

## Vanuatu Building Regulations

The following regulatory documents and commentaries are available to Partner Housing Australasia from the Quasar Management Services Pty Limited technical library.

In electronic format –

-  EMDAT Disaster Database
-  Red Cross Vanuatu-Desk-Survey (EXTRACTS)
-  Red Cross Vanuatu-Desk-Survey
-  Report on Vanuatu Building Code JB\_DM191\_V...
-  Vanuatu Building Methods
-  Vanuatu Construcion
-  Vanuatu First National faqsheet

To be copied on request from hard copy documents –

National Building Code for Vanuatu

Partial Commentary of the National Building Code Vanuatu

## **Building Regulations of other South Pacific Countries**

Set out below are references to the Building Acts and Building Regulations of South Pacific countries other than Papua New Guinea, Solomon Islands and Vanuatu.

### Generic

URL: [http://www.paclii.org/pg/legis/consol\\_act/br1994182](http://www.paclii.org/pg/legis/consol_act/br1994182)

### Australia

National Construction Code 2019 – BCA Volumes One, Two and Three

### Cook Islands

National Building Code for Cook Islands

Partial Commentary of the National Building Code Cook Islands

Home Building Manual Cook Islands

Cook Islands 1991 Building Controls and Standards

Cook Islands Building Controls and Standards (National Building Code) (Amendment) (No.2) Order 2005

Building Controls and Standard (National Building Code) (Amendment) (No.2) Order 2005 [32%]  
(From Cook Islands Sessional Legislation; 1 January 2005

Building Controls and Standards Act 1991  
(From Cook Islands Sessional Legislation;

### Fiji

National Building Code for Fiji

Partial Commentary of the National Building Code Fiji

### French Polynesia

### Kiribati

Building Act 2006

(From Kiribati Sessional Legislation; 1 January 2006

### Nauru

### New Caledonia

### New Zealand

Building Regulations

### Niue

National Building Code for Niue

Partial Commentary of the National Building Code Niue  
Home Building Manual Niue  
Building Code Act 1992  
(From Niue Consolidated Legislation; 1 January 1992)

Samoa

Ministry of Works Act 2002 [18%]  
(From Consolidated Acts of Samoa 2011; 1 January 2002)

American Samoa

Tonga

Building Control and Standards Act 2002  
(From Tonga Sessional Legislation; 1 January 2002)  
Building Code Regulations 2007 [31%]  
(From Tonga Subsidiary Legislation; 1 January 2007)

Tuvalu

National Building Code for Tuvalu  
Partial Commentary of the National Building Code Tuvalu  
Home Building Manual Tuvalu

Wallis and Futuna

## Part 4 – Collaborative Research

### Scope

This Part provides a description of partnerships with one or more Australian universities, to research building practices (including consideration of human rights in village building).

### University of Sydney School of Engineering

Partner Housing Australasia has a Memorandum of Understanding with the University of Sydney School of Engineering to cooperate on research projects aimed at improving standard of living through improved built environment of Asia-Pacific villages

Currently (August 2020) a research project is being initiated by the University of Sydney School of Engineering that will involve Partner Housing Australasia (and three other major NGOs) in collaborative research into the sociological and building issues affecting design and construction decision in rebuilding villages damaged by natural disasters. The research will consider all relevant factors including those identified as humanitarian issues.

At this time, the details of the project and the major NGOs that are involved is confidential because the funding has not yet been approved.

When the funding decision has been finalised, details of the project will be included in this part of this document.

As the results of the research are published, relevant summaries will be reproduced here also.

### Water Reticulation – Solomon Islands 2019-2020



There are no regulatory requirements covering disability and gender issues for these water reticulation installations, although there is a policy directive in respect of community consultation. Partner Housing Australasia adheres to this policy document.

Site specific requirements (further to normal requirements specified elsewhere).

- In remote villages communal standpipes are not sited too close to houses. They are open and used by all, who remain fully clothed.
- In unpaved remote villages, people with mobility disabilities must be assisted to standpipes.

## **Part 5 – Evaluation of Partner Housing Australasia and its Programs**

### **Scope**

This Part provides analysis and evaluation of the effectiveness of Partner Housing Australasia, and its village building construction programs in Papua New Guinea, and water supply infrastructure in Solomon Islands. It extends the appraisals carried out in previous years (reported in the previous Annual Reports and in other monitoring and evaluation documents), and should be read in this context. of Partner Housing’s activities in the context of the human rights criteria and other key policies of the organisation.

### **Analyses to be Performed**

The principal activities of Partner Housing Australasia shall be analysed and reported in the Annual Report in the following format. This reporting includes consideration and monitoring human rights.

The following analysis is for the activities of the most recent (2024-2025) financial year.

### **Australian Strategic Context**

Partner Housing Australasia is the only Australian engineering/building NGO that is working to strengthen built infrastructure and civil society in both the strategically-important Papua New Guinea Western Highlands and the politically-sensitive Solomon Islands Western Province. Our long-term working relationships with the people in these two regions, and the mutual trust built up during the last decade, are significant considerations in appraising the risks presented by our programs.

### **Extent of the Partner Housing Australasia Programs**

Since 2005, PHA directors and volunteers (building industry professionals at the peak of their professional careers) have helped our South Pacific neighbours, by giving freely of their time, money and skills. Over this eighteen-year period, this wholly volunteer organisation (with no paid staff) has contributed to the funding, design and construction of the following infrastructure in PNG and Solomon Islands—

- three village community health buildings,
- five school building (including double classrooms and four duplex staff houses),
- village housing,
- government housing,
- well over a dozen village water reticulation schemes, and
- approximately 100 village latrines.

All have been constructed at the request of village communities and/or government organisations (such as the health authorities and school administrations).

This work is additional to –

- previous funding and technical assistance to building programs in Bangladesh, Fiji, Cook Islands and Philippines, and
- technical assistance in multiple countries across the Asia-Pacific region.
- previous construction of affordable housing in Australia.

## Compliance with DFAT Requirements<sup>4</sup>

Based on the feedback from the previous DFAT ANCP application and audit, PHA has rewritten all policies and procedures, and instituted some new practices required by DFAT. This process was achieved with the assistance of a DFAT-funded consultant.

*Outcome – The Policies and Procedures of Partner Housing Australasia comply fully with the stated DFAT requirements.*

PHA personnel have received training in the DFAT requirements<sup>5</sup>, together with the revised policies and procedures. This is additional to the CPD training and other training associated with their normal employment as professional engineers, architects, builders, accountants and university lecturers.

*Outcome – The key personnel of Partner Housing Australasia are well trained in both policy requirements and the technical skills necessary to carry out the programs in accordance with stated DFAT requirements.*

Personnel from Vision for Homes (PNG) and South Ranongga Community Association (Solomon Islands) have undertaken training in the DFAT-based PHA policy and procedures requirements, which are reflected in the current Memoranda of Understanding (MOUs). In addition, personnel of both partners undertook extensive training by UNICEF.

*Outcome – The key personnel of the partner organisations are well trained in both policy requirements and the technical skills necessary to carry out the programs in accordance with stated DFAT requirements.*

## Risk Assessment

Partner Housing Australasia enthusiastically embraces the DFAT requirements, and has a proven and demonstrated track record of fulfilling them. The relatively small number of volunteers, and a decade of close partner organisation relationships, lead to demonstrably diminished risk of noncompliance with the DFAT requirements. The programs are “design and construction of building and infrastructure”, and our policies, procedures and practices (correctly) reflect this. In accordance with sound and proven management principles, Partner Housing Australasia assesses realistic risk<sup>6</sup>, and has tailored our program, monitoring and evaluating accordingly.<sup>7</sup> Notwithstanding, Partner Housing Australasia complies fully with the child protection, anti-terrorism, anti-fraud, training, risk analysis and other DFAT code of conduct requirements.

## Benefit / Cost Considerations

Partner Housing Australasia and our partners are not high-overhead, large, city-based NGOs. Our policies, procedures and records reflect a low-overhead hands-on volunteer professional organisation, and this is what makes us both relevant and effective. This is reflected in the evaluation extracts below. Our very low overheads (less than AUD \$ 10,000 per year) are paid from existing reserves, so that 100% of any donations are spent directly on materials and/or in-country labour for the PNG or Solomon Islands projects.

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<sup>4</sup> Partner Housing Australia is confident of our compliance with DFAT requirements, although the DFAT consultant assessors disagree.

<sup>5</sup> Refer to the Training Records for details.

<sup>6</sup> Refer to Organisational Risk Register, Activity Risk Register, Financial Risk and Audit and Risk Committee records.

<sup>7</sup> Refer to quarterly Board Meeting Minutes

Solomon Islands Western Province suffers from lack of aid grants targeted towards the provision of built infrastructure, including water and sanitation. The “RWASH Sector Performance Review ... 2015 – 2020” states– *Safely managed water access is present in just two provinces and just for small portions of the population ... 4.4 percent of population in Western province. Safely managed water access means they have improved source located on premises, available when needed, and free from microbiological and priority chemical contamination*



Inspection of the maps together with the text of the report yields the following conclusions –

1. The best access to rural water supplies in the Solomon Islands Western Province (83% to 100%, indicated by dark green shading) is located in the Shortland Islands and in North Ranongga.
2. Central Ranongga and South Ranongga have significantly better access (83% to 100%, indicated by pale green shading) than most other parts of the Western Province.
3. Significantly, the current PHA-funded and managed water reticulation program commenced in 2013 in North Ranongga (first in Buri village and then in Keigold village), before progressing to Central Ranongga and South Ranongga.
4. The areas where the PHA-SRCA partnership has been most active since 2013 consistently have significantly better access to safely managed water than the rest of the Western Province and most of the rest of rural Solomon Islands.

The following information is extracted from, “PNG: Rural Primary Health Services Delivery Project”, February 2022, Asian Development Bank, Project Administration Manual (Including Additional Financing) for the completed costs to construct the 32 Community Health Posts (CHPs) completed since July 2016. The average cost for the ADB Community Health Posts is **USD \$ 1.28 million per CHP**.

The average cost for the PHA-VFH Umi and Kopeng Community Health Posts was PGK K 0.198 million per CHP. This is approximately **USD \$ 0.06 million per CHP** at the current exchange rate of USD \$ 1.0 = PGK K 3.43. The PHA-VFH Community Health Posts (73 m<sup>2</sup>) are approximately 50% of the habitable floor area of the ADB Community Health Posts (152 m<sup>2</sup>), so a comparison on a “per square metre” rate is appropriate.

The PHA-VFH Community Health Posts average **cost is approximately one tenth per unit area** of the ADB Community Health Posts.<sup>12</sup>



Umi Community Health Building



Kopeng Community Health Building

*“...I believe as do those who are supporting the rural facilities in WHPHA that through this project we have come up with the perfect design for a rural health facility to deliver primary care services.” ... Jane Holden, Western Highlands Provincial Health Authority*

## Conclusions

1. The people living in villages in the regions, in which Partner Housing Australasia and its partners serve, benefit directly from the programs.
2. Given the very high pro bono professional service contributions by PHA volunteers, the benefit greatly exceeds that cost.
3. Partner Housing Australasia remains committed to continuing and extending these programs, as long as funding permits.
4. The current programs would be greatly enhanced by the provision of reliable ongoing grant funding for these programs.
5. Australia, PNG and Solomon Islands would all benefit significantly if Partner Housing Australasia and its partners were to receive such reliable ongoing grant funding.

## Evaluation Summary

The Evaluation of the performance of Partner Housing Australasia and its PNG and Solomon Islands programs is summarised in Log Frame<sup>8</sup> format below.

Partner Housing Australasia – Program Evaluation			Date: 30 June 2025
Targets	Objectively Verifiable Indicators, OVIs	Means Of Verification, MOVs	Risks & Assumptions
<b>Goal</b>			
<i>Partner Housing Australasia is an entirely voluntary organisation, which aims to transform the lives of people living in Asia-Pacific villages by improving the cyclone, earthquake and tsunami resistance of their houses, clinics, schools and community buildings; and by providing clean water supplies and hygienic sanitation.</i>	The goal is being progressively achieved, through the fulfilment of the outcomes, outputs and activities below.	Monitor the indicators below.	The risk is that funding bodies fail to understand the need for improved infrastructure resilience.
<b>Outcomes</b>			
Increased building resilience, reliable water supply and hygienic latrines provided at minimum cost to the beneficiaries.	Buildings have increased resilience and water supply is reliable. Costs are well below the industry benchmarks.	Use standardised designs and monitor the indicators, to ensure compliance	Due to design and monitoring practices, the risk of construction not complying with the design is extremely low.
Facilitation of pro bono work by volunteer professionals using their skills and experience for improving of	The design, project management, financial management and auditing	Monitor the indicators below.	The risk of imbalance of volunteer experience is extremely low.

<sup>8</sup> Log Frame is a standardised matrix format widely used by donor agencies and NGOs to summarise proposals and evaluations on international development programs. This Evaluation summary is provided in Log Frame format to assist the rapid communication of the goal, outcomes, outputs and activities; together with the indicators, verification and risks.

lives and building safety of Asia-Pacific village dwellers.	work is being effectively performed.		
<b>Outputs</b>			
<b>Average annual expenditure</b> (averaged over the last two years) <b>All programs</b> > \$ 100,000 pa Village water supply > \$ 30,000 pa Village buildings > \$ 30,000 pa	Annual expenditure, \$ (two-year average) <b>\$ 266,101</b> \$ 60,685 \$ 205,416	Average the last two years of the annual program expenditure, from the annual accounts workbook.	Target is an increase of \$100,000 balanced between village buildings and village water supply (or sanitation), contingent on increased funding.
Lives improved during the design life, as a result of each year of construction <b>All programs</b> > 3,000 people Village water supply > 1,500 people Village buildings > 1,500 people	Lives improved by each year of construction <b>7,904</b> <b>1,821</b> <b>6,083</b>	Multiply the benchmark by the average of last two years of the annual program expenditure.	These estimates are based on an average benchmark of 0.030 people pa. years / \$.
Between <b>12 and 16</b> volunteer professionals able to deploy their skills and experience to contribute to improving of lives and building safety of Asia-Pacific village dwellers.	<u>Board Members</u> <b>2</b> Engineers <b>1</b> Architects <b>1</b> Builders <b>3</b> Other Professions <b>1</b> Administrator <u>Senior Managers</u> <b>1</b> Architect (CEO) <b>2</b> Engineers <b>1</b> Builder <u>Others Volunteers</u> <b>1</b> Engineer <b>1</b> Builder <b>1</b> Other Profession	Count the number of Board Members (Directors) and Other Active Volunteers by profession, with skills matching the need.	If too many people volunteer, there may be frustration at not being deployed. If too few people volunteer, there will be too much work for each person.
<b>One new reliable village water supply scheme</b> (or ten communal village latrines) built per year.	<b>One</b> new village water scheme (Ngaidavala) is <b>100%</b> complete.	Progress report from Partner Organisation	Supply chain issues delayed start.
<b>One new building</b> (community health building or educational building or equivalent housing built each year), with enhanced resistance to cyclones, earthquakes and/or tsunami.	<b>1</b> new educational accommodation building <b>100%</b> complete, and <b>1</b> new educational building <b>90%</b> complete.	Progress report from Partners, & PHA quarterly Board Meeting minutes.	Tribal violence or inclement weather could impede progress, but has not been the case.
Features that protect <b>women and children</b> as specified in the design file included in built infrastructure.	Privacy screens & lockable latrine doors designed for the current project	Check design file for screens & lockable doors.	Obtain community support, before committing funds.
Features that provide for people with <b>disabilities</b> as specified in the design file included in built infrastructure.	WHPHA and schools advised that access ramps and other features are not practical and are not required. These will be	Consult design file for ramps and other disability features.	Obtain community support, before committing funds.

