

**Land Ownership, Population
and Climate Change Issues
in PNG: Perception versus
Reality, Rapatona
Communities, Manus
Province**



In the Beginning: there was a Quote

“I (my clan) own a very big piece of land here but I (my clan) do not know how much it measures, what it contains and how much it is worth”.

(LLG President, Rapatona LLG, 2020)

Insight

Many similar sentiments like this were expressed throughout the Rapatona Socioeconomic Impact Study carried out in 2020 by a UPNG research team

- What drew my attention to this topic

Research Questions

- What do people NOT know about their land?
- What do people perceive as the size of their land?
- What do people in reality own as their land?
- What the effects and signs of population and climate change were affecting their livelihoods, environment and their psychology?

These questions emerged from this event and continued to tingle my mind which has led me to writing this paper which I hope makes sense.

They form the basis of my talk - highlight the realities and perceptions of land, population and climate change issues in Rapatona

I then try to create a *philosophical* or *theoretical connection/linkage* between these issues and thus, try also to explain this connection(s) – *scientifically* or through a *scientific process* – more specifically – one I refer to a *social scientific* process

Introduction

- **Land** in PNG is paramount– owning land, identifying ones land, attaching to ones land are vital aspects for one’s existence (whether one creates good or bad outcomes – land remains)
- Land in PNG can also be seen as a ‘heartbeat’ for the livelihoods of all people(especially those living in rural village communities) whose lives entirely depend on the land for their survival
- Rural communities make up about 75% of the national population and are strongly connected to their land
- In PNG about 95% of land is customarily-owned (communally by tribal or clan groupings)
- Amidst these land issues, **Population** and **Climate change** are also impeding global issues affecting both industrialised and developing countries, rich and the poor people those living in urban and rural areas and those living in **small island communities**
- All these in one way another, big or small, direct or indirectly affect all parts of the globe and PNG, Manus-Rapatona and the small island communities of Pak, Tong and Nauna are no exception

Data Used for this Study

Obtained from the Socioeconomic Impact Study carried in Rapatona in 2020 initiated by the Manus Provincial Administration which engaged the UPNG research team under the leadership of Prof Chalapan Kaluwin to provide data for Manus Autonomy Project 2050 (MAP2050)

MAP2050 is a strategic vision and plan for the Manus Provincial Administration to support all LLGs in the province by way of empowering their respective communities and people to increase self-reliance, socioeconomic, political and financial security and sustainability (especially during natural disasters and epidemiological threats such as climate change and COVID-19) as a step towards achieving autonomy status

This study collected data on population, housing, social, culture, economic, environment, agriculture, food, amenities, communication, environment and climate change information

Parts of my discussion will include the data/information obtained from this source with particular focus on *land*, *population* and *climate change* issues

Methodology

- Research Approach Used: Mixed Method (Quantitative and Qualitative)
- Research Methods: Questionnaire interviews, focus groups discussions, interactive discussions and personal interviews
- Sampling Method: 1:10 ratio determined by total number of households in Rapatona in 2011
 - *i.e 746 households (and population of 4, 440)*
- Sample Size: 79 households covered
 - Sample population: 410 people
- Coverage: 9 wards of Rapatona LLG
- Sex Composition: Males: 233 Females: 177
- Selection of Households: Random

Research Problem & Questions

Research Problem

- There is no clear understanding on the connection or relationship between land, population and climate change in PNG based on a Perception versus Reality dichotomy
- Is there are relationship between land, population and climate change? And if there is -
- How can we create a conceptual linkage between land, population, climate change and measure this link quantitatively or statistically to measure changes overtime?

Research Questions emerged:

- What do people not know about their land and, if so, *what they must know?*
- What do people *perceived as the size* of their land?
- What do people in *reality own* as their land?
- What the *effects and signs of population* and *climate change* were showing on their livelihoods (shorelines, food and diet, village settlements and their psychology)?

Aim & Objectives

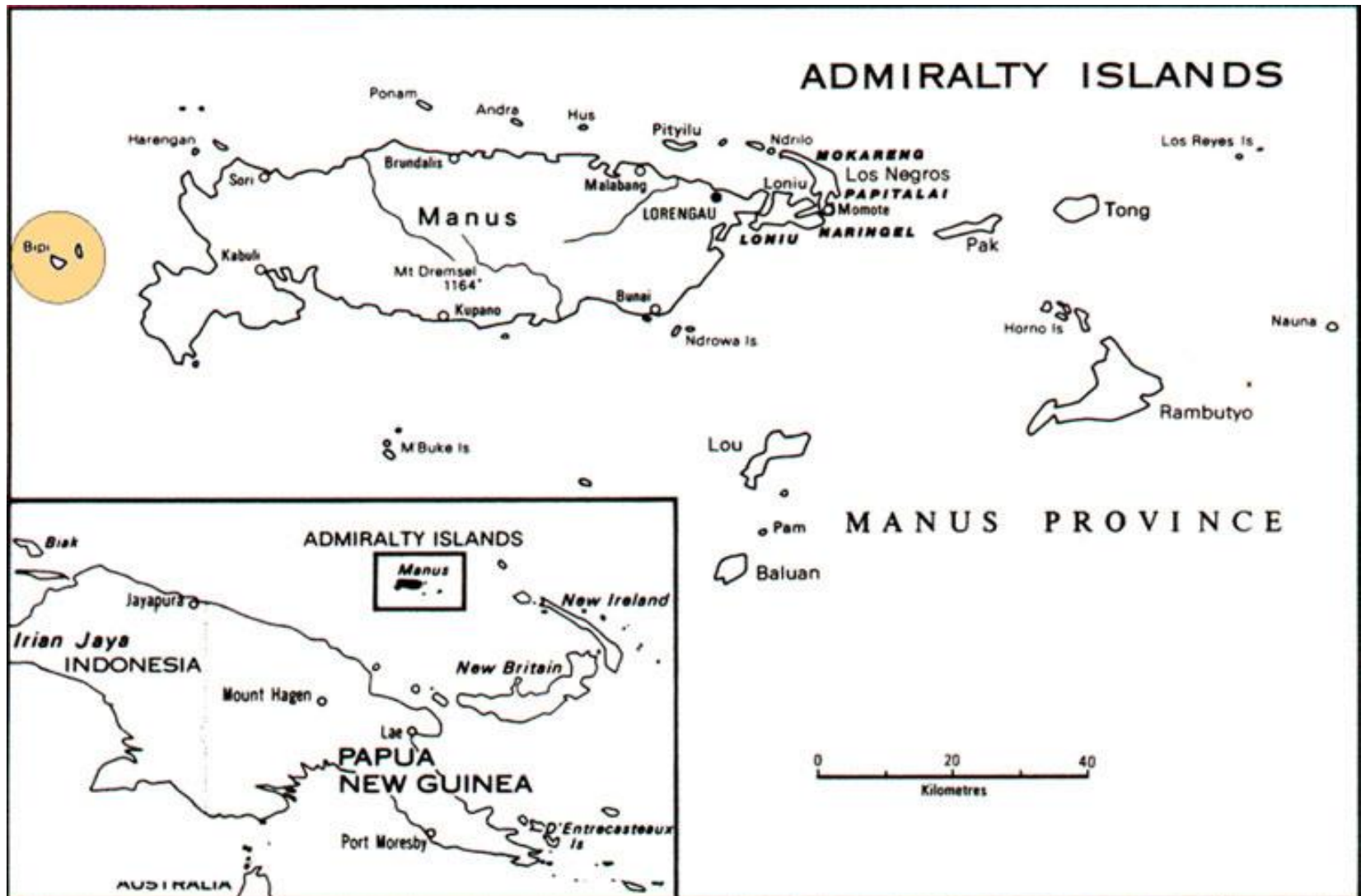
Aim

- Explore the philosophical notion of PERCEPTION versus REALITY based on the relationship between Land, Population and Climate Change issues in a PNG context (Rapatona)

Objectives

- To find a connection between these factors or variables
- To explain how each affect each other
- To explain scientifically using a social scientific approach
- To make logical sense or to make sense logically

Background: Study Area



Literature Review

Land Issues

Village communities are holistically (socially, culturally, psychologically, economically, politically, psychologically, environmentally etc) connected to land

Land communally owned

Land used for livelihood and survival (gardening, gathering, housing materials, medicine, food source)

Andersen (2006: 138) Land Debate in PNG - from 2 sides – PNG (recognition of a wider value of land) vs western view (economic – commercial reductionism phenomena)

Land has special meaning to landowner because it means everything to him/her/them

Narakobi (1998: 8) – expresses this ownership poetically

Population Issues

- **Size** – high and increasing (about 9.3 million)
- **Growth Rate** - high (2.3% p/y)
- **Composition** – concentrated in the young age group (under 25 years)
- **Distribution** - unequal in different provinces & increasing in urban areas through migration
- **Density** – different very high in landlocked provinces (like Simbu) and on small island communities in New Ireland, Milne Bay, ARoB, Manus
- **Natural Increase (births – deaths)** - high
- **Migration** - high and increasing (esp. rural to urban areas)

Climate Change Issues

CC Issues – already having significant effects on communities in PNG on highland and coastal areas

- Rising temperatures
- Changing rainfall patterns
- Floods and droughts
- Increasing cyclones
- Sea level rise (SLR)

These affect ecology and livelihoods of people

- Food security
- Health and Education etc
- **SRL Rise**
- **Bf Loss**
- **Social Science Approach**

Sea Level Rise

As oceans warms, it expands causing SLR (also melting of glaciers and ice)

- According to Pacific-Australia Climate Change Program (PACCP, 2015: 6):
 - SLR in PNG increase by 77 mm since 1993
 - Global average about 2.8 – 3.6 mm p/y
 - By 2030, very high emissions scenario, SLR expected to increase between 8-17 cm
- Calculated that 1 cm = 1 m of Beachfront Loss due to SLR