	retrofitted if requested by clients.		
Features that provide <b>environmental protection</b> as specified in the design file included in built infrastructure.	A PNG tree planting program is proceeding.	Check accounts for expenditure.	Obtain community support, before committing funds.
<b>Training</b> program expenditure of <b>\$ 5,000 per year</b> for Building skills and Code of Conduct for overseas builders.	In county training in PNG and Solomon Islands are temporarily suspended due to a lack of funding.	Check accounts Count trainees.	Training may be in-country or in Australia. Programs are dependent on funding.
<b>Design Manuals</b> suitable for the reform of Building & WASH regulations.	Design Loads, <b>DANCER</b> and <b>VILLAGE AQUA</b> manuals revised.	Check website and count manuals.	Manuals published on the website when regulations change.
<b>Activities</b>			
Ensure that all volunteers have job description requisites skills, have undergone police checks, and appropriate training in "Policies and Procedures".	<b>100</b> % of volunteers with all HR requirements done	View relevant HR records (e.g., job descriptions, training, police checks etc)	Work constraints could delay a volunteer from completing the required tasks.
Execute a project to fund, design, and construct <b>one</b> VILLAGE AQUA water reticulation (or latrines), in collaboration with VFH-PNG.	Ngaidavala water project (100% complete).	Inspect designs & construction records.	As reserves are used, external funding is required.
Execute a project to fund, design, and construct <b>one</b> DANCER community health building, educational building, or housing per year in collaboration with SRCA.	Kwip Dau Duplex and Kitip Duplex #1 school project (100 % complete). Kitip Duplex #2 school project (80 % complete)	Inspect designs & construction records.	As reserves are used, external funding is required.
Include privacy screens & lockable latrine doors in the current project	Privacy screens & lockable latrine doors designed for the current project	Inspect designs & construction records.	As reserves are used, external funding is required.
Include an access ramp in the current project	Will be retrofitted if requested by WHPHA or school administrations.	Inspect designs & construction records.	As reserves are used, external funding is required.
Include tree planting in the current project	A PNG tree planting program has started, and will be continued.	Inspect designs & construction records.	As reserves are used, external funding is required.
Conduct training programs in Solomon Islands, PNG and Australia.	In county training in PNG and Solomon Islands are temporarily suspended due to a lack of funding.	Inspect HR records.	Probono input by volunteer trainers is required.
Revise the current Design Actions, DANCER, VILLAGE AQUA and other manuals and post on the website.	Design Actions, DANCER and VILLAGE AQUA manuals were revised.	Inspect website.	Probono input by volunteers is required.

## Positive and Negative Impacts

### Positive impacts

The positive impacts are reported in detail in this Annual Report in the section on “Evaluation of Partner Housing Australasia and its Programs”. The following is a summary:

The estimated number of lives improved during the design life, due to each year of construction activity (averaged over the last two years) are approximately-

Village water supply	1,800	people affected by each year of construction
Village buildings	6,200	people affected by each year of construction
All programs	7,000	people affected by each year of construction

Partner Housing Australasia has deployed over \$ 1.74 million to improve the lives of village dwellers in the Asia-Pacific region over a period of 16 years. The total number of people whose lives will be improved by this expenditure is estimated to be approximately 52,000 people.<sup>9</sup>

This is consistent with the Vision, Mission and Values of Partner Housing.

### Negative impacts

Partner Housing Australasia seeks feedback from both the volunteers who travel to the projects on behalf of the organisations (for supervision and auditing) and from the partner organisations.

No negative impacts have been reported from either of these sources.<sup>10</sup>

<sup>9</sup> The metric, “people affected by each year of construction”, is calculated as follows.

- For each program (water reticulation or sanitation, and building and engineering), the PHA donation is determined from historical records. It is compared to a “Benchmark Cost”, which is determined from publicly available the cost data, modified by a decade of historical data and tempered by engineering judgement.
- The value of “People whose lives are improved by one year of expenditure x number of years of use” measured in “people.years”
  - The numbers of “people whose lives are improved” are estimates based on the number of facilities built and the populations of the regions in which the villages are located.
  - The numbers of people using each facility are estimates based on the typical population of a village and number of facilities built therein.
  - The design lives of the facilities are conservative (low) estimates, based generally on experience and observation of the cycle of replacement or major repairs. One example of a typical calculation is shown below. Other calculations are available,

Estimated number of lives improved during design life	People . years / AUD \$	Design Life (years)	People per year	Donation \$ / structure
Village water supply	0.030	12	100	\$ 40,000
Village sanitation	0.030	5	6	\$ 1,000
Village buildings	0.030	50	77	\$ 130,000

- The “Lives improved during the design life, as a result of each year of construction” is determined by multiplying the “Donation / building” by the benchmark “Lives improved pa. design life / donation”.

<sup>10</sup> The most likely negative impact would be an over-reliance by village communities on external finance and expertise, rather than building self-reliance. There is no evidence of such negative impacts, but Partner Housing Australasia continues to be vigilant in watching for this.

## Organisational Risk Management

Partner Housing Australasia - Organisational-wide Risk Register					
Description of risk	Types of impact	Consequence	Risk Assessment at 31-Mar-23		
			Likelihood	Consequence	Risk Rating
Financial loss through fraud committed by PHA Volunteers	Financial Reputation Legal	Loss of funds available for programs	1	2	2
			Rare	Minor	Low
Financial loss through fraud committed by VFH personnel	Financial Reputation Legal	Loss of funds committed to program	1	3	3
			Rare	Moderate	Low
Financial loss through fraud committed by SRCA personnel	Financial Reputation Legal	Loss of funds committed to program	2	3	6
			Unlikely	Moderate	Moderate
Financial loss through funding that does not eventuate	Long-term viability of the organisation	Programs do not commence, or are terminated	3	2	6
			Possible	Minor	Moderate
Loss of Reputation	Reputation	Difficulty to obtain funding partners	1	1	1
			Rare	Insignificant	Low
Litigation targeting the organisations	Financial	It would be necessary to make an insurance claim.	1	2	2
			Rare	Minor	Low
Litigation targeting the Directors	Financial Recruitment	Affected Directors could resign, and could be difficult to replace.	1	3	3
			Rare	Moderate	Low
Litigation related to design	Financial	It would be necessary to make a PI insurance claim.	1	3	3
			Rare	Moderate	Low

Description of risk	Types of impact	Consequence	Risk Assessment at 31-Mar-23		
			Likelihood	Consequence	Risk Rating
Failure to complete project within the committed time frame	Reputation	Possible future loss of program funding	2	1	2
			Unlikely	Insignificant	Low
Failure to meet the technical brief for the structures	Reputation	Possible future loss of program funding	1	3	3
			Rare	Moderate	Low
Failure to carry out the works within the agreed budget	Financial	PHA may be required to fund the shortfall from reserves	1	3	3
			Rare	Moderate	Low
Failure to provide volunteers with safety and security	Medical Financial	It could be necessary to arrange emergency medical action, and an insurance claim.	1	4	4
			Rare	Major	Moderate
Failure to undertake safeguarding	Financial	Possible future loss of program funding	1	3	3
			Rare	Moderate	Low
Failure to manage unexpected incidents	Financial	Possible future loss of program funding	1	3	3
			Rare	Moderate	Low
Failure of volunteer (or staff) integrity	Financial	Possible future loss of program funding	1	3	3
			Rare	Moderate	Low
Execution of high-risk programs	Financial	Possible future loss of program funding	1	3	3
			Rare	Moderate	Low
Failure to comply with Policies & Procedures	Financial	Possible future loss of program funding	2	3	6
			Unlikely	Moderate	Moderate
Privacy of stakeholders	Privacy	Violation of privacy of all stakeholders, sue to organisation-wide activities, fundraising, promotions etc.	1	3	3
			Rare	Moderate	Low

## Activity Risk Management

Description of risk	Types of impact	Consequence	Risk Assessment at 30-Mar-25		
			Likelihood	Consequence	Risk Rating
Child Protection in the Overall PNG Program	Child Protection	Abuse, damage and/or neglect of children	1	5	5
			Rare	Catastrophic	Moderate
Child Protection (Kitip School Housing No 1 & 2) PNG Program	Child Protection	Abuse, damage and/or neglect of children	1	5	5
			Rare	Catastrophic	Moderate
Child Protection in the Overall Solomon Islands Program	Child Protection	Abuse, damage and/or neglect of children	1	5	5
			Rare	Catastrophic	Moderate
Child Protection (Keigold Village Water Upgrade) Solomon Islands	Child Protection	Abuse, damage and/or neglect of children	1	5	5
			Rare	Catastrophic	Moderate
Child Protection (Ngaidavala Keigold Water Supply) Solomon Islands	Child Protection	Abuse, damage and/or neglect of children	1	5	5
			Rare	Catastrophic	Moderate
Child Rights in the Overall PNG Program	Child Protection	Abuse, damage and/or neglect of children	1	4	4
			Rare	Major	Moderate
Child Rights in the Overall Solomon Islands Program	Child Rights	Children are denied equitable access to facilities	1	4	4
			Rare	Major	Moderate
Racial, Ethnic, Religious or Caste Discrimination through PNG Programs	Racial, Ethnic, Religious, or Caste Discrimination	People are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Racial Ethnic, Religious or Caste Discrimination through Solomon Islands Programs	Racial, Ethnic, Religious, or Caste Discrimination	People are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low

Gender, Gender Identity, Sexuality, or Sexual Orientation through PNG Programs	Gender or Sexual Discrimination	People are denied equitable access to facilities	1	4	4
			Rare	Major	Moderate
Gender, Gender Identity, Sexuality, Sexual Orientation through Solomon Islands Programs	Gender or Sexual Discrimination	People are denied equitable access to facilities	1	4	4
			Rare	Major	Moderate
Poverty, Class or Socio-economic Status Discrimination through PNG Programs	Poverty, Class or Socio-economic Discrimination	People are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Poverty, Class or Socio-economic Status Discrimination through Solomon Islands Programs	Poverty, Class or Socio-economic Discrimination	People are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Terrorism Financing through PNG Programs	Terrorism Financing	Terrorism is facilitated in the region	1	5	5
			Rare	Catastrophic	Moderate
Terrorism Financing Terrorism Solomon Islands Programs	Terrorism Financing	Terrorism is facilitated in the region	1	5	5
			Rare	Catastrophic	Moderate
Discrimination Against Women through PNG Programs	Discrimination against women	Women are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Discrimination Against Women through Solomon Islands Programs	Discrimination against women	Women are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Discrimination Against People with Disabilities through PNG Programs	Discrimination Against People with Disabilities	People with disabilities are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Discrimination Against People with Disabilities through Solomon Islands Programs	Discrimination Against People with Disabilities	People with disabilities are denied equitable access to facilities	1	3	3
			Rare	Moderate	Low
Worker Health and Safety through PNG Programs	Worker Health and Safety	Workers are exposed to hazard	2	3	6
			Unlikely	Moderate	Moderate
Worker Health and Safety through Solomon Islands Programs	Worker Health and Safety	Workers are exposed to hazard	2	3	6
			Unlikely	Moderate	Moderate

Privacy through PNG Programs	Privacy	Violation of privacy of beneficiaries, workers or public	1	3	3
			Rare	Moderate	Low
Privacy through Solomon Islands Programs	Privacy	Violation of privacy of beneficiaries, workers or public	1	3	3
			Rare	Moderate	Low
Ineffective Complaints Handling through PNG Programs	Complaint Handling	Complaints by beneficiaries, public or workers are not dealt with fairly .	1	3	3
			Rare	Moderate	Low
Ineffective Complaints Handling through Solomon Islands Programs	Complaint Handling	Complaints by beneficiaries, public or workers are not dealt with fairly .	1	3	3
			Rare	Moderate	Low
Ineffective Whistleblowing through PNG Programs	Whistle Blowing	People are reluctant to expose corruption, mal-administration etc.	0	3	0
			Negligible	Moderate	Negligible
Whistleblowing through Solomon Islands Programs	Whistle Blowing	People are reluctant to expose corruption, mal-administration etc.	0	3	0
			Negligible	Moderate	Negligible
Non-development Activity through PNG Programs	Non-development Activity	Development funding is diverted to religious, political or welfare activity	1	3	3
			Rare	Moderate	Low
Non-development Activity through Solomon Islands Programs	Non-development Activity	Development funding is diverted to religious, political or welfare activity	1	1	1
			Rare	Insignificant	Low

Genocide through PNG Programs	Genocide	Genocide is facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Genocide through Solomon Islands Programs	Genocide	Genocide is facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Torture and Cruelty through PNG Programs	Torture and Cruelty	Torture and Cruelty are facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Torture and Cruelty through Solomon Islands Programs	Torture and Cruelty	Torture and Cruelty are facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Statelessness and Refugees through PNG Programs	Statelessness and Refugees	Statelessness and Refugees are facilitated	0	4	0
			Negligible	Major	Negligible
Statelessness and Refugees through Solomon Islands Programs	Statelessness and Refugees	Statelessness and Refugees are facilitated	0	4	0
			Negligible	Major	Negligible
Slavery through PNG Programs	Slavery	Slavery is facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Slavery through Solomon Islands Programs	Slavery	Slavery is facilitated	0	5	0
			Negligible	Catastrophic	Negligible
Environmental Risk (including greenhouse emissions) through PNG Programs	Environmental	Unacceptable temperature rise, biodiversity loss, erosion, or terrestrial loss.	1	3	3
			Rare	Moderate	Low
Environmental Risk (including greenhouse emissions) through Solomons Programs	Environmental	Unacceptable temperature rise, biodiversity loss, erosion, terrestrial or marine loss.	0	3	0
			Negligible	Moderate	Negligible

# Environmental Impact in Rural Community Health and School Building Projects

## Background

Village houses, community health and educational buildings are being constructed in Papua New Guinea. The materials used in the projects are common building materials and fittings. The project provides safe shelter and community health and education facilities without any detrimental effect the natural environment.

Cyclone-resistant village houses have been designed for the Freshwin Precinct for Port Vila, Vanuatu. The materials used in the projects are common building materials and fittings. The project provides safe shelter without any detrimental effect the natural environment.

Previous cyclone anchorage programs in Fiji and Cook Islands increase safety without any detrimental effects on the natural environment.

The material used in the projects are common building, electrical, plumbing, tanks and fittings. The projects replace labour-intensive had collection of water with efficient piped water and do not have any detrimental effect the natural environment.

## Environmental Impact Policy and Comments

Partner Housing Australasia recognises and adheres to the following principles –

Principle 1: Partner Housing Australasia shall do no harm (to the environment) through the following –

- a) Protect and maintain the health, diversity and productivity of natural habitats.

Comment: The project will have negligible impact on the natural habitat.

- b) Protect the health, welfare, and livelihoods of people including women and vulnerable groups, including children and people with a disability.

Comment: The project will improve the health, welfare and livelihood of all the village residents.

- c) Apply pollution prevention and control technologies and practices consistent with international good practice and standards. Avoid the use of hazardous materials subject to international bans and phase outs.

Comment: The project does not create pollution of erosion, and does not employ hazardous materials.

- d) Provide safe and healthy working conditions that prevent accidents, injuries and disease to workers and local communities.

Comment: The project does not create health hazards..

- e) Protect and conserve natural and cultural heritage.

Comment: Although reticulated water is not part of the cultural heritage, it is the recognised right of all humans. It is therefore part of modern culture.

Principle 2: Partner Housing Australasia shall assess and manage environmental risk and impact of the construction programs through the following –

- a) Conduct an assessment of each proposed activity to identify potential direct and indirect impacts on the environment and the potential significance of any identified impacts. Undertake due diligence reviews of associated facilities where appropriate.

Comment: The proposed infrastructure consists of a very small dam, a small diameter HDPE pipeline laid through the existing forest without any noticeable disturbance of the soil or vegetation, and a number of standpipes within the village.

- b) Ensure environmental risks are identified early and presented in relevant risk and decision-making processes and documents.

Comment: The only potential environmental risks would be in the form of soil erosion or vegetation loss. Both are assessed as nil to negligible.

- c) Avoid, or where avoidance is not possible, minimise, mitigate, or as a last resort, offset negative environmental impacts.

Comment: Avoidance of environmental impact is both possible and included within the design.

- d) Monitor and report on environmental management during design and implementation.

Comment: The PHA Regional Manager PNG and the VFH Manager assume delegated responsibility for the minimisation environmental disturbance during the construction.

- e) Conduct strategic environmental assessment of the policies, programs, and plans when appropriate.

Comment: The PHA CEO reviews the environmental assessment of the policies, programs, and plans annually and makes appropriate recommendations to each February PHA Meeting.

- f) Seek advice from environmental experts on any activities which are assessed as having, or likely to have a significant environmental impact.

Comment: PHA has several recognised environmental experts on its Board.

- Alison Scotland (Director) is the CEO of ASBEC (Australian Sustainable Built Environment Council)
- Peter Cheers (Director) is a former director of the Australian Building Codes Board, responsible for the plumbing regulations. He now works throughout Australia on land-care and wildlife protection programs.
- Rod Johnston (President / CEO) served for 15 years as the Consult Australia (peak body for consulting engineers) representative on the Building Codes Committee, which advises the ABCB on regulatory matters including the minimisation of greenhouse gas liberation of buildings.
- Davina Rooney (previous Director) is the CEO of the Green Building Council, and is available to augment the advice of the other experts.

Principle 3: Partner Housing Australasia shall disclose information transparently through the following –

- a) Use transparent accessible form and language to report environmental information based on internationally recognised methods (e.g., life-cycle analysis and/or ISO standards).

Comment: PHA uses a basic life-cycle approach to assess the relative impacts embodied (manufacturing etc), operational and demolition impacts of the construction on the environment. This water reticulation project relies on gravity feed, and therefore its operational impact on the environment is nil. All manufactured items are sourced through reputable hardware outlets, and are thus subject to normal commercial pressures and regulatory controls. At the end of the useful life, infrastructure items will be repurposed if possible. This is common practice in remote villages.

Principle 4: Partner Housing Australasia shall consult with stakeholders through the following –

- a) Conduct meaningful consultation with affected parties, including women and vulnerable groups. The consultations shall be free from external manipulation, interference, coercion or intimidation and provide information that is relevant, understandable and accessible to the affected people in a timely manner.

Comment: The Vision for Homes (VFH) representative (Kelly Kombra Peng) received a request from the school board for assistance. He subsequently visited the site (on several occasions), consulting with the school board and advised PHA.

- b) Establish a grievance redress mechanism to receive affected parties' concerns and grievances on environmental performance and facilitate resolution.

Comment: Both PHA and VFH have redress mechanisms (Complaints policies and procedures), and a track record of their operation to the satisfaction of stakeholders.

Principle 5: Partner Housing Australasia shall work with partners through the following –

- a) Comply with environmental laws, standards and/or policies of the governments in the countries where the programs are based (e.g., Papua New Guinea and Solomon Islands).

Comment: This building project complies with the PNG building regulations. Refer to the specific design of the various components.

- b) Build the capacity of Partner Organisations to develop and implement environmental governance frameworks as appropriate.

Comment: PHA has supported VFH since its formation in 2010, providing funding, governance and management support and thus building capacity with the aim of making VFH self-sufficient.

- c) Harmonise with international development partner environmental safeguard policy principles.

Comment: PHA monitors and adopts appropriate principles for built infrastructure, including the recommendations of the Australian Building Codes Board (ABCB), the International Code Council (ICC) and the contributing organisations.

Principle 6: Partner Housing Australasia shall promote improved environmental outcomes through the following –

- a) Integrate environmental considerations into programs to reduce pollution and improve the sustainable use of resources including energy, forestry and water resources. (See details below)

Comment: This building project –

- reduces pollution and soil erosion (through properly constructed footings on properly prepared foundations),
- minimises the waste of materials during construction, but optimising the structural design for the specified permanent, imposed, wind and earthquake loads.

- b) Promote the principles of ecologically sustainable development as outlined in the EPBC Act by ensuring aid activities address these principles.

<https://www.dcceew.gov.au/environment/epbc>

Comment: Quotation outlining the purpose of the act. "The *Environment Protection and Biodiversity Act 1999* (EPBC Act) protects our [Australian] nationally significant animals, plants, habitats and places. We have a range of listings to show what these are. You can also nominate a native species, ecological community or threatening process for listing." As outlined above, the PHA program and this project minimise any potential harmful environmental effects, and are thus consistent (in a PNG) context with the principles of ecologically sustainable development.

In more detail –

Partner Housing Australasia shall ensure that all undertakings are environmentally sustainable, employing materials and practices that minimize environmental impact. Following is a list of the principal sustainability elements addressed in the Partner Housing Australasia programs.

- a) Greenhouse gas capture and storage, through consideration of –
- greenhouse gas emission during building product manufacture (see further comments on use of timber); and

Comment: As noted above, the use of commonly available standard products from reputable hardware outlets minimises the liberation of greenhouse gas during manufacture.

- operational greenhouse gas emissions, through the minimization of heating and cooling energy. Depending on the climate, these will be commonly achieved through roof insulation and roof ventilation (respectively). Considerations can include the use of naturally occurring local materials as insulation.

Comment: This gravity water supply and reticulation project, with no operational energy or greenhouse emissions involved.

- b) Soil erosion, as affected by both logging and replanting practices.

- c) Water quality, as affected by –

- both logging and replanting practices;

Comment: This project is augmented by a tree planting program. See further details below.

- siting latrines and septic tanks, particularly in respect of potable water sources;

Comment: Not applicable, because this project does not involve the construction of latrines.

- effluent disposal (where applicable).

Comment: Not applicable, because this project does not involve effluent disposal.

“Likelihood” = 1 Rare

“Consequence” = 3 Moderate

“Risk Rating” = 3 Low

“Mitigation” The PHA Regional Manager shall ensure compliance with policies, procedures and designs, as articulated above. The VFH Manager shall ensure compliance with policies, procedures and designs, as articulated above, and report any breach to PHA.

Extract from the most recent Activity Risk Register.

No	Description of risk	Types of impact	Consequence	Risk Assessment at 30-Jun-23		
				Likelihood	Consequence	Risk Rating
41	Environmental Risk (including greenhouse emissions) through PNG Programs	Environmental	Unacceptable temperature rise, biodiversity loss, erosion, or terrestrial loss.	1	3	3
				Rare	Moderate	Low

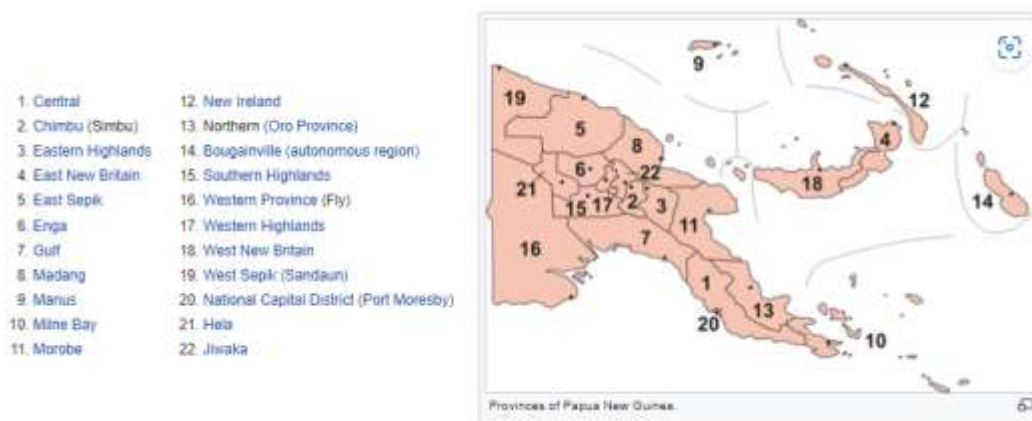
Risk Mitigation Strategy	Owner	Status	Review Date
The PHA Regional Manager shall ensure compliance with policies, procedures and designs. The VFH Manager shall ensure compliance with policies, procedures and designs, and report any breach to PHA.	CEO, with delegation to Regional Manager	Monitoring	On-going + annual review at the April Board Meeting

# Environmental Impact Statement

## Geography

*“New Guinea (Tok Pisin: Niugini; Hiri Motu: Niu Gini; Indonesian: Papua, or Nugini historically Irian) is the world's second-largest island with an area of 785,753 km<sup>2</sup>. Located in Oceania in the southwestern Pacific Ocean, the island is separated from Australia by the 150-kilometre-wide Torres Strait, though both landmasses lie on the same continental shelf. Numerous smaller islands are located to the west and east. The eastern half of the island is the major land mass of the independent state of Papua New Guinea. The western half, known as Western New Guinea, forms a part of Indonesia and is organized as the provinces of Papua, Central Papua, Highland Papua, South Papua, and West Papua. The largest cities on the island are Jayapura (capital of Papua, Indonesia) and Port Moresby (capital of Papua New Guinea).*

*Most of the current work covered by this program are in the following provinces – Western Highlands, Southern Highlands, Enga, Jiwaka, Hela and Morobe. The principal office of VFH is near Mount Hagen, capital of Western Highlands Province.*



*Located north of the Australian mainland, the country's geography is diverse and, in places, extremely rugged. A spine of mountains, the New Guinea Highlands, runs the length of the island of New Guinea, forming a populous highlands region mostly covered with tropical rainforest, and the long Papuan Peninsula, known as the 'Bird's Tail'. Dense rainforests can be found in the lowland and coastal areas as well as very large wetland areas surrounding the Sepik and Fly rivers. This terrain has made it difficult for the country to develop transportation infrastructure. Some areas are accessible only on foot or by aeroplane. The highest peak is Mount Wilhelm at 4,509 metres (14,793 ft). Papua New Guinea is surrounded by coral reefs which are under close watch, in the interests of preservation. Papua New Guinea's largest rivers are in New Guinea and include Sepik, Ramu, Markham, Musa, Purari, Kikori, Turama, Wawoi and Fly.*

*The country is situated on the Pacific Ring of Fire, at the point of collision of several tectonic plates. Geologically, the island of New Guinea is a northern extension of the Indo-Australian tectonic plate, forming part of a single land mass which is Australia-New Guinea (also called Sahul or Meganesia). It is connected to the Australian segment by a shallow continental shelf across the Torres Strait, which in former ages lay exposed as a land bridge, particularly during ice ages when sea levels were lower than at present. As the Indo-Australian Plate (which includes landmasses of India, Australia, and the Indian Ocean floor in between) drifts north, it collides with the Eurasian Plate. The collision of the two plates pushed up the Himalayas, the Indonesian islands, and New Guinea's Central Range. The Central Range is much younger and higher than the mountains of Australia, so high that it is home to rare equatorial glaciers.*

*There are several active volcanoes, and eruptions are frequent. Earthquakes are relatively common, sometimes accompanied by tsunamis. On 25 February 2018, an earthquake of magnitude 7.5 and depth of 35 kilometres struck the middle of Papua New Guinea.[76] The worst of the damage was centred around the*

Southern Highlands region.[77] Papua New Guinea is one of the few regions close to the equator that experience snowfall, which occurs in the most elevated parts of the mainland.”<sup>11</sup>

The western highlands of Papua New Guinea consist of steep volcanic and fold mountains in an active part of the earthquake-prone “Ring of Fire”. The highest point is Mount Wilhelm (4,509 m) The following table indicates a relatively high annual rainfall. This high rainfall acting on the steep slopes makes the area particularly susceptible to soil erosion if there is substantial loss of tree cover.



Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Average high °C (°F)</b>	29 (84)	29 (84)	29 (84)	29 (84)	29 (84)	28 (82)	28 (82)	28 (82)	29 (84)	30 (86)	30 (86)	30 (86)	29 (84)
<b>Average low °C (°F)</b>	12 (54)	13 (55)	13 (55)	12 (54)	12 (54)	11 (52)	11 (52)	11 (52)	11 (52)	12 (54)	12 (54)	12 (54)	12 (54)
<b>Rainfall mm (inches)</b>	283 (11.14)	299 (11.77)	309 (12.17)	249 (9.8)	180 (7.09)	122 (4.8)	135 (5.31)	163 (6.42)	193 (7.6)	218 (8.58)	208 (8.19)	279 (10.98)	2,638 (103.86)
<b>Avg. rainy days (≥ 0.1 mm)</b>	24	25	26	26	25	23	23	22	23	24	23	24	288
<b>Mean monthly sunshine hours</b>	155	113	124	120	124	120	124	124	120	155	150	155	1,584

Source: <http://worldclimateguide.co.uk/climateguides/papuanewguinea/mounthagen.php>

### Deforestation, Soil Erosion, Habitat Destruction and Biodiversity Reduction

Environmental Problem – Over-logging is denuding the landscape, leading to diminished atmospheric carbon sequestration and uncontrolled soil erosion. Unsustainable logging techniques (such as logging near streams or on slopes steeper than 30°) is accelerating soil erosion. This leads to loss of soil nutrients, a diminution of the available arable soil for subsistence farming, pollution of the waterways. Uncontrolled rain forest logging reduces the biodiversity, leading to species extinction.