Perception vs Reality: Reality

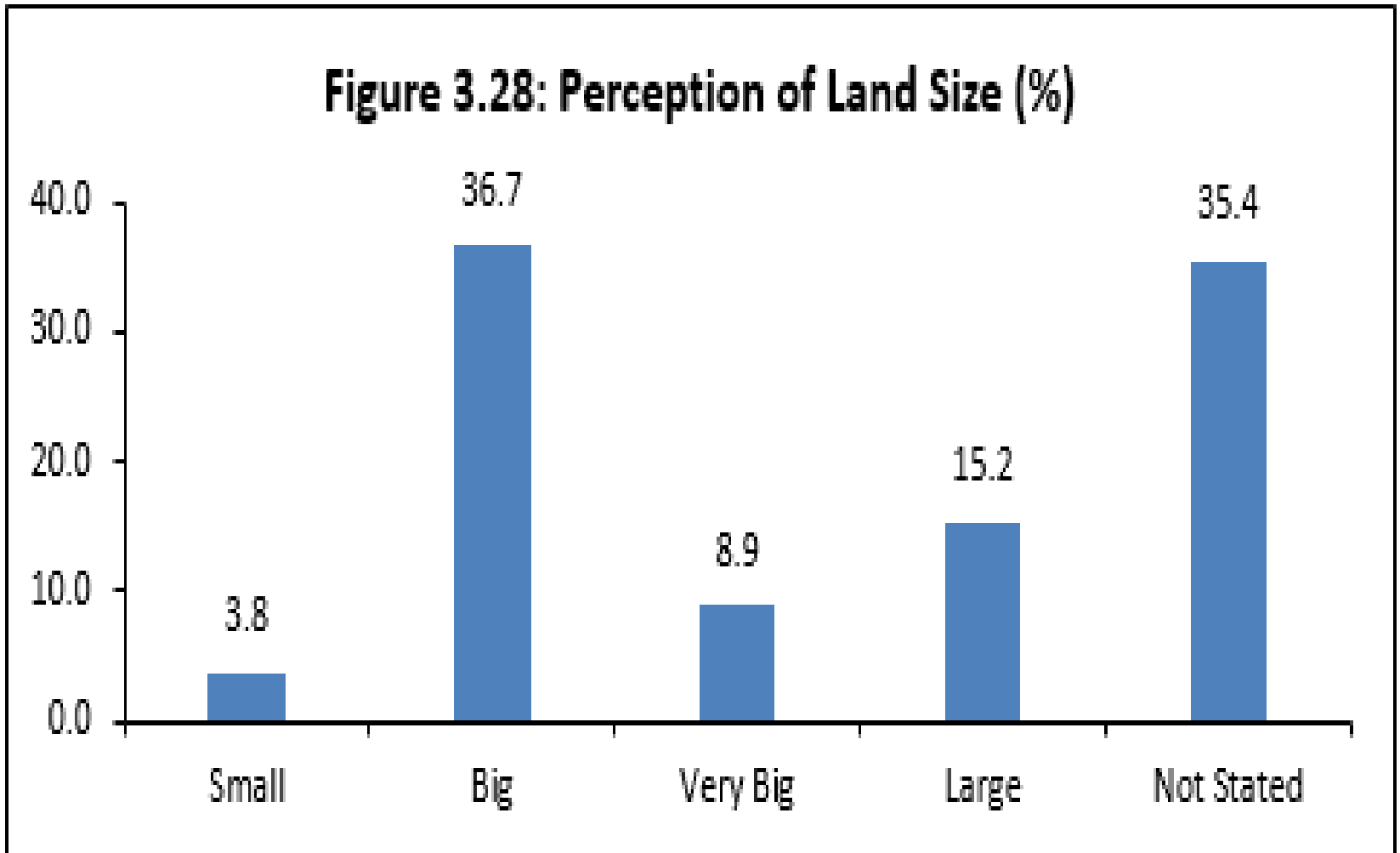
Rapatona LLG	
Item	Change Factor
Land	
Land Area	131.878 km²
Sea Area	
<u>Population</u>	
Population Size	3, 361 in year 2000
Growth Rate (%) since 2000	Increase at 2.53% per year
Population Composition	35% under the age of 15 years
Population Distribution	Located mainly on the coastline
Climate Change	
Sea Level Rise (global average)	3.2 mm per year (3-12 mm per year)
Beachfront Loss (global average)	1 cm = 1 m of Bf lost along coastline

Reality vs Perception

Reality	Perception
Land Area (sea area) Arable land, customary land, forest, water, gardens, hunting grounds	Still Big – will always be available
Population Change Births, deaths, migration, resettlement,	Normal change
Sea Level Rise Global average = 3.2 mm per year (3-12 mm per year)	Bit of a concern (increasing)
Beachfront Loss Average 1cm = 1 m of Bf lost along coastline	Clearly noticed