Mitigation – The PHA-VFH program does not involve any significant loss of tree cover, and thus soil erosion is minimised. Buildings are generally located (where practical) in existing clearings. Construction is such that natural slopes remain unaltered to the maximum degree that is practical.

<sup>11</sup> [https://en.wikipedia.org/wiki/New\\_Guinea](https://en.wikipedia.org/wiki/New_Guinea)

## Global Warming and Climate Change

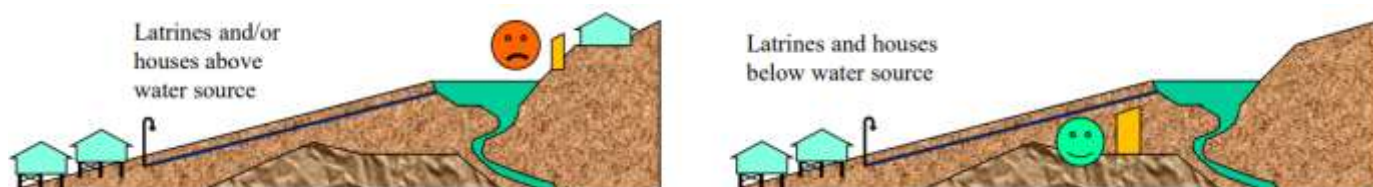
Environmental Problem –The liberation of greenhouse gasses (principally carbon dioxide and methane) are causing global warming, leading to climate change (including more severe cyclones) and sea level rise (including inundation of low-lying islands).

Mitigation – The PHA-VFH program involves the purchase and use of manufactured building components. Where practical, preference is given to those products for which there is verifiable legitimate reduction in liberated carbon (also referred to [incorrectly] as “embodied carbon”) in the extraction, manufacturing, transport and construction processes. However, a practical limitation on this aspiration is that the current rampant “greenwash” in the building product supply industry makes it difficult to confidently differentiate between “low carbon” and “high carbon” products. As a general rule, products from reputable suppliers will be sought.

## Ground Water Contamination and Pollution

Environmental Problem –Ground water can become contaminated and polluted by poorly sited latrines and septic tanks, particularly in respect of potable water sources; and inappropriate effluent disposal (where applicable).

Mitigation – The PHA-VFH program adopts the following principles. Water sources should be above houses and above latrines.



## Applicable Sustainability Elements

Following is a list of the principal sustainability elements addressed in the policies and building practices covered by this Strategic Plan.

- a) Greenhouse gas capture and storage, through consideration of –
  - greenhouse gas emission during building product manufacture (see further comments on use of timber); and
  - operational greenhouse gas emissions, through the minimization of heating and cooling energy. Depending on the climate, these will be commonly achieved through roof insulation and roof ventilation (respectively). Considerations can include the use of naturally occurring local materials as insulation.
- b) Soil erosion, as affected by both logging and replanting practices;
- c) Water quality, as affected by –
  - both logging and replanting practices;
  - siting latrines, toilets, and septic tanks, particularly in respect of potable water sources; and
  - effluent disposal (where applicable).

## Use of Timber in PNG Community Health Buildings

- a. These buildings are timber frames, with timber floors, timber internal linings. Future buildings could also use timber cladding.
- b. From the point of view of the environmental sustainability and maximising carbon capture, using timber (if done wisely) is a good thing.
- c. In extremely simple terms, existing trees extract carbon from the atmosphere as they grow. Selected trees are then felled and incorporated into buildings (effectively capturing the carbon). New seedlings are planted, and as they grow, they capture more carbon, and the process repeats.
- d. **Provided the trees are replaced and there are precautions regarding biodiversity, soil erosion, and outlawing clear felling**, timber framing and cladding is the most environmentally responsible building solution available.

## The Practical Question – Tree Replacement

- a. As an interim policy, PHA encourages (and will pay for as part of our donation), the purchase and planting of native tree seedlings to serve as carbon sinks, replacing those mature trees which have been harvested to serve as building products for the construction of village buildings.
- b. The number of such trees to be planted by VFH shall be determined for each project, based on a method to be outlined in the policy document (which will be finalised and sent shortly). Preliminary calculations (subject to confirmation) indicate that the planting of 100 casuarina oligodon seedlings would be sufficient to completely replace the trees that have been harvested for the structural frames of a community health building.
- c. The species to be selected will depend on where they are planted. Casuarina oligodon (currently grown in the PNG Highlands) is a good starting point. Papers supporting this selection are in the Environmental Sustainability Policies and Procedures.
- d. The best option is for PHA to donate the cost of the seedlings to VFH. Subject to local PNG support and availability of unused land, the seedlings could be planted on the site of the building. Because this arrangement may not be practical, a fallback position would be to fund the planting of the equivalent trees in Australia. This will be further investigated.

## Use of timber in the PNG Community Health Buildings

- a) These buildings are timber frames, with timber floors, timber internal linings. Future buildings could also use timber cladding.
- b) From the point of view of the environment and maximising carbon capture, using timber (if done wisely) is a good thing.
- c) In extremely simple terms, existing trees extract carbon from the atmosphere as they grow. Selected trees are then felled and incorporated into buildings (effectively capturing the carbon). New seedlings are planted, and as they grow, they capture more carbon, and the process repeats.
- d) **Provided the trees are replaced and there are precautions regarding biodiversity, soil erosion, and outlawing clear felling**, timber framing and cladding is the most environmentally responsible building solution available.
- e) PHA will work with various environmental organisations to refine its policies and procedures with a view to minimising the environmental impact of our building work. These organisations include –
  - Green Building Council of Australia (GBA) <https://new.gbca.org.au/>  
CEO: Davina Rooney [Previously a director of Partner Housing Australasia]

GBCA's policy priorities are carbon positive buildings, strong government leadership, realizing our vision for cities and communities, smarter infrastructure investments and affordable, sustainable housing.

<https://gbca-web.s3.amazonaws.com/media/documents/embodied-carbon--embodied-energy-in-australias-buildings-2021-07-22-final-public.pdf>

- Australian Sustainable Built Environment Council (ASBEC)

CEO: Alison Scotland [currently a Director of Partner Housing Australasia]

ASBEC is the peak body of key organisations committed to a sustainable, productive, resilient built environment in Australia.

- Responsible Wood: <https://www.responsiblewood.org.au/>

CEO, Simon Dorries

Responsible Wood is an umbrella organisation, which endorses national forest certification systems that have been developed through multi-stakeholder processes and tailored to local priorities and conditions.

, but it's more of a comparison of which Australian building products contribute to the most emissions (timber being the one product that doesn't).

### The Practical Question – Tree Replacement

- As an interim policy, PHA encourages (and will pay for as part of our donation), the purchase and planting of native tree seedlings to serve as carbon sinks, replacing some of the mature trees which have been harvested to serve as building products for the construction of village buildings.
- The number of such trees to be planted shall be determined for each project based on a method to be outlined in the policy document. Preliminary calculations (subject to confirmation) indicate that the planting of up to 100 casuarina oligodon seedlings would be sufficient to completely replace the trees that have been harvested for the structural frames.
- The species to be selected will depend on where they are planted. Casuarina oligodon seedlings (currently in common use in the PNG Highlands) would be a good starting point. I will provide papers supporting this selection in the policy document.
- The best option is to pay the in-country partner (i.e., Vision for Homes) to plant the seedling in PNG (preferable on the site of the buildings). But because this may not be practical, a fallback position would be to fund the planting of the equivalent trees in Australia.

### Tree Replacement Project

In response to the Environmental Policy, as it applies to this project, PHA will fund and VFH will implement the following proposed program on tree replacement. Refer also to the correspondence between Kelly Kombra Peng (VFH) and Phillip Pup (PNG National Forest Authority).

**Initial Budget:** AUD \$ 1,000 for initial establishment of the program, 100+ seedlings, and 1 labourer for 1 day per month for 1 year. This represents 2% of the current annual PHA funding contribution to VFH.

**On-going Budget:** Subject to DFAT ANCP funding, the replanting program will be increased to AUD \$ 4,000 per year. This will represent 2% of the proposed annual DFAT/PHA funding contribution to VFH.

The numbers of seedling planted and tended will be increased in line with the budget allocation.



## Correspondence with Kelly Kombra Peng (VFH)

**From:** Kelly Kombra Peng <kellykombrap@yahoo.com>  
**Sent:** Thursday, 9 November 2023 1:32 PM  
**To:** Rod Johnston <Rod@ELECTRONICBLUEPRINT.COM.AU>  
**Subject:** Proposal for Seedling Production and distribution

Hi Rod,

Further to the above, we intend to buy and distribute 200 - 500 seedlings to start with and then eventually increase the number as we progress into the future. This exercise will cover an area of about 400 - 600 hectares of land that is readily available.

The initial seed funding will be approximately K2,000 to make it happen this year and the on-going funding of approximately K8,000 per year is anticipated to maintain the growth of these seedlings into the future.

I hope this information provides a clear pathway for your consideration.

With kind regards,

Kelly

## Correspondence with Phillip Pupndui (PNG National Forest Authority)

**To:** Kelly Kombra Peng <kellykombrap@yahoo.com>  
**Cc:** Rod Johnston <Rod@ELECTRONICBLUEPRINT.COM.AU>  
**Subject:** Re: Tree seedlings Production & Distribution

Hi Kelly,

Thank you for that piece of information

We are pleased to inform that our extension work in tree planting is an ongoing activity.

We have the capacity to produce over 50,000 seedlings per cycle and sustain seedling production every month all year round raising different tree species.

We sell seedlings at K0.50t each and we assure you that we are able to manage your request at anyone time possible.

We are happy to work with you in terms of seedling supply as your program is directly in support and enhance our extension tree farming and conservation activities at the community level.

Please advise should you need seedlings immediately.

We will send photos of current seedling stock on bed at nursery and what we do.

Look forward to work with you soon.

Thank you.

Philip PUPNDUI  
Forestry Manager - Jiwaka

**From:** Kelly Kombra Peng <kellykombrap@yahoo.com>  
**Sent:** Thursday, 9 November 2023 12:25 PM  
**To:** ppupndui@gmail.com  
**Cc:** Rod Johnston <Rod@ELECTRONICBLUEPRINT.COM.AU>  
**Subject:** Tree seedlings Production & Distribution

Hi Phillip,

Thank you for your quick response to my text message.

In line with your Authority's policy to doing extension on reforestation programs, we are interested to doing our bit in trying to buy seedlings and distribute to potential people with land to plant trees for purposes of replacing the trees being cut down for construction and other uses. This approach when comes in to play will regenerate the natural forest environment and in turn capture the carbon from the atmosphere to compensate the trees being lost through human exploitation.

On this note we would need the following information:

i) information on your current practices on seedling production and distribution which you may be undertaking and also if you are into seedling production, how much are you selling for a seedling that we can afford to buy from.

ii) if you are not currently producing seedling, can you be able to produce say 200 - 500 seedlings for us provided we fund you AUD1000 on a yearly basis.

Please give us a quick feed back and we can discussion further and come up with strategies to make it happen.

Kind regards,

Kelly

## Casuarina oligodon

The following paper deals with the *Casuarina oligodon*, the species of she oak, which is common in the PNG Highlands.

### Casuarina oligodon

L. Johnson  
Casuarinaceae

---

#### LOCAL NAMES

English (she-oak); Indonesian (kilu)

#### BOTANIC DESCRIPTION

*Casuarina oligodon* is an evergreen tree to 30 m tall, bark grey-brown, fissured, peeling off in irregular flakes, outer bark red, hard.

Leaves reduced to minute scales, arranged in whorls of 5-7 at the internodes of the thin, pendulous, green branchlets which function as leaves (phyllodes). There are 6 leaf scales in each whorl. Branchlets are grooved.

Flowers unisexual, male flowers are borne in spikes 1.5-4.5 cm long, usually borne on terminal branches, each flower consists of one stamen surrounded by 4 scales. Female cones shortly cylindrical or sub-cylindrical, 4-10 mm long, 0.7-0.9 mm diameter, each flower consists of an ovary with 2 branch thread-like styles and of 1 large and 2 small scales. They are red.

The fruit is a 1-seeded winged nut initially enclosed in accrescent woody bracteoles, which separate at maturity appearing like a dehiscent capsule. The fruit proper is a small samara about 4 mm long that is held by the enlarged and hardened scales fused into a small woody cone less than 1 cm in diameter and dull light brown.

Two subspecies have been recognized, *ssp. oligodon* which occurs in Papua New Guinea and *ssp. abbreviata* in the Indonesian province of Irian Jaya. They differ in the length of the leaves (teeth), *ssp. abbreviata* teeth are 0.4-0.5 m long, those of *ssp. oligodon* are 0.8-1 mm long.

*Casuarina* is from the Malay word 'kasuari', from the supposed resemblance of the twigs to the plumage of the cassowary bird. One of the common names of *Casuarina* species, 'she-oak', widely used in Australia, refers to the attractive wood pattern of large lines or rays similar to oak but weaker. The specific epithet comes from the Greek olig- (few), and -odon (tooth); meaning with few teeth.

#### BIOLOGY

In its natural range in Papua New Guinea, flowering starts around early August and cones are ready to collect by November-December. Flowers are unisexual. The tree is wind pollinated.

## ECOLOGY

This species is confined to the island of New Guinea. It occurs at high elevations (up to 2 500 m) forming extensive pure stands along river beds and on ridge tops but at times is seen to be associated with *C. papuana*. The species grows in areas with high relative humidity throughout the year and a weak dry season in July and August. Temperatures vary from 11-15 deg C minimum at night to 24-30 deg C maximum during the day.

## BIOPHYSICAL LIMITS

Altitude: 1 500-1 800 m

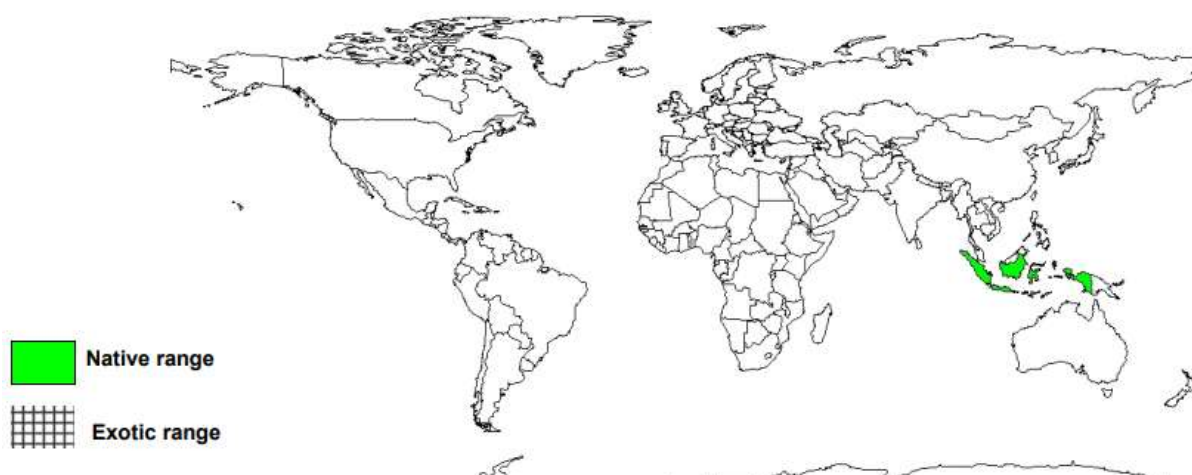
Mean annual rainfall: 1 900-2 600 mm

Soil type: *C. oligodon* is mostly found in sandy soils along creeks and rivers but grows well in colluvial soils, humic brown clay soils, alluvial and meadow soils.

## DOCUMENTED SPECIES DISTRIBUTION

Native: Indonesia, Papua New Guinea

Exotic: Israel



## PRODUCTS

**Fuel:** The wood is regarded as one of the best firewoods in the world, with a calorific value of the charcoal of over 700 k cal/kg.

**Timber:** The wood is generally hard and heavy (air-dry density is about 900-1 000 kg/cu m) and tends to split when sawn. Split wood is used to construct fences and houses. Round posts for construction, poles, fences suitable for use in the ground and for unprotected extension use in buildings, protected extension and intension work. Specialty uses include tool handles, shuttles and permanently submerged freshwater piles.

## SERVICES

**Erosion control:** The species is used to control soil erosion on steep slopes. Fallen casuarina foliage provide a good protective layer against soil erosion and helps rebuild soils and protect unstable sites.

**Shade or shelter:** *C. oligodon* has been found to be a good shade tree for both cattle and sheep as it provides a good shade and improves pastures. It has also been used as a shade tree for coffee.

**Nitrogen fixing:** *C. oligodon* like other species of the Casuarinaceae possess nodules of nitrogen-fixing bacteria in the rootlets.

**Soil improver:** When it is used as a shade tree for coffee, it further improves soil fertility by its leaf litter.

**Boundary or barrier or support:** One of the other main uses of *C. oligodon* is as wind breaks and in its natural range, can be seen in most villages where it is planted around the whole village protecting it from strong winds.

**Intercropping:** *C. oligodon* is planted in subsistence food gardens and as a fallow intercrop.

## TREE MANAGEMENT

Trees should be fertilized with boron which tends to be deficient in highland grassland soils. It should be applied at 56g/tree during a 2 month period (28g, 1 month after planting and another 28g 1 month later).

Even though the species can grow with competition from grass, shrubs, trees etc, ring tending should be done after 3-5 months. *C. oligodon* grows well with close spacing and 1 110-2 500 stems/ha could be ideal. The rotation length depends on the end use. For use as fence posts, a rotation length of 12-15 years is sufficient with thinnings at age 6 which could be utilized as fuelwood etc.

## GERMPLASM MANAGEMENT

Seed production by the species is very good. Storage of *C. oligodon* seeds is mainly in household refrigerators where they are kept until needed for sowing. No research has been carried so far into their longevity under these conditions, but appears to be orthodox for this family. There are 1.5-2 million seeds /kg. Viability is generally low.

## PESTS AND DISEASES

The species does not have a problem with diseases. Boron deficiency in the species cause stunted growth with plants looking rounded and bushy with short internodes and the growing tips die.

## FURTHER READNG

Advisory Committee on Technology Innovation (ACTI). 1984. Casuarinas: nitrogen-fixing trees for adverse sites. Board on Science and Technology for International Development (BOSTID), National Academy Press, Washington, DC, USA

Bourke RM. 1985. Food, coffee and casuarina: an agroforestry system from the Papua New Guinea highlands. *Agroforestry Systems*. 2(4): 273-279.

Chen ZZ, Wang TT and Yang JC. 1984. Variation in salt tolerance of Casuarina species. *Bulletin, Taiwan Forestry Research Institute*. No. 422.

Ildgley SJ, Turnbull JW and Johnston RD. 1983. Casuarina ecology, management and utilization. Proceedings of an International Workshop, Canberra, Australia, 17-21 August 1981. Commonwealth Scientific and Industrial Organization (CSIRO), Australia.

Marten KD. 1981. Enga provincial forest development. *Commonwealth Forestry Review*. 60(2): 91-92.

Pinyopusarerk K and House APN (comps.). 1993. Casuarina: an annotated bibliography of *C. equisetifolia*, *C. junghuhniana* and *C. oligodon*. International Centre for Research in Agroforestry (ICRAF), Nairobi, Kenya

## SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/af/treedb/>)

## Other References

<https://pfaf.org/user/Plant.aspx?LatinName=Casuarina+oligodon#:~:text=Casuarina%20oligodon%20is%20an%20evergreen%20tree%20with%20foliage,the%20best%20firewood%20producing%20trees%20in%20the%20world.>

## Summary

*Casuarina oligodon* is an evergreen tree with foliage consisting of slender, well-branched green to grey-green twigs bearing minute scale-leaves in whorls of 5-20. It grows up to 30 m tall and is a tropical highland species. It is considered to be one of the best firewood producing trees in the world. Its wood is hard and heavy and used as material for fences, houses, poles, and general construction. Also, it has an extensive root system making it an ideal species to control soil erosion on steep slopes.

## Physical Characteristics



*Casuarina oligodon* is an evergreen Tree growing to 25 m (82ft) at a medium rate. It is hardy to zone (UK) 10. The flowers are pollinated by Wind.

It can fix Nitrogen.

Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils and can grow in very acid and very alkaline soils.

It cannot grow in the shade. It prefers moist soil.

Other uses rating: High (4/5). Agroforestry Uses: The species has an extensive root system and is used to control soil erosion on steep slopes[ 303 ]. Fallen casuarina foliage provide a good protective layer against soil erosion and helps rebuild soils and protect unstable sites[ 303 ]. It is used in reforesting grasslands in the highlands of Papua New Guinea because it competes well with grasses such as *Imperata cylindrica*, *Saccharum robustum* and *Themeda australis*[ 310 ]. With its ability to improve soil fertility by fixing atmospheric nitrogen and with its leaf litter, the tree has been found to provide good shade and growing conditions for coffee[ 303 ]. The tree is planted as an intercrop in subsistence food gardens and as a fallow intercrop[ 303 ]. One of the other main uses of this species is as wind breaks and, in its natural range, it can be seen planted around whole villages, protecting them from strong winds[ 303 ]. Other Uses: The wood is generally hard and heavy and tends to split when sawn. Split wood is used to construct fences and houses. Round posts for construction, poles, fences suitable for use in the ground and for unprotected extension use in buildings, protected extension and intension work. Specialty uses include tool handles, shuttles and permanently submerged freshwater piles[ 303 ]. The wood is regarded as one of the best firewoods in the world, with a calorific value of the charcoal of over 700 k cal/kg[ 303 ].

This is truly a tropical highland species, being found at elevations up to 2,500 metres or sometimes even higher[ 303 ]. It grows in areas where the mean annual rainfall is in the range 1,900 - 2,600 mm, there is a high relative humidity throughout the year with a weak dry season of up to 2 months and the temperatures vary from 11 - 15°C minimum at night to 24 - 30°C maximum during the day[ 303 ]. Prefers a sunny position[ 418 ]. Mostly found in sandy soils along creeks and rivers in the wild, but also grows well in colluvial soils, humic brown clay soils, alluvial and meadow soils[ 303 ]. Prefers a pH in the range 5.5 - 6.5, tolerating 4.5 - 7.5[ 418 ]. For use as fence posts, a rotation length of 12 - 15 years is sufficient with thinnings at age 6 which could be utilized as fuel wood etc[ 303 ]. According to Johnson (1982), the species consists of two subspecies: subsp. *Oligodon* and subsp. *Abbreviata*. Subsp. *Oligodon* has longer leaves, up to 1mm long. It is used locally in the eastern highlands of Papua New Guinea[ 317 ]. Subsp. *Abbreviata* has shorter leaves up to 0.5mm long. It is used to restore soil fertility and control soil erosion in the N Baliem valley of Irian Jaya[ 317 ]. This species has a symbiotic relationship with certain soil micro-organisms, these form nodules on the roots of the plants and fix atmospheric nitrogen. Some of this nitrogen is utilized by the growing plant but some can also be used by other plants growing nearby[ 303 ].

## PNG Highlands Hardwood

### Group

The two broad groups of trees are included in this key, namely:

**Conifer** This category is used for the Cone-bearing trees, such as the species of *Araucaria* and *Pinus* that are included in this key.

**Dicotyledon** Describes the group of trees that are flowering plants.

Note: **Woody monocotyledons** (such as, palms) have not been included in this key.

### Tradename

These are the non-scientific names used by the forestry and timber industry. Sometimes more than one name is used for the same species. In other cases, one name may refer to more than one species. The names used here are based on the Standard Trade Common Names officially recognised by the *Papua New Guinea Forest Authority* ([Eddowes 1977](#)).

### Timber groups

This feature primarily distinguishes between softwood and hardwood timbers; it also distinguishes between the importance of different species as timber trees (such as major, commercial, minor and occasional). Furthermore, the special small group of plantation species has been distinguished by this character.

The six timber groups recognised are based on [Eddowes \(1977\)](#). These include:

**Major exportable hardwoods** The timbers in this category of trees are recognised as being the major Hardwood timber species harvested from Papua New Guinea.

**Commercial hardwoods** Many of the timbers in this group have been exported occasionally. However, substantial supplies, on a regular basis, for any particular species in this group would not be reliable.

**Minor hardwoods** Generally this category includes locally available species that have currently shown little export potential. Regular supplies of any one of these species is generally not possible. Therefore, they are currently of minor commercial value.

**Softwoods** The conifers have been harvested from plantations, mainly at higher altitudes, and are abundant in some areas, for example, in the Bulolo area.

**Plantation species** Several indigenous and introduced species have been planted in forest plantations throughout Papua New Guinea. *Araucaria* and *Pinus* species are two softwood examples included in this publication.

**Occasional timber** This category includes trees that are currently regarded as of little to no economic significance. The majority of these trees are limited in their distribution, but they have been recorded as sawn logs or of other utilitarian value.

Note: the term “**softwood**” refers to the conifers, whereas the “**hardwoods**” are the dicotyledonous flowering plants.

### **Timber tree**

This feature records whether or not a plant is known to be a timber species. If the species is regarded as a Timber tree, then it would also be classified as belonging to at least one of the categories in the Timber groups field. Although the timber of most trees has some local traditional use, such as for the framing of traditional buildings, these examples are not regarded as timber species because they have no known commercial value.

This feature is recorded as either:

**yes**, or

**no** – although the wood of a species may [have]been used traditionally, it is not regarded as belonging to one of the categories of timber with commercial value.

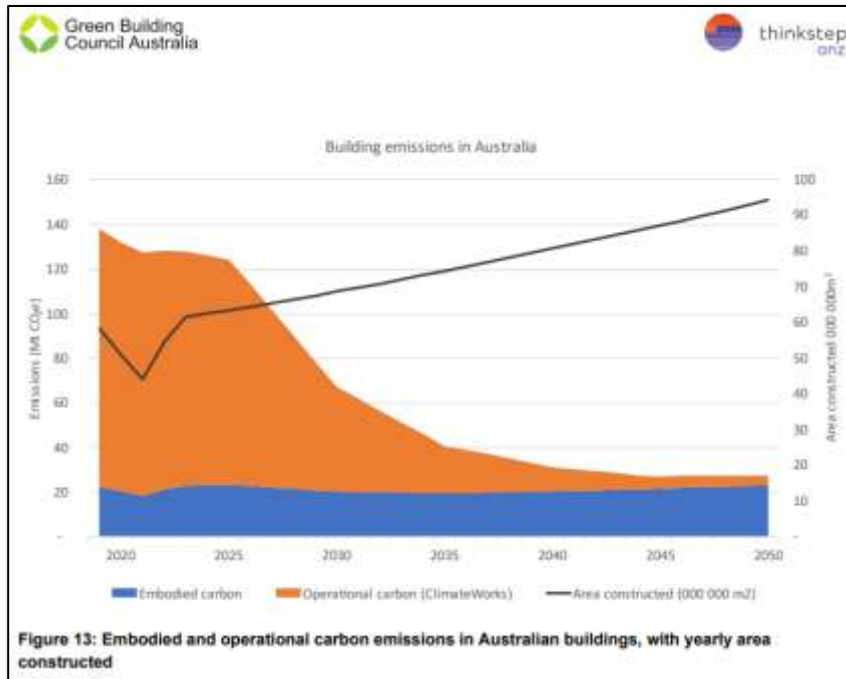
## Analysis based on GBCA Publications

### GBCA Prediction

The following extract from the Green Building Council of Australia predicts that (in Australia) policy will dictate that, despite increasing construction (indicted by increasing area), there will be a significant net reduction in carbon equivalent emissions).

### Source of Carbon Savings

However, all such gains will result in reductions in operational emissions, while (so-called) embodied carbon emissions remain constant.



### Interpretation for PNG Building Projects

It is emphasized that this is not PNG data. However, some broad conclusions can be drawn.

- Given that air conditioning is not widespread in PNG, particularly in the villages, there is unlikely to be much saving through operational energy.
- Therefore, reductions in embodied carbon liberation will be relatively more significant than in (say) Australia.
- The sustainable use of timber as a building material, through a program of replanting, should be encouraged by governments and donor agencies.
- The PHA DANCER Building System is an ideal system for the sensible use of timber building superstructures.

# Environmental Impact in Village Water Supply and Sanitation Projects

## Background

Water projects in Ranongga and Vella Lavella in the Western Province of Solomon Islands provide drinking water from clean sources in the hills. This is collected in small dams, piped to villages in which communal stand-pipes are constructed. The material used in the projects are common plumbing pipes, tanks and fittings. The projects replace labour-intensive hand collection of water with efficient piped water and do not have any detrimental effect on the natural environment.

Similar projects in Ranongga and Vella Lavella and East Arwin (PNG) have been constructed previously to provide clean water to remote villages (where no reliable source existed) without any detrimental effects on the natural environment.

Water-flush pit latrines are being constructed in Gibitngil Island, Philippines, to replace defecation in the sea. The water used to flush the latrines is sea water carried by bucket to the latrines. The pits drain through the porous bedrock and do not pollute either the sea or the adjacent land. The materials used in the projects are common building materials and fittings. The project reduces health hazards without any detrimental effect on the natural environment.

Previous latrine projects in remote villages in Solomon Islands similarly reduce health hazards without any detrimental effects on the natural environment.

## Environmental Impact Policy and Comments

Partner Housing Australasia and South Ranongga Community Association recognise and adhere to the following principles –

Principle 1: Partner Housing Australasia and South Ranongga Community Association shall do no harm (to the environment) through the following –

- f) Protect and maintain the health, diversity and productivity of natural habitats.

Comment: The project will have negligible impact on the natural habitat.

- g) Protect the health, welfare, and livelihoods of people including women and vulnerable groups, including children and people with a disability.

Comment: The project will improve the health, welfare and livelihood of all the village residents.

- h) Apply pollution prevention and control technologies and practices consistent with international good practice and standards. Avoid the use of hazardous materials subject to international bans and phase outs.

Comment: The project does not create pollution or erosion, and does not employ hazardous materials.