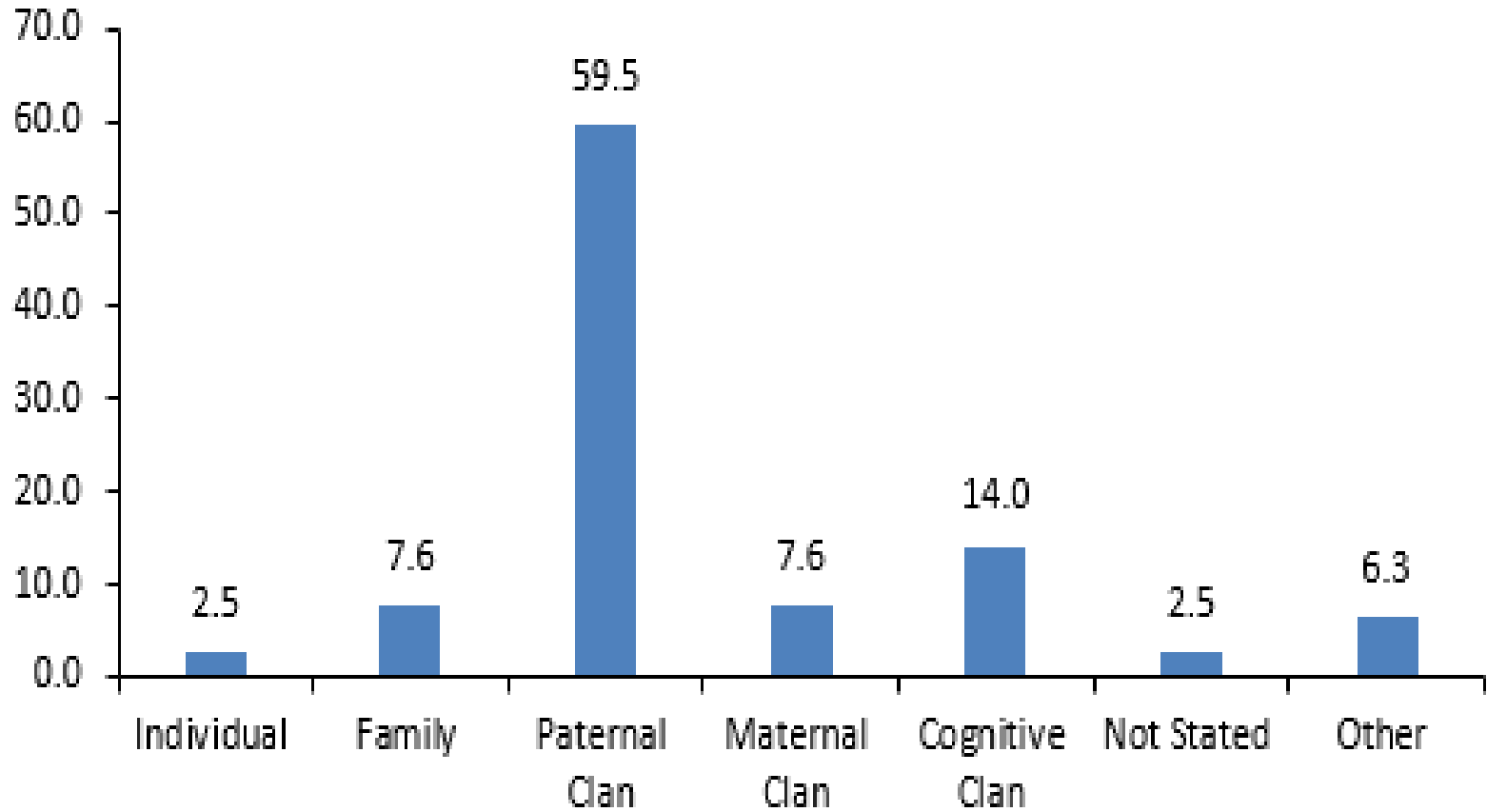
Land: Perception

Figure 3.28: Perception of Land Size (%)

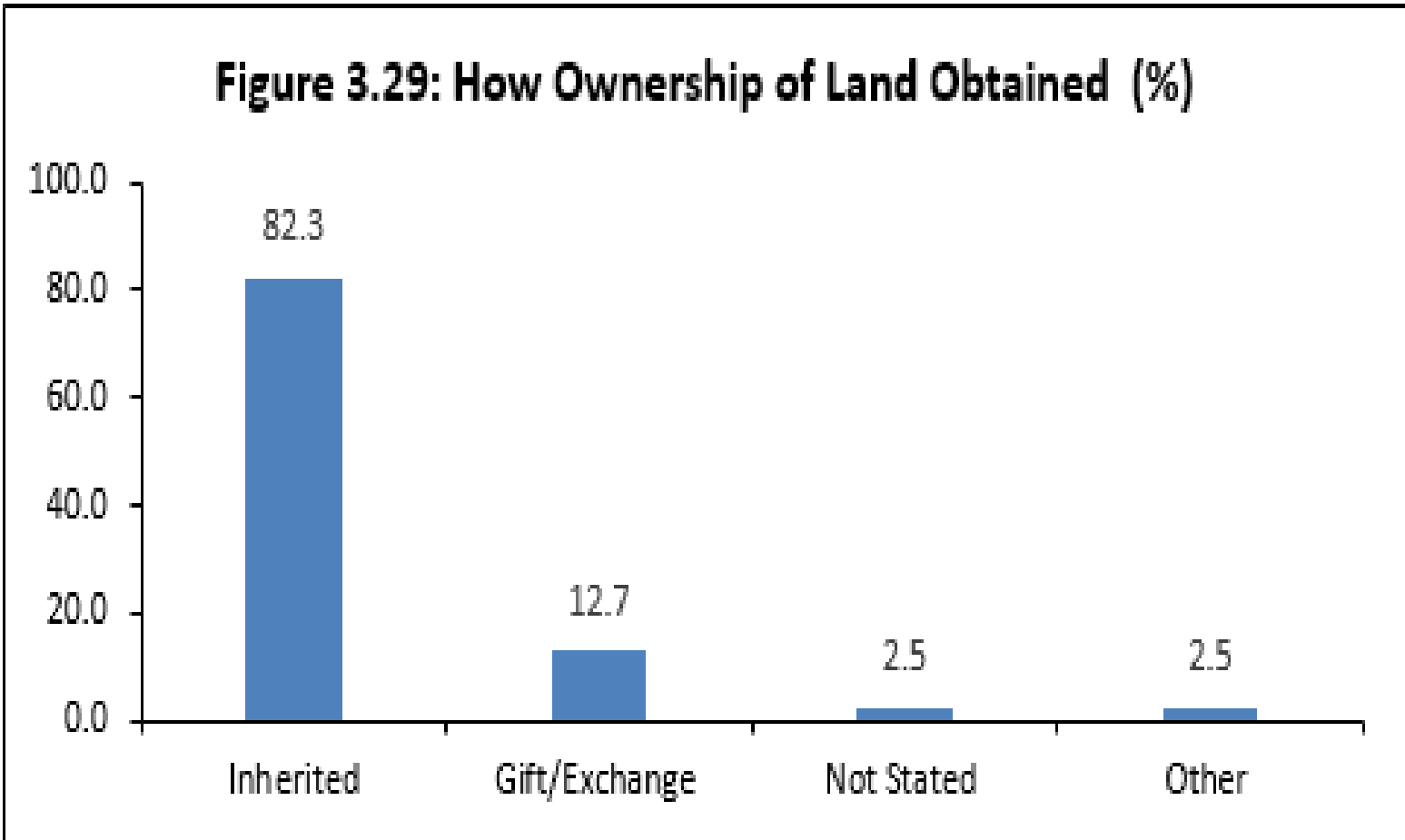


Perception or Reality?