- i) Provide safe and healthy working conditions that prevent accidents, injuries and disease to workers and local communities.

Comment: The project does not create health hazards. Standpipe slabs are self-draining to the Solomon Islands RSS design.

- j) Protect and conserve natural and cultural heritage.

Comment: Although reticulated water is not part of the cultural heritage, it is the recognised right of all humans. It is therefore part of modern culture.

Principle 2: Partner Housing Australasia and South Ranongga Community Association shall assess and manage environmental risk and impact of the construction programs through the following –

- g) Conduct an assessment of each proposed activity to identify potential direct and indirect impacts on the environment and the potential significance of any identified impacts. Undertake due diligence reviews of associated facilities where appropriate.

Comment: The proposed infrastructure in Ngaidavala consists of a very small dam (existing), a small diameter HDPE pipeline laid through the existing forest without any noticeable disturbance of the soil or vegetation, and a number of standpipes within the village. The work in Keigold involves maintaining, repairing and/or replacing existing standpipes and reticulation pipes. The will have negligible environmental impact.

- h) Ensure environmental risks are identified early and presented in relevant risk and decision-making processes and documents.

Comment: The only potential environmental risks would be in the form of soil erosion or vegetation loss. Both are assessed as nil to negligible.

- i) Avoid, or where avoidance is not possible, minimise, mitigate, or as a last resort, offset negative environmental impacts.

Comment: Avoidance of environmental impact is both possible and included within the design.

- j) Monitor and report on environmental management during design and implementation.

Comment: The PHA Regional Manager (Solomon Islands) and the SRCA Manager assume delegated responsibility for the minimisation environmental disturbance during the construction.

- k) Conduct strategic environmental assessment of the policies, programs, and plans when appropriate.

Comment: The PHA CEO reviews the environmental assessment of the policies, programs, and plans annually and makes appropriate recommendations to each February PHA Meeting.

- l) Seek advice from environmental experts on any activities which are assessed as having, or likely to have a significant environmental impact.

Comment: PHA has several recognised environmental experts on its Board.

- Alison Scotland (Director) is the CEO of ASBEC (Australian Sustainable Built Environment Council)
- Peter Cheers (Director) is a former director of the Australian Building Codes Board, responsible for the plumbing regulations. He now works throughout Australia on land-care and wildlife protection programs.
- Rod Johnston (President / CEO) served for 15 years as the Consult Australia (peak body for consulting engineers) representative on the Building Codes Committee, which advises the ABCB on regulatory matters including the minimisation of greenhouse gas liberation of buildings.
- Davina Rooney (previous Director) is the CEO of the Green Building Council, and is available to augment the advice of the other experts.

Principle 3: Partner Housing Australasia and South Ranongga Community Association shall disclose information transparently through the following –

- b) Use transparent accessible form and language to report environmental information based on internationally recognised methods (e.g., life-cycle analysis and/or ISO standards).

Comment: PHA uses a basic life-cycle approach to assess the relative impacts embodied (manufacturing etc), operational and demolition impacts of the construction on the environment. This water reticulation project relies on gravity feed, and therefore its operational impact on the environment is nil. All manufactured items are sourced through reputable hardware outlets, and are thus subject to normal commercial pressures and regulatory controls. At the end of the useful

life, infrastructure items will be repurposed if possible. This is common practice in remote villages.

Principle 4: Partner Housing Australasia and South Ranongga Community Association shall consult with stakeholders through the following –

- c) Conduct meaningful consultation with affected parties, including women and vulnerable groups. The consultations shall be free from external manipulation, interference, coercion or intimidation and provide information that is relevant, understandable and accessible to the affected people in a timely manner.

Comment: The SRCA representative in Obobulu (Saemon Alepio) received a request from Ngaidavala village for assistance to upgrade their water supply. He subsequently visited the site, consulting with the local residents, advised PHA, and (on request from PHA) visited the site a second time to confirm the village requirements and design details etc. The PHA/SRCA Board Member (David Kaunitz) received a request from Keigold village for assistance to upgrade their existing water supply, some of which required repair or replacement. He subsequently visited the site, consulting with the local residents, and advised PHA.

- d) Establish a grievance redress mechanism to receive affected parties' concerns and grievances on environmental performance and facilitate resolution.

Comment: Both PHA and SRCA have redress mechanisms (Complaints policies and procedures), and a track record of their operation to the satisfaction of stakeholders.

Principle 5: Partner Housing Australasia and South Ranongga Community Association shall work with partners through the following –

- d) Comply with environmental laws, standards and/or policies of the governments in the countries where the programs are based (e.g., Papua New Guinea and Solomon Islands).

Comment: This water reticulation infrastructure project complies with the Solomon Islands Rural Water Sanitation and Health requirements. Refer to the specific design of the various components.

- e) Build the capacity of Partner Organisations to develop and implement environmental governance frameworks as appropriate.

Comment: PHA has supported SRCA since its formation in 2012, providing funding, governance and management support and thus building capacity with the aim of making SRCA self-sufficient.

- f) Harmonise with international development partner environmental safeguard policy principles.

Comment: PHA monitors and adopts appropriate principles for built infrastructure, including the recommendations of the Australian Building Codes Board (ABCB), the International Code Council (ICC) and the contributing organisations.

Principle 6: Partner Housing Australasia and South Ranongga Community Association shall promote improved environmental outcomes through the following –

- c) Integrate environmental considerations into programs to reduce pollution and improve the sustainable use of resources including energy, forestry and water resources. (See details below)

Comment: This gravity water supply and reticulation project –

- reduces pollution and soil erosion (through properly constructed standpipe and bases),
- conserves energy through gravity reticulation,
- minimises disruption of the forest by using small-bore HDPE pipe, and
- employs a float control valve in the break-pressure tank to minimise draw down from the (small) dam, thus conserving water resources.

- d) Promote the principles of ecologically sustainable development as outlined in the EPBC Act by ensuring aid activities address these principles.

<https://www.dcceew.gov.au/environment/epbc>

Comment: Quotation outlining the purpose of the act. “The *Environment Protection and Biodiversity Act 1999* (EPBC Act) protects our [Australian] nationally significant animals, plants, habitats and places. We have a range of listings to show what these are. You can also nominate a native species, ecological community or threatening process for listing.” As outlined above, the PHA program and this project minimise any potential harmful environmental effects, and are thus consistent (in a Solomon Islands) context with the principles of ecologically sustainable development.

[In more detail –](#)

Partner Housing Australasia and South Ranongga Community Association shall ensure that all undertakings are environmentally sustainable, employing materials and practices that minimize environmental impact. Following is a list of the principal sustainability elements addressed in the Partner Housing Australasia programs.

d) Greenhouse gas capture and storage, through consideration of –

- greenhouse gas emission during building product manufacture (see further comments on use of timber); and

Comment: As noted above, the use of commonly available standard products from reputable hardware outlets minimises the liberation of greenhouse gas during manufacture.

- operational greenhouse gas emissions, through the minimization of heating and cooling energy. Depending on the climate, these will be commonly achieved through roof insulation and roof ventilation (respectively). Considerations can include the use of naturally occurring local materials as insulation.

Comment: This gravity water supply and reticulation project, with no operational energy or greenhouse emissions involved.

e) Soil erosion, as affected by both logging and replanting practices.

f) Water quality, as affected by –

- both logging and replanting practices;

Comment: Not applicable, because this project does not involve the significant use of timber.

- siting latrines and septic tanks, particularly in respect of potable water sources;

Comment: Not applicable, because this project does not involve the construction of latrines.

- effluent disposal (where applicable).

Comment: Not applicable, because this project does not involve effluent disposal.

## Risk Analysis

“Likelihood” = 0 The nature of the project indicates that the likelihood of a breach of policy is the lowest possible likelihood.

“Consequence” = 3

“Risk Rating” = 0

“Mitigation” The PHA Regional Manager shall ensure compliance with policies, procedures and designs, as articulated above.

The SRCA Manager shall ensure compliance with policies, procedures and designs, as articulated above, and report any breach to PHA.

Extract from the most recent Activity Risk Register.

42	Environmental Risk (including greenhouse emissions) through Solomons Programs	Environmental	Unacceptable temperature rise, biodiversity loss, erosion, terrestrial or marine loss.	0	3	0	The PHA Regional Manager shall ensure compliance with policies, procedures and designs. The SRCA Manager shall ensure compliance with policies, procedures and designs, and report any breach to PHA.
				Negligible	Moderate	Negligible	

## Applicable Sustainability Elements

Following is a list of the principal sustainability elements addressed in the policies and building practices covered by this Strategic Plan.

- a) Soil erosion, as affected by the location and nature of water and sanitation infrastructure;
- b) Ground water contamination and pollution, as affected by the location and nature of water and sanitation infrastructure, such as
  - siting latrines and septic tanks, particularly in respect of potable water sources; and
  - effluent disposal (where applicable).
- c) Global warming and climate change.

The paper “The Solomon Islands: Headed for Self-destruction?” by Cherylee P. Sevilla comments on the specific environmental risks to the Solomon Islands and forms the basis of the PHA-SRCA mitigation initiatives.

## Geography

Ranongga, Simbo, Vella Lavella and Gizo are volcanic islands in the western Solomon Islands, in an active part of the earthquake-prone “Ring of Fire”. Ranongga is the location of the majority of the PHA-SRCA program. Ranongga is 28 km long, narrow island, located 8 km north-east of [Simbo Island](#) and south-west of [Gizo](#), the capital of Western Province. The highest point is Mount Kela (869m) In April 2007, an earthquake rocked Ranongga Island, along with many parts of the [Solomon Islands](#). Land thrust from the quake extended out the shoreline of Ranongga Island by up to 70 meters according to local residents. This has left many once pristine coral reefs exposed on the newly formed beaches. The following table indicates a relatively high annual rainfall. This high rainfall acting on the steep slopes of the volcanic islands makes the area particularly susceptible to soil erosion if there is substantial loss of tree cover.

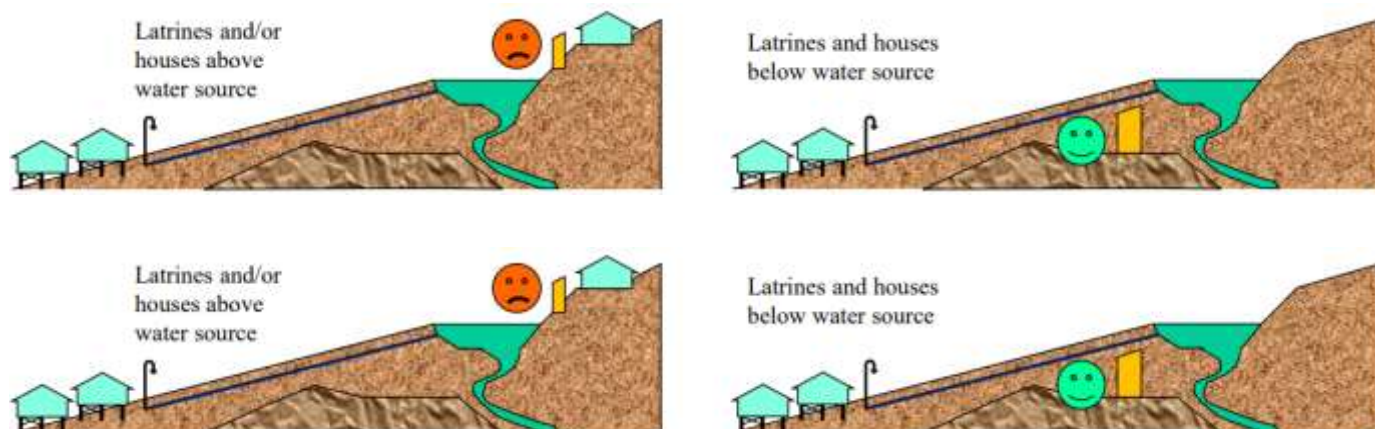


difficult to confidently differentiate between “low carbon” and “high carbon” products. As a general rule, products from reputable suppliers will be sought.

### Ground Water Contamination and Pollution

Environmental Problem –Ground water can become contaminated and polluted by poorly sited latrines and septic tanks, particularly in respect of potable water sources; and inappropriate effluent disposal (where applicable).

Mitigation – The PHA-SRCA program adopts the following principles. Water sources should be above houses and above latrines.



### Solomon Islands Environmental Impact Assessment - Reference Material

The following paper has been downloaded from the following internet website

<https://www.gdrc.org/oceans/csevilla.html>

While this paper is relevant to general sustainability of Solomon Islands, those parts that are particularly relevant to the construction of water and sanitation infrastructure in the Western Province are highlighted in yellow.

## The Solomon Islands: Headed for Self-destruction?

by

Cherylee P. Sevilla

### *Abstract*

Although the Solomon Islands are hardly mentioned within the spectrum of global news, they can be described as the center of extremely important global issues. Trying to live in a developing country becomes difficult when the country's natural resources start diminishing at alarming rates. While the natives barely survive by subsistence farming and hunting, major corporations and foreign investors obtain massive amounts of money by commercial logging and fishing. In fact, the tropical rain forests are predicted to be depleted in only three years if the government allows their logging licenses to continue at 4,000,000 cubic meters per year instead of a recommended sustainable harvest rate of 325,000 meters per year (Lineback, 1998). The nation's largest commercial fishery, Solomon Taiyo Ltd. illustrates the problem with declining fish stocks as their commercial catch dropped 20 percent from 1993 (Bank of Hawaii). The native populations as well as the investors place heavy demands on the ecosystem. Unfortunately, the environment will not be able to support all the needs and wants of everyone. Therefore, the duty to preserve the Solomon Islands lies in the cooperation of the government, the natives, and the corporations. By educating the population about how to take an active role in conservation and substitution, the Solomon's' resources can be saved. The political, social and economic arenas of the islands must work together to accomplish the common goal of protecting the environment. Since each arena affects the other, the process of destruction needs to be stopped at all levels.

### Welcome to the Solomon Islands

"The chain of islands known as the Solomon Islands is located in the Pacific just to the north and east of the island of New Guinea and 1,000 miles (1,609 km.) northeast of Australia." (Lineback, 1998). They also occupy around 900 miles over the South Pacific Ocean, but the islands themselves are not always closely linked (see Figure 1). The Solomon Islands are part of the chain of Melanesian islands on the eastern side of the East Indies, and they include some Polynesian outliers (Kent, 1972). Each island possesses unique qualities that transcribes unto the villagers that settled within them. Choiseul, Guadalcanal, Malaita, New Georgia, Makira, and Santa Isabel are the six major islands which are divided into provinces with Honiara, Guadalcanal as the capital territory (see Figure 2).

### *Coral Islands*

Several of the islands were formed from ancient volcanoes and lava flows, but Ontong Java and the other fringe islands are made of coral (Diamond, 1995). When microscopic sea creatures attach themselves to a solid base, they secrete lime as they multiply in number. As these secretions built one on top of each another, it become large enough to be called a coral reef. However, in the Solomon Islands the coral structures becomes so enlarged that it forms islands which are "thrust up from the sea by earthquakes or left as a ring when a mountain collapses" (Diamond, 1995). While Ontong Java is a group of low coral atolls that lays just above the sea, Bellona and Rennell are two of the largest existing atolls. Since Ontong Java's land consists mostly of salty soil, the inhabitants are forced to cook with sea water and collect rain for drinking water. Only the big islands had the luxury of underground streams for freshwater. On the other hand, Rennell and Bellona are tropical islands, and the former even has the largest lake in the South Pacific, Lake Tegano.

### *Volcanic Islands*

Anuta, Fataka, and Tikopia are the last of the main islands, and along with the six major islands (Choiseul, Guadalcanal, Malaita, New Georgia, Makira and Santa Isabel) they make up a group of volcanic islands. On some of the islands the trees cover as much as 90% of the area, and unique wildlife roams this encompassing as well. Furthermore, there are short, but fast-flowing rivers that

channel into the ocean. They are the tips of undersea volcanoes that are common in the Pacific "Ring of Fire," and the smaller islands are where overpopulation starts being a problem (see Figure 3).

### *Natural Resources*

Three main types of soil found on the Solomon Islands are volcanic, limestone and island soils. Volcanic soils can either be extremely fertile or just a top coating of volcanic dust over thin coral and clay (Kent, 1972). Limestone soil can become waterlogged easily on the plains, but it works better on higher altitudes. Using this type of soil will not produce good crops because it tends to be very infertile. Lastly, the island soils are barely able to support the Islanders that depend on subsistence farming to survive.

Minerals located on the Solomon Islands include gold, copper, bauxite, phosphate, nickel, and cobalt deposits. In December of 1997, the Leigh Resource Corporation attained a prospecting license that resulted in the discovery of "a porphyry copper gold system (Tango) and a structurally hosted epithermal gold system (Vulu)" on Vangunu Island. Although these findings appear to be good news, the Bougainville civil war tends to put a damper on the process of copper mining. An interesting twist involves the mining of coral from the ocean, and sand from the beaches.

Vegetation on the Solomons vary from more than 230 species of orchids to mangrove swamps or beaches lined with a few coconut palms near the shore area. "There are two main categories of forest: coastal, subdivided into beach forest and mangrove forest, and primary inland forest, subdivided into lowland and foothill forest, freshwater swamp, and mountain forest...the rain forest becomes increasingly dense, forming an enclosed world of its own..." (Kent, 1972). Bougainvillea vines, begonias and hibiscus are prominent flowering plants on the islands. Meanwhile, water lilies have been spotted in rivers. Multitudes of fruit including coconuts, bananas, almonds, papayas and apples grow in the wilds.

Hundreds of multi-colored butterflies (ex. blue birdwind butterfly) along with various species of birds flourish in the forests. Famous birds that inhabit the Solomon Islands are parrots of every color in the rainbow, frigate birds and frogmouth birds. Within the forests lie spiders, pythons, Rana frogs, monitor lizards, geckos, skinks and the largest freshwater crocodiles in the world. About 20 distinct species of mosquitoes thrive on the islands because they thrive in the warm, wet climate. Some mammals that have evolved naturally or were shipped on boats include rats, bats, cuscuses, cats, dogs and cattle. By far the most important animals (economically) are aquatic creatures, namely fish. Bonito (a type of tuna), tunny, mackerel and porpoise are caught for commercial value. Other commodities sold for food comprise of shellfish and sea cucumbers. Amid the coral reefs swim invaluable species of tropical fish such as coral rock cod, a clown triggerfish and a gaimard wrasse. Other creatures located in the vicinity of the reefs are barracudas, sharks and longnosed garfish. Even the finback, sperm and sulfur-belly whales swim in deeper waters further away from shore.

### *A Market of Raw Materials*

One of the biggest economic problems for the Solomons includes their precarious position as a market for raw materials. Their situation resembles the stages of colonialism because of their exportation of raw goods and importation of manufactured goods. Unless they learn how to manufacture the goods they need, it will be impossible for the country to become self-sufficient. Abdul Azeez, a fisherman on Thulusdhoo (in Maldives) accurately described the economic situation by saying that, "The world will have to limit economic activity if we want to prevent a disaster. But that is not going to happen, because every country, rich or poor, wants more than it has." Solomon Mamaloni, the Prime Minister of the Solomon Islands made matters worse by pushing the previous Prime Minister's deadline for slapping a total ban on the export of roundlogs by 1999. Since the previous Prime Minister set the deadline for 1997, the new government fails to understand the urgency of the matter. Mamaloni also let the current logging be 9 times past the sustainable levels and loggable rain forests will be finished by the turn of the century. A bit ironic; logging controls will come in one year before there is nothing left to cut. (Islands Business Pacific). Mamaloni came up with selling oxygen and rain forest water to help the national deficit at \$128 million dollars (1988).

As the years pass by, the population grows more diverse because of the massive foreign investment from other countries. Coconut plantations invaded the tropical rainforests after they've been cleared for the valuable timber. Money hungry companies from Malaysia, Japan, Australia and other Asian countries take advantage of the Solomon Islanders because of their lack of economic (human-made) capital. The entire country depends on foreign countries for manufactured products, but they are not going to get these goods for free. The Islanders need to have a stable cash flow to purchase all the goods that they need. Unfortunately, the only valuable exports are natural resources such as timber, fish (tuna), and copra. While the Solomon government led by Mamaloni sells permits to the forest 'butchers' (foreign companies), the indigenous people are starting to protest. What shall happen to us if life as we know it changes with the destruction of our habitat? What will happen to our knowledge and traditions that has been passed from generation to generation for hundreds of years?

### Social Aspects

#### *The Way of Life*

The Solomon Islanders vary from island to island, and village to village. With a population of 400,000 people (WPDS, 1997), there are an amazing 60 different dialects being spoken. Religion, tradition, and other ways of life are dissimilar within each group. The Islanders even look unlike each other. "About 90 percent of the working population is involved in subsistence agriculture, but less than 2 percent of the land is under cultivation" (Diamond, 1995). A large work force in a small concentrated area of occupation emulates the situation on most of the islands. The Solomons have no railroads, about 2,100 km of road (800 km of private logging and plantation roads), 27 usable airports, two industries (copra, tuna), 4 AM radio stations, no TV, and an external debt of \$128 million dollars (www.op). Most of the population are Christian (97%), others are Bahai or still follow traditional beliefs. Each tribe or village tends to depart from the common experience because their way of life varies depending on location, tradition and beliefs.

For example, the Vaturanga live in the northwestern part of Guadalcanal, and they "depend heavily upon their traditional lands and their traditional skills for day to day survival. They grow many crops in their gardens, fish on nearby coral reefs, occasionally hunt wild pigs, and keep domestic pigs and chickens" (www.geocities). They are socially organized into matrilineal clans which control things like the land and resources. The Vaturanga believe in *tidao* (devils), female spirits, and magic (good and bad). Another example would be the Kwaio who are bush people living on Malaita Island, and they have taboos such as women being kept separate from men. Thus, the Solomon Islands is "home to some of the world's most diverse peoples" (Diamond, 1995).

#### *Education*

Education takes the number one position in the battle for the conservation of the natural resources on the Solomon Islands. During the 1960's, there were only 3 university graduates in the whole population. Families could not afford to send their sons to high school because of the high tuition, room/board and the cost of transportation to Honiara. At this time period, there existed only one high school. If someone wanted to attend a college or university, they had to be sent to Fiji, Papua New Guinea, or even Australia or England (Diamond, 1995). Although these numbers have increased over the years to sixty students attending school abroad, the literacy rate is only 60% due to difficulty in finding books or a school in certain villages. Women tend to be less educated than their male counterparts. Both sexes need to receive the same opportunities to help shape their future. Education has to be achieved because the Solomon Islanders need more doctors, scientists, lawyers and businessmen.

One of the obstacles to education is the enormous diversity of the people. The villages themselves are physically isolated from each other on many islands. Each tribe or clan has a different belief system, laws, traditions, and even languages. How can you teach everyone about their perilous situation if there are sixty languages to contend with? But, according to the citizens of Maldives, it can be done. "Even residents with little formal education can ramble on about the issue" (Filkins,

1997). What issue are they talking about? Global warming, the stubbornness of the North in limiting emissions into the air, and the threat of sea levels rising.

### *Population Growth*

According to the 1997 World Population Data Sheet, the Solomon Islands have a population of .4 million people with a total fertility rate of 5.7. However, the life expectancy of both the male and the female is uncharacteristically high on par with more developed countries. The combination of these statistics with the natural increase of 3.4% forecasts a continual increase in population. One solution to help slow down the birth rate would be to educate the women. If the women are able to work in different fields and learn about contraception, there would be a decline in the total fertility rate. Forced migration already occurs on the smaller islands due to the inability of the land to sustain the rising population. Since the soil yields only to subsistence levels of the current population, many families need to move into less impacted areas. Another limiting factor involves the shortage of freshwater on the coral atolls. Mosquitoes are the number one carriers of disease, so the members of the village can not prevent contamination by avoiding their fellow villagers.

### *Health Care Crisis*

Without necessary medical facilities and faculty, several diseases spread throughout the islands at an alarming rates. Malaria still runs rampant among the Solomon Islands because of the underdevelopment of a health care infrastructure. "In 1992, the Solomon Islands recorded a national rate of 440 malarial cases per 1,000 population" (Toka, 1997). Since malaria affects a good number of Solomon Islanders, international aid agencies need to continue with their monetary support towards a solution. For example, the United Nations Development program in Fiji donated \$548,000 for the implementation of a sustainable community-based malaria control program in the Solomon Islands (Toka, 1997). George Taleo, the national malaria supervisor on the neighboring island of Vanuatu explains that "efforts are focused on the use of permethrin-treated bednets, ultra-low volume spraying through fogging and biological control using larvivorous fish which is now increasingly being done by local communities." Accomplishing a 10 out of a thousand incidence rate and a zero mortality rate for malaria, requires the cooperation of government to create a working health care system. Other forms of illness also starts to appear as the Mamaloni government fails to initiate the development of a stable medical field. "The incidence of filariasis is increasing in tropical and subtropical areas because of the rapid and unplanned growth of cities, which provide breeding sites for the mosquitoes that carry the disease" (Maugh II, 1998). Filariasis is a fairly recent disease that affects both men and women by swelling limbs and appendages to grotesque sizes. The most interesting side to this disease is the ostracizing and rejection of people when they contract this disease.

### *Government and Policy*

By the 1900s, Great Britain had the Solomon Islands under their control. While under the first British commissioner, Morris Woodford, the Solomon Islanders lost much of their land because Woodford had a different definition of property. Villagers viewed the land as a group holding, like the commons in England. The only reason areas of land seemed vacant was during a 'rest' period. When the islanders sold their land to pay off debts or gave into the pressure by Woodford, they "often sold land with the belief that the land would revert back to them when the person who made the purchase died...purchasing the land did not mean purchasing the trees on the land, nor would purchasing the trees mean that the land had been purchased" (Diamond, 1995). Land rights remains a big problem today because most of the Solomon Islanders still have a communal ownership system. In fact, these properties are extended into the ocean up to the coral reefs in certain cases. Furthermore, some of the Islanders have tried to retrieve the land that Woodford sold to foreigners by taking them to court. Unfortunately, most of the cases heard in 1990 ruled in favor of the purchaser.

During World War II (1941-1944), the Japanese invaded the Solomon Islands. Although "the actual invasion and combat only lasted two years...its effects changed the Solomon Islanders and their

relationship with Europeans forever"(Diamond, 1995). When the Japanese occupation began, many of the Europeans left the islands. Soon the Japanese soldiers tortured the people by looting the churches and destroying villages. The Europeans that remained started a group called the "coast watchers." With the help of the natives, they managed to set up a spy ring, and broadcast ship movements in makeshift radio stations. The Solomon Islanders also helped the American soldiers by joining the Solomon Island Labour Corps whose job was to unload cargo, and bring ammunition to the front lines. After the war ended, the Solomon Islanders lost the respect and fear they had for Britain because the Americans had treated them with both respect and generosity during the war. "The country became restless under British rule"(Diamond, 1995).

In 1978, the Solomon Islands were officially declared an independent nation. However, the Solomons are still considered a member of the Commonwealth which means that Britain appoints a governor-general who advises the Solomon government. With the about 90% of the population depending on subsistence agriculture, fishing and forestry for at least part of their livelihood (www.op), the Islanders aren't too happy with the government for exporting these commodities away (agriculture, fishing and forestry is 75% of GDP). The Solomons have a 650 million pound deficit, and when the government-owned plantations were sold last year, more than 450 forestry workers became unemployed. So the foreign companies are not only getting the timber, but the government has eliminated the possibility of the Islanders earning money for doing the labor. What brilliant plan had the government thought of to help ease this horrible situation? They're going to sell rain forest oxygen and water.

The people countered this idea by stating that oxygen remains the same no matter where it's collected, and the fact that rain forest water may not be such a good idea. "The sad irony is that bottled water may become a necessity, not just a tourist item, as good drinking water becomes harder to find and the supply to Honiara increasingly erratic" (Baird, 1996). Maybe Mamaloni should concentrate more on the problems staring him in the face and less on the possibility of selling oxygen.

On a positive note, the public was outraged when they discovered that a Malaysian logging firm bribed 7 of their government ministers. Another powerful incident of protest occurred over \$10 billion dollars compensation for back-payments of profits and environmental concerns when the Panguna mine (Bougainville, Papua New Guinea) was raped of it's [sic]gold, silver and especially copper. When Bougainville Copper Limited refused to pay up, the Bougainville Resistance Organization repeatedly attacked the workers and equipment . A civil war forced the mine to close in 1989. Foreign "timber companies will fail even to abide by minimal good management practices" (Baird, 1996). When is the government going to step in and regulate what the logging companies have promised to do? Ten years from now when there are no more trees to cut? With the environmentalists and the indigenous people leading the way towards conservation, they are beginning to understand that the economy, society and the environment are not interchangeable. Wanting to limit the influence of foreign investors does not make it so, the Solomon Islanders have a lot of hard work ahead of them if they want to achieve environmental, economic and social sustainability.

#### Technical Aspects

##### Deforestation

A recent Australian study concluded that the sustainable harvest rate for the Solomon Islands amounted to 325,000 cubic meters per year. "Actual logging rates are 700,000 cubic meter per year...The government, however, has issued logging licenses for 4,000,000 cubic meters per year...such an elevated logging rate (12 times the sustainable rate) could deplete the Solomon Island's forests in only three years" (Lineback, 1998). With only 5 million acres of tropical rain forest left, these logging rates are alarming. The Solomon government seems to believe that they don't have much of a choice when it comes to selling the Island's timber off to the highest bidders. Foreign investment companies buy plots of land by purchasing a permit from the government to cut down the precious trees. Logging companies are by far the biggest threat to the tropical rain forests, and

yet they are still increasing their production rate. Some companies have resorted to illegal exportation and the violation of sacred tribal sites. In addition, the coconut plantations also owned by foreign investors treat the land without any environmental considerations. The constant use and re-use of the same areas of land also degrades the soil. Include all the subsistence farmers that still use the slash and burn technique into the equation, and the forests don't have a chance. In fact, firms have started to "violate established conservation practices by cutting slopes of more than 30 degrees, which causes erosion, and within 50 yards of streams, which pollutes the waterways" (Gray, 1996).