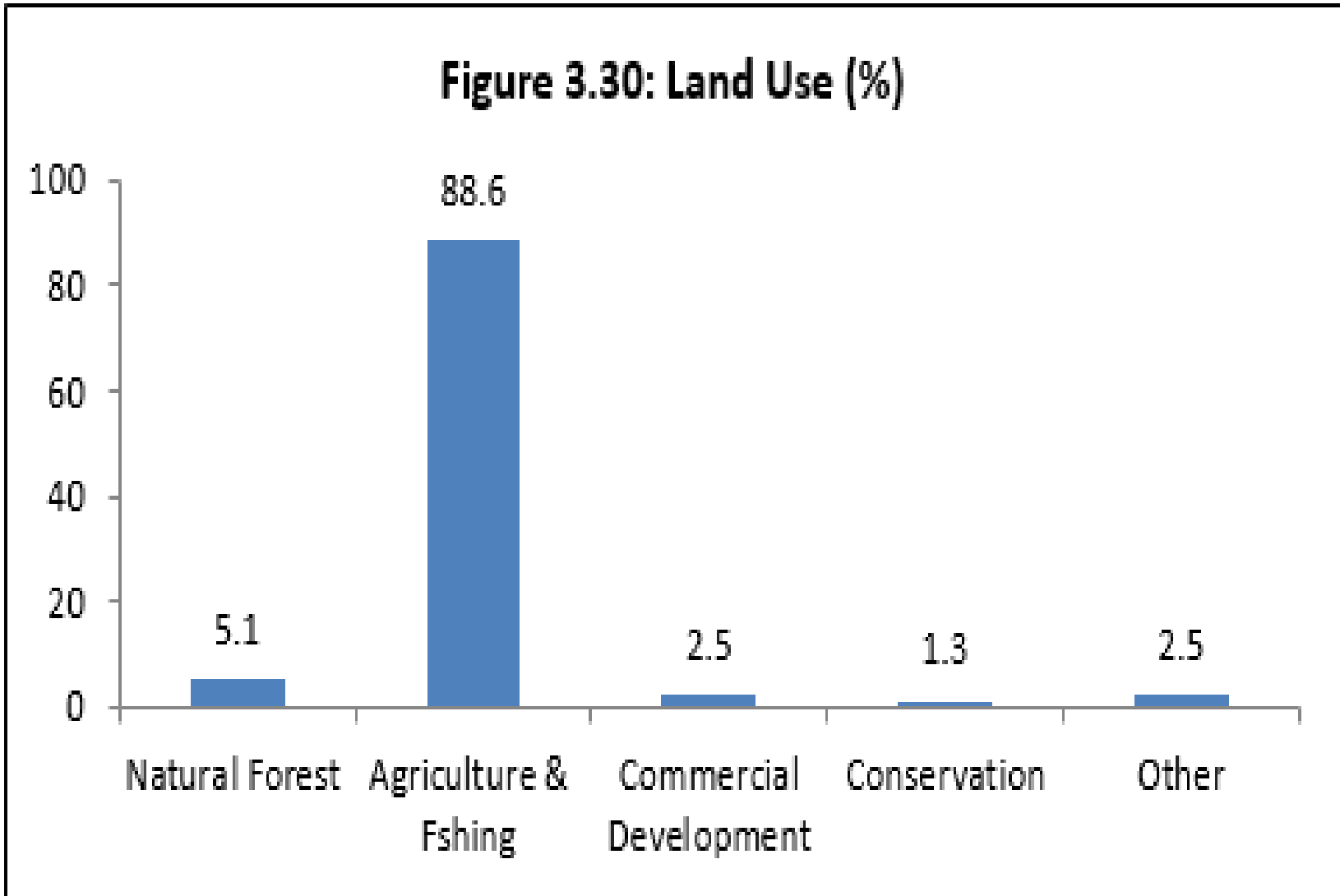
Figure 3.27: Ownership of Land (%)



Perception or Reality?



Perception or Reality?



Climate Change: Perception or Reality?

The study results revealed that 96.2% (76/79) of persons interviewed, knew something about climate change. The most popular factor:

- | | |
|---|------------|
| • increase in temperature | 40 (52.6%) |
| • human activities' | 21 (27.6%) |
| • others | 17 (22.4%) |
| • change in weather patterns | 11 (14.5%) |
| • increase emissions of carbon-dioxide (CO ²) | 2 (2.6%) |

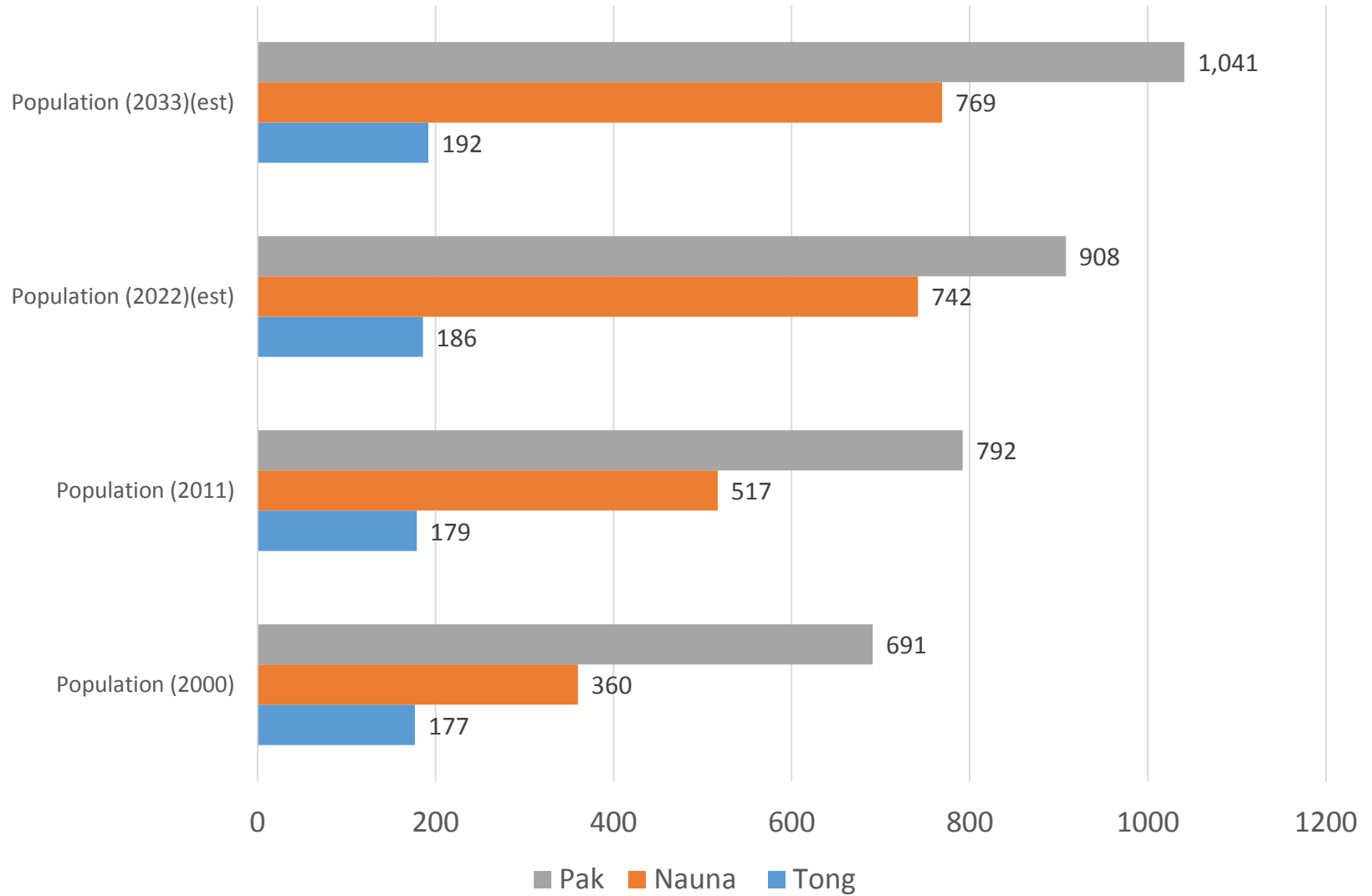
The concern here:

- No scientific or statistical evidence to prove these issues to be real or false (reality or perception)
- Lets examine this relationship through a social science approach (L-P-CC)

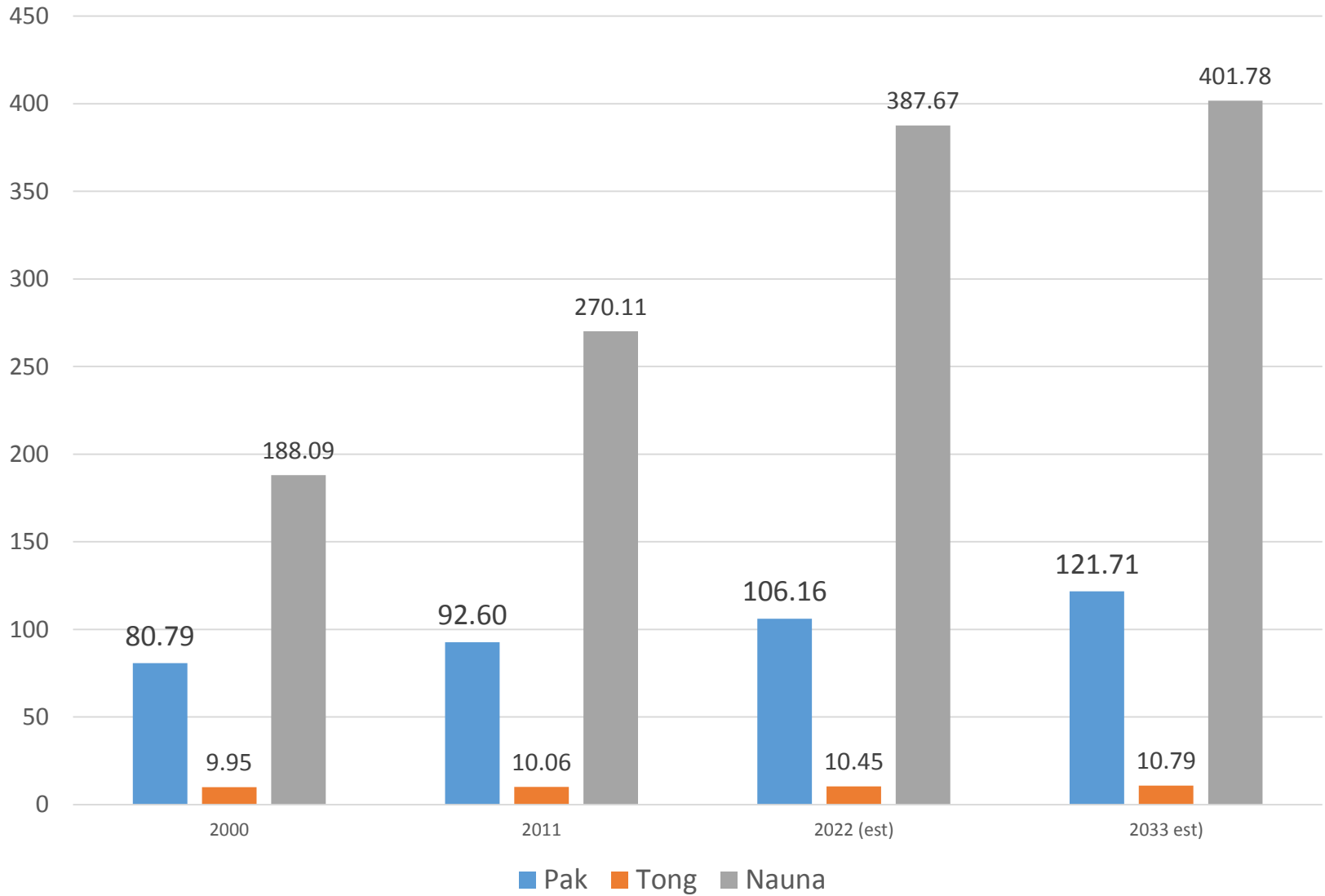
Population Density (land & population)