### *Soil Erosion*

Since the nutrients in the tropical rain forest are not stored in the soil, the loss of deep-rooted trees can convert the soil into a drier mass vulnerable to wind and rain. While the trees suffer harsh logging rates, the streams and rivers become polluted with infertile runoff. With the logging companies ignoring the "rule that says they must leave a strip of untouched forest beside any waterway" (Baird, 1996), bodies of water fall victim to discarded sediment. Much of the dirt discharges into the water, and it flows down river all the way into the ocean. Furthermore, coastal erosion interferes with the process of sedimentation that protects the shoreline from storms and hurricanes. Any change in the process, "through alterations in external factors such as sediment supply, wave direction, wave height and vegetation growth, will elicit a temporary response in island size, shape or location" (Bayliss-Smith, 1988).

### *Habitat Destruction*

Cutting down the rain forests affects more than just the soil. Various species occupied the forest, and they depended on each other for survival. Unlike other areas the climate on the Solomon Islands creates "a competitive environment where monocultures, or large areas of a single species, seldom occur naturally. The rain forest, then, is composed of intermingled species, rather than large stands of one species" (Lineback, 1998). Without fertile soil the different types of vegetation such as the underbrush or flowers perish. After the plants die from malnutrition, the herbivores that counted on the vegetation for nourishment die of starvation. A pattern forms when the animals that feed upon insects or small herbivores die without their food source. Finally, the process reaches the Solomon Islanders who can't grow crops or hunt any animals to feed themselves.

Habitat destruction can also occur beneath the ocean's surface in the coral reefs. Several things contribute to the eradication of the process that keeps the reefs alive. The most direct method involves the collecting of coral for the conversion into lime. "Mining coral removes habitat of local marine species, and weakens coastal storm defenses" (Meltzoff, 1988). Hurricanes are common in the Solomon Islands, and they can create sandbars offshore if they beach doesn't possess enough sand. Another example is when sedimentation from deforestation makes it into the ocean, then the water quality drops. The change in quality could affect the organisms that build up the coral reefs. With less sunlight hitting the surface of the water, photosynthesis slows down, and fewer amounts of plankton are produced. For plankton feeding fish, the loss of nutrition means a reduction in the population size. Food chains in the ocean alter as the number of species in the water changes dramatically. On the other hand, if too much nitrogen and phosphorous flow down into the ocean, dangerous algae blooms can occur. Such occurrences have been known to kill fish, shellfish, and possibly humans that come in contact with either of the previous two. Massive clumps of plankton also attracts heat, so the water will invariably become warmer which can affect the coral reefs.

### *Fisheries*

The Solomon Islands' fisheries are definitely in trouble with the amount of overfishing taking place. "Most important in the Solomon Islands...is the open-sea commercial tuna fishery, whose dominant pole-and-line technology is completely dependent on a regular supply of live baitfish from coastal lagoons under customary jurisdiction" (Hviding, 1996). Commercial fishermen along with natives catch two times more fish than the ocean can supply naturally. An increasing trend between these two parties includes a major debate between the local population's "limited entry" ideology and the industrial sector's "open access" ideology. The former ideology concentrating more on area-intensive

marine resource use versus the latter ideology of area-extensive. Since fish brings in large amounts of money (about 30% of all income earnings), the country fails to regulate the market efficiently. Furthermore, tribal peoples also depend heavily on what they catch from the ocean to survive.

### Global Warming

"For such countries--the Maldives, the Solomon Islands, Samoa, Fiji and others--even a small rise in the world's sea levels could mean not just washed-out sea walls and eroded coastlines but national catastrophe and even extinction"(Filkins, 1997). Many of the Solomon Islands are barely above sea level especially the coral atolls and the raised coral reefs. If global warming continues to melt the polar ice caps, then the Solomon Islanders need to prepare now for a possible disaster. If the predictions of a rise anywhere from 6 inches to 3 feet by 2100 (International Panel on Climate Change) comes true, there must be massive migrations unto safer islands. Although the islands themselves are not producing the dangerous emissions, they are the ones who will pay the price for them. The developed countries like the United States are refusing to cut back the air pollution to the levels asked for by the Pacific Islands.

### Biodiversity and Exotic Species

As the environment changes whether it was due to a change in temperature (climate or ocean) or quality (water, air or soil), the species habituating that area must change as well. Darwinism starts to penetrate the Islands because only the strong will survive. When scarcity hits the Solomons, the organisms that can live off the least amount of food or water shall prevail. An extremely wonderful example of a complex ecosystem that may soon be threatened are the mangroves. The mangroves are tropical wetlands that possess unique qualities not found in any areas of the world. For example, the mangroves contain highly saturated soils and trees with three unusual features. They have prop roots which balances the tree on unconsolidated soil, and unwittingly becomes a center of biodiversity. Pneutophores (snorkels) and viviparous seeds are the remaining characteristics which allow the mangroves to thrive in a stratified area impacted by freshwater (from the rivers) as well as saltwater (from the ocean).With only .2 square kilometers [sic] of salt-tolerant mangroves left, these rare wetlands must be protected.

A narrow surviving corridor of species decreases the biodiversity of the islands because natural selection leaves behind several organisms. The ocean will also start to homogenize when water quality changes, and only a few marine creatures can adapt quick enough to survive. Although evolution takes decades or even centuries to change the demography of species, the threat of exotic species seems to be moving quicker than ever. For some reason, exotics are able to thrive in less than favorable conditions compared to native species. Combined with one or all of the other environmental problems, exotic species can be the end of many organisms. The Solomon Islands communicate with other countries mainly by ship because of their isolated situations. Usually ships travel all over the world, and they can be carriers of exotic ships especially with the practice of using "ballast water." For the time being, the major exotic species infestation in the Solomons are ants.

### Problems

#### *Social Problems*

Solomon Islanders tend to live in isolated villages along different islands (with the exception of Honiara), and they rarely share a common culture. With such a diverse population, achieving certain goals are only going to be the result of hard work and dedication. Problems that stem from the enormous variety include:

- Nationwide communication due to the language barrier.
- The establishment of treaties or contracts between the government, the native population and the foreign investors.
- Educational progress in accordance with the development of new structures and faculty.
- A shift away from short-term benefits.

### *Economic Problems*

As a developing country, the Solomons are no exception when it comes to their economic standing in the world. Their economic status mirrors those of nineteenth and twentieth century "colonies" to the stronger powers. The more developed countries (ex. Japan) sell the Solomon Islands manufactured goods, in return for raw materials such as timber and fish. As a market for raw materials, the Solomons experience these problems:

- Dependence on developed countries for manufactured goods.
- Exportation of slow regenerative products.
- Lack of capital and infrastructure.
- Loss of employment due to selling raw logs.
- Controversies between natives and foreigners over land and sea ownership.

### *Political Problems*

"Particularly important, moreover, are the roles of formal political institutions as mediators and conveyors of the different views of traditional users and new parties" (Hviding, 1996). The government holds the key to uniting the Solomon Islanders in the struggle for their resources:

- Government regulation of tropical rainforests.
- Government enforcement of conservation practices and environmental policies.
- Government subsidies for the advancement of education and research for export substitution.

### Opportunities

#### *Social Opportunities*

With the Solomon Islanders being such a diverse nation, the language and cultural barrier between each tribe poses a serious threat to any community based project. Since the educational programs are behind in manpower and technology, there must be a major push towards a new network which includes the development of new facilities to teach the people within their own villages. To stop the alarming rates of destruction of the forests and aquatic environments, people are going to have to understand one another. Simple as it may sound, the cultural gaps between each individual tribe, the collective indigenous population and the commercial or industrial (usually foreign) investors run miles apart from each other. The first step to beach such distances between tradition and modern styles of thinking revolves around educating all parties. This goal involves massive changes to existing structures of educational policy because there are not enough faculty or administration to implement such an extensive plan. However, the most important factor (in anything these days) in the building of new schools and colleges is and always will be money. The real challenge to this project requires looking at the long-term benefit rather than the short-term, but today's economic policies are geared towards the immediate gain.

#### *Economic Opportunities*

If the Solomon Islands remain a market of natural resources, long-term problems will arise due to scarcity. The natural resources taken out of the earth will not be able to regenerate themselves as quickly as before, and with an increasing population this trend could speed up even more. A proposed plan includes "the regime of investment incentives will be streamlined and reoriented to induce import substitution activity, production for export markets and tourism development as means of reducing the country's dependence on imported manufactured goods and the export of primary products"(www.solomons). However, the production of substitutes and the creation of a tourist industry utilizes a lot of time, energy and capital.

Since the government has been selling their former plantations wholesale to foreign investors, the Solomon Islanders lost a vital income because the logging companies were able to cut and transport the raw logs themselves. Creating a substitution process for things that the Islands usually import, the government could give jobs back to the people in that production line. Starting this project takes a group of professionals who are well-trained in the sciences of economics and ecology. These scientists need to work together in assessing the islands for elements that can be used for substitution as well how to set up an industry without creating more damage than the rampant logging managed to do. After the creation of the working process, the Solomon Islanders learn the trade and passes it down from generation to generation. Preferably, every village adds extracurricular activity to educate the public in the dangers of unsustainable living like the people of Maldives.

Eco-tourism seems to be the new rage within the development of beautiful third world countries. In fact, the Solomon Islands looks like "an ideal vacation spot-sparkling, clear blue water, a fine sandy beach, great reef diving, snorkelling, canoeing and fishing, not to mention friendly people and delicious seafood...there's always hiking in the pristine rainforests, visits to the colourful local markets, or absorbing the local culture"(Hunnam, 1996). With all these wonderful things to do, who wouldn't want to spend an ideal vacation here (see Figure 4)? The Michi Village, a small community tourism venture was designed to meet community, cultural and conservation needs (1997). The "tourism project has also brought social and cultural benefits to the community...traditional customs, dance, song, and history-undocumented knowledge passed orally from one generation to the next..." (Hunnam, 1997). The key to the success of this resort was the involvement of the community and the joining of indigenous knowledge to the professional arena of thought.

Although the Michi Village achieved success, "the Solomon Islands are not well suited for mass market tourism, because of their size and fragility of the environment, and because of the inconvenience in transport, as yet rudimentary infrastructure, and the high cost of getting to and staying in the islands"(www.boh). Another pressing problem for the islands are the numerous cases of malaria. "Although research has been conducted over the years, malaria remains a serious problem and an impediment both to foreign travel and foreign investment" (www.boh). Most critics of eco-tourism on a massive scale agree that the only beneficial solution contains a plan for a niche market aimed at small pools of tourists. On a local level, one group of handcrafters look forward to the increase in local market opportunities, while the other side (mainly fishers) are nervous about a serious decrease in native access to the fishing grounds. Since the bulk of tourists visit the Solomon Islands for the "untouched" coral reefs, the local fishers are wary of resorts marking off places for them to fish because of the wants of the tourists. "Despite this emphasis of the tourist operation on not touching the reefs, but merely looking at them, conflict has arisen at intervals between the resort managers and the groups who use and have customary control over the reefs where diving takes place"(Hviding, 1996). Customary respect for the leaders of *butubutus* (tribes) requires the resort managers to ask for permission to dive around the coral reefs as well as monetary compensation. Needless to say, this tradition causes several problems between the local and foreign players.

#### *Political Opportunities*

With the government allowing the foreign logging and fishing companies to reap all of the Solomon's natural resources, the people have to take action. Prime Minister Mamaloni has proposed to sell oxygen and rain forest water as a solution towards environmental sustainability (Baird, 1996). This idea remains absurd considering the fact that within the turn of the century the loggable rain forest will be demolished. The Mamaloni government should begin demanding the implementation of conservation practices and restrictions on the extraction of natural resources. For example, a simple thing that the government could do was to enforce the conservation laws already in place like forcing the logging firms to cut the slopes less than 30 degrees which would avoid erosion and the pollution of the waterways (Gray, 1996). Or simply planting more trees, and cutting them down at a decreased rate. Limiting the number of plantations (timber or coconut) will help conserve the soil, and keep the waterways cleaner. Furthermore, the government can incorporate the indigenous knowledge from

the native population with scientists to create a workable plan in reviving the ravished areas. After all, the Solomon Islanders used to rotate the fields and they all are professionals when it comes to subsistence farming.

In the ocean and surrounding aquatic areas, the government must take a stand with the locals in their move towards environmentally stable fish and shellfish populations. Instead of catering to the needs of the foreign investors, the Mamaloni government needs to improve the depleting numbers of sea creatures (tuna being the number one fishing industry). Since the sheltered reef and lagoon systems of the Solomons have suitable conditions for lagoon-based aquaculture, the Solomon Islanders started small-scale farms of seaweed and giant clams. These clams are a highly valued local food, and a potential export for the Asian markets. Unfortunately, the value of the giant clams triggered extensive poaching by mainly Taiwanese ships. One thing the government created in cooperation with ICLARM (International Center for Living Aquatic Resource Management) was an international coastal aquaculture research center. This center resides at Aruligo on the northwest side of Guadalcanal, and was established by the Manila-based ICLARM in 1987. The Aruligo research center aims "to develop suitable farming systems for the village-based cultivation of giant clams, with a view both to rural cash cropping and to restocking depleted reefs" (Hviding, 1996). For the Solomon Islands this experiment qualifies as a big step forward in the conservation and protection of the coral reefs and the surrounding waters.

### Conclusions

The Solomon Islands possess valuable natural resources that should be protected because they are vanishing at an appalling rate. Beautiful lagoons, rushing rivers and lush rainforests cover the islands, and contribute to the illusion of a tropical paradise (see Figure 5). In reality, the Solomons resemble a giant magnet that attracts foreign investors and commercial opportunists. According to an Australian study, logging companies devastate the rainforests at more than twice the sustainable rate, around 700,000 cubic meters a year. What does the Mamaloni government do to try and stop the unsustainable rate? The government issued even more logging licenses that added up to a harvest rate of 4,000,000 cubic meters per year (Lineback, 1998). Another large export commodity for the Solomons involves massive amounts of fish. With the natives fishing for their survival and the commercial enterprises fishing for money, the number of catch per unit effort decreases. In other words, catching the same amount of fish for everyone will take a larger amount of energy (technology or labor). Furthermore, the majority of the population remains unaware of the pressing problems happening around them. Without the creation of a stable health and educational infrastructure, the Solomon Islanders can not deal with the onslaught of social-economic problems. The only way to improve the conditions of the Solomon Islands involves the full cooperation of the government in protecting the environment and providing adequate information to ensure the survival of the people. What has the government recently proposed to help the islands? Selling rainforest oxygen and water seems ridiculous as a solution to the preservation of the natural environment. Unfortunately, the government still needs to get their heads out of the clouds, and plant their feet firmly on the ground.

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