Place	Land Area (km ²)	Popn (2000)	PD (km ² /p)	Populati on (2011)	PD (km ² /p)	Popn (2022) (est)	PD (km ² /p)	Popn (2033) (est)	PD (km ²) (est)/p	Growt h Rate (%)
Manus	2,100	43,387	20.66	60,485	28.80	84,318	40.15	117,542	55.97	3.02
Rapato na	131.878	3,361	25.49	4,440	33.67	5,926	44.94	7,666	58.13	2.53
Rambut yo	103.614	2,133	20.59	2,953	28.50	4,090	39.47	5,664	54.66	2.96
Pak	8.553	691	80.79	792	92.60	908	106.16	1,041	121.71	1.24
Tong	17.797	177	9.95	179	10.06	186	10.45	192	10.79	0.36
Nauna	1.914	360	188.09	517	270.11	742	387.67	769	401.78	3.29

Population Size of Pak, Tong and Nauna, 2000-2033



Population Density of Pak, Tong and Nauna, 2000-2033



Climate Change: SLR & Bf Loss – Explanation

SLR:

Low variant:

- $3\text{mm/y} \times 11$ (2000-11) + $3\text{mm/y} \times 11$ (2011-22) + $3\text{mm/y} \times 11$ (2022-33) = total (2000-33) = $33 + 33 + 33 = 99\text{mm}$

Medium variant:

- $7\text{mm/y} \times 11$ (2000-11) + $7\text{mm/y} \times 11$ (2011-22) + $7\text{mm/y} \times 11$ (2022-33) = total (2000-33) = $77 + 77 + 77 = 231\text{mm}$

High variant:

- $12\text{mm/y} \times 11$ (2000-11) + $12\text{mm/y} \times 11$ (2011-22) + $12\text{mm/y} \times 11$ (2022-33) = total (2000-33) = $132 + 132 + 132 = 396\text{mm}$

Bf Loss: 1 cm = 1 m bf loss along coastline

Climate Change: SLR & Bf Loss

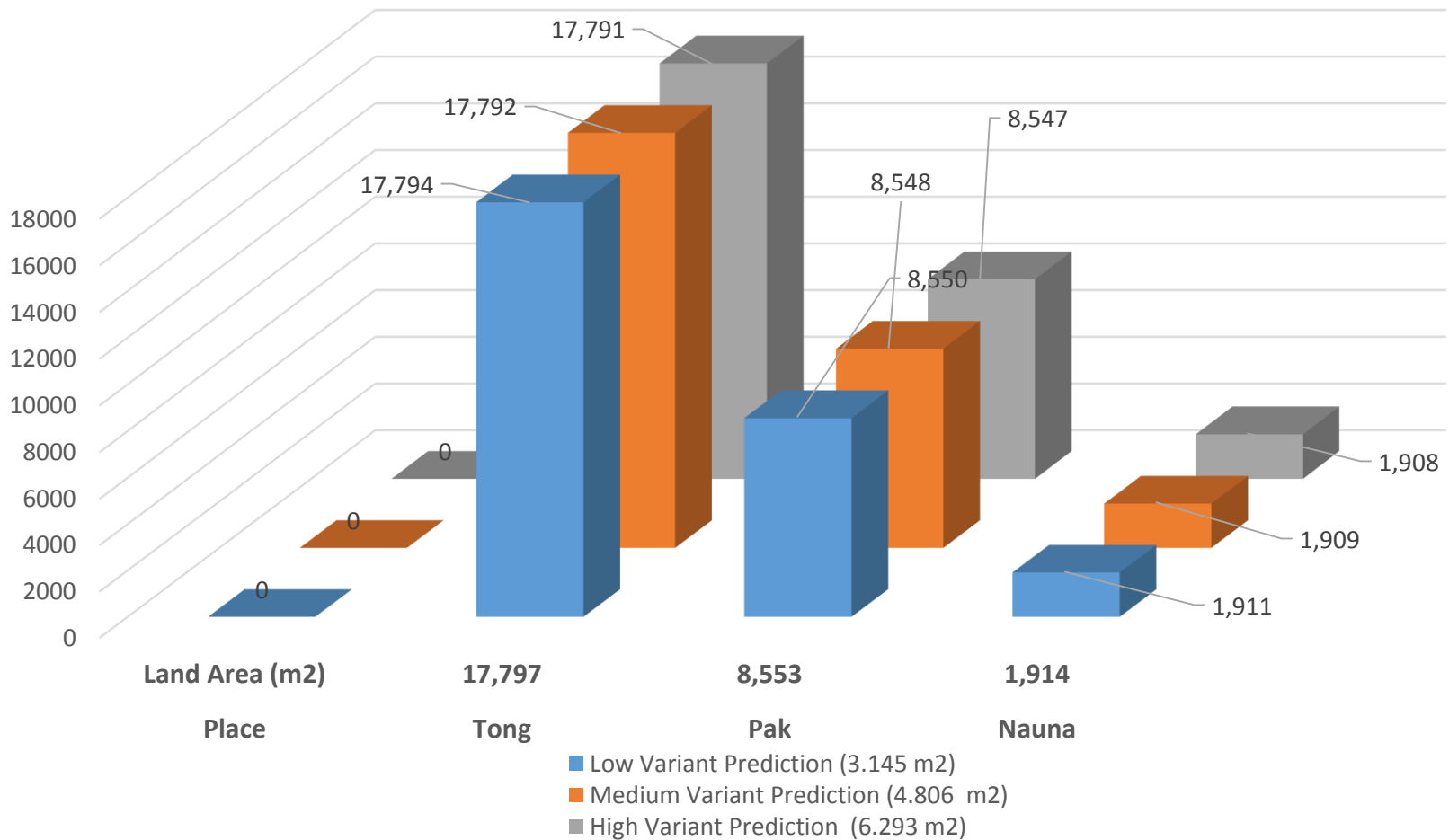
Period	2000-2011			2011-2022			2022-2033			Total		
Variance	SLR (m m)	SRL (cm)	Bf Loss (m)	SLR (m m)	SRL (cm)	Bf Loss (m)	SLR (mm)	SLR (cm)	Loss (m)	SLR (mm)	SLR (cm)	Bf Loss (m)
Low variant (3 mm/y)	33	3.3	3.3	33	3.3	3.3	33	3.3	3.3	99	9.9	9.9
Medium variant (7 mm/y)	77	7.7	7.7	77	7.7	7.7	77	7.7	7.7	231	23.1	23.1
High variant (12 mm/y)	132	13.2	1.32	132	13. 2	1.32	132	13.2	1.32	396	39.6	39.6

Connecting Land, Population & Climate Change

Period	2000-33			Bf Loss (m)			Total to end of period		Total Land Area (km ²)	Total Land Area (m ²) remaining due to SLR
Place and Variant	SLR (mm)	SRL (cm)	Loss (m)	2000-11	2011-22	2022-33	2000-33	Sq. root of Bf loss (m ²)		
Tong										Total land area in m ² (17,797)
Low variant (3 mm/y)	99	9.9	9.9	3.3	3.3	3.3	9.9	3.146	17.797	17,794
Medium variant (7 mm/y)	231	23.1	23.1	7.7	7.7	7.7	23.1	4.806	17.797	17,792
High variant (12 mm/y)	396	39.6	39.6	13.2	13.2	13.2	39.6	6.293	17.797	17,791
Pak										Total land area in m ² (8,553)
Low variant (3 mm/y)	99	9.9	9.9	3.3	3.3	3.3	9.9	3.146	8.553	8,550
Medium variant (7 mm/y)	231	23.1	23.1	7.7	7.7	7.7	23.1	4.806	8.553	8,548
High variant (12 mm/y)	396	39.6	39.6	13.2	13.2	13.2	39.6	6.293	8.553	8,547
Nauna										Total land area in m ² (1,914)
Low variant (3 mm/y)	99	9.9	9.9	3.3	3.3	3.3	9.9	3.146	1.914	1,911
Medium variant (7 mm/y)	231	23.1	23.1	7.7	7.7	7.7	23.1	4.806	1.914	1,909
High variant (12 mm/y)	396	39.6	39.6	13.2	13.2	13.2	39.6	6.293	1.914	1,908

The Connection: Land Area, Population & SLR

Predicted Land Area after Beachfront Loss caused by SLR between 2000-2033 (m2)



Conclusion

- Perception vs Reality
- Connection between Land & Population (population density) + Climate Change (SLR & Bf Loss) can help us understand the amount of land likely to be lost through the process of SLR and amount of land left (especially along the shoreline)
- Know amount of land washed away using the 3 variants
- Using a social scientific method connecting three variables in a logical manner
- Connection (L-P-CC) now becomes – Knowledge to use that can be proven scientifically
- Simple explanation to educate and make aware local people about L-P-CC
- People may plan ahead – relocation to higher ground , building houses on high and strong posts and bridges, relocation outside of their island (make connections)
- Register customary land to know its size, value and worth – to take care, protect and preserve for the future and NOT lose it totally without wisdom
- Education children now for the future about climate change – using examples with numbers and simple figures to understand and interpret
- This in some way will create a better future for the future especially for small island communities which are in danger of losing their livelihoods
- Even if you lose your land (washed off by sea), you may still lay claim to the fishing ground it will become for your children and future generations

Recommendation:

- Research Topics

- Migration and Remittances
- Land Ownership and Resource Ownership
- SMEs and Informal Sector Development
- Women in Agriculture and Food Security
- Climate Change and Sustaining Local Livelihoods
- Traditional Political Systems and Structures for Autonomy
- Social and Cultural Systems of Sustainability
- Traditional Connections and Resettlement Options
- Social Mapping – clans, ownership system, social structure, genealogies, migration histories etc)
- Develop a PNG HDI/SDI – generate more socioeconomic indices for this study for example - dependency ratio, TFR, GFR, average household income, population density, land indicators etc
- Select small island communities in PNG for CC studies (collect data and create data base – collect data on all aspects of livelihood and scientific data – rainfall, SLR, wave action and erosion, rainfall etc)
- Factor land area and decline over the years (especially for small islands) in calculation of socioeconomic indicators (eg population density)

The Future: Ending Quote

This is one of biggest challenges for PNG going forward

“Land does not grow; population grows which creates a problem of socioeconomic inequality between people and resources that must be balanced by equal benefit sharing.....Land in our society, like anywhere in PNG, is the key factor!”

(Karol Kisokau, Former Senior Public Servant, Mouklen Village, 20/05/20).

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- **All Ward Councillors in Rapatona LLG** - , Mr. Levai Pono(Ward 1: Mokarah), Mr. George Saleh (Ward 2: Hahai), Mr. David Jessie (Ward 3: Tong), Mr. Jack Komai (Acting Chief in absence of Chief/Councillor Albert Punjimil)(Ward 4: Nauna), Mr. Pokupwen Pomelu(Ward 5: Polobuli), Mr. Noan Phillip (Ward 6: Kuluo), Mr. Len Tentem Mosim (Ward 7: Penchal), Mr. Patrick Palek (Ward 8: Lenkau) and Mr. Dominic Chamilou (Ward 9: Mouklen).
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- Finally - To **God Almighty** who makes all things possible.

And to everyone I say – uroh uroh uroh!

