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# ISSUES PAPER

## PAPUA NEW GUINEA'S DRIVE TO PROVIDE AFFORDABLE HOUSING: ARE WE READY?

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### Highlights

- Housing affordability and strategies for providing effective affordable housing were explored.
- Housing cost to income ratio is the most commonly used measure of housing affordability.
- Affordable housing primarily targets low-income households.
- Households that spend more than 30% of their income on housing will have housing affordability problems.
- The housing sector in Port Moresby has not been able to meet requirements for the provision of affordable housing.
- In order to promote an effective affordable housing strategy in Port Moresby it is necessary to develop guidelines for providing affordable housing and review import duties on building materials.
- The government should facilitate private developers to build houses, by making more customary land available and providing more trunk infrastructure such as good road networks, pipe-borne water and electric power.

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# PAPUA NEW GUINEA'S DRIVE TO PROVIDE AFFORDABLE HOUSING

By Eugene Ezebilo

This Issues Paper provides insights into developing an effective and efficient affordable housing strategy in Port Moresby. It reports on standards used for measuring housing affordability and discusses whether the housing sector in Port Moresby has been able to meet requirements for providing affordable housing. It explores ways to promote an effective affordable housing strategy in Port Moresby. This study is based on a brief review of literature about housing affordability programs in four countries. Findings from the review were applied to assess the provision of affordable housing in Port Moresby. It was found that housing cost to income ratio is the most commonly used measure for housing affordability and that a household's housing costs should not exceed 30% of its income. In the four countries reviewed, government housing agencies play facilitating roles, such as providing trunk infrastructure, monitoring the quality of houses and developing housing policy. Private property developers are directly involved in building houses.

The findings revealed that the housing sector in Port Moresby has not been able to meet requirements for providing affordable housing. For example, standards for measuring housing affordability have not been put in place, the categories of residents targeted by affordable housing programs are not clear and the roles of government housing agencies and private developers have not been delineated. To promote a sustainable and effective affordable housing strategy in Port Moresby, it is important that government agencies facilitate private developers to build houses. The following strategies are recommended: develop effective guidelines; review import duties on building materials; make more customary land accessible; supply more high-rise multi-family apartments for rental; provide more trunk infrastructure such as good road networks, electric power, portable pipe-borne water and facilities for sewage; and introduce more affordable housing schemes. The findings will provide policy-makers and urban development planners a greater understanding of ways to develop effective guidelines for providing affordable housing in Port Moresby, which could also be applied in other cities in

Papua New Guinea.

## 1. Introduction

Shelter is a basic necessity for humans and accounts for the largest share of the consumer price index (Bajari and Kahn, 2005). However, providing housing that people can afford and at the same time be able to pay for other necessities is becoming a concern for governments of many countries. For example, Chen et al. (2010) found that housing affordability in Shanghai has declined, and Haffner and Boumeester (2010) found that housing costs in the Netherlands are increasing. Expenditures associated with housing have caused many households to reduce their expenditures for food, clothing, health care, education and other human capital investments, which consequently lowers the household's standard of living. Kutty (2005) found that some households in the USA cannot afford non-housing goods after paying for housing. Anderson et al. (2003) found that when affordable housing is not available to low-income households, resources required for food, medical and other non-housing necessities are used to pay for housing. In order to sustain human wellbeing, housing must be affordable. Internationally, housing affordability is generally expressed as the relationship between housing expenditure (rent or mortgage) and household income (Lux 2007; Whitehead et al. 2009). Housing affordability has continued to be an important policy issue in most countries (Bramley 2012; Crook et al. 2006; Guran and Phibbs 2013). Affordable housing programs often target low-income households who find it difficult to pay for housing (Wallace 1995; Housing and Urban Development 2016). This is primarily because low-income households tend to be hit hardest when housing prices rise. For example, in the USA, support is often provided to low-income households through public housing programs, rental assistance to tenants and home ownership programs. Low-income households are those with incomes at or below 80% of the local median income, adjusted for family size (Wallace 1995).

In recent years, providing affordable housing to residents of major cities in Papua New Guinea (PNG), especially Port Moresby has become increasingly challenging. This is primar-

ily because of shortages of secure land for residential property development, insufficient basic infrastructure, rapid rural-urban migration and the urban housing sector evolving from a government dominated system to a market-driven system (Endekra et al. 2015; Ezebilo 2015; Ezebilo et al. 2016). Furthermore, housing developers in PNG are often interested in selling housing without referring to any established index as a base point. In a study of policy options for the National Land Development Program in PNG Yala (2010) found that the income levels of the average Port Moresby resident are too low to afford housing. The current paper investigates measures of housing affordability, which could be used in developing guidelines for standards for affordable housing in PNG.

The housing shortage in Port Moresby is of concern to the PNG government. In response, the government has introduced initiatives that promote access to housing, such as the Land and Affordable Program and the First Home Ownership Scheme in partnership with the Bank of South Pacific Ltd. The establishment of the Customary Land Development Office has been approved by the National Executive Council (NEC Decision No. 33/2016) and charged with the mandate of making customarily owned land more accessible for economic development, including housing. Furthermore, several private residential property initiatives, such as EDAI Town and the Glory Group of Companies, have emerged in Port Moresby and other cities in PNG with the primary aim of providing affordable housing for the expanding population. However, to the best of my knowledge, there is no published paper that has explored whether Port Moresby meets requirements for the provision of affordable housing or specifies which standards are used in measuring housing affordability. Furthermore, affordable housing issues have not been explored in detail in PNG and studies related to housing affordability in the country are few. For example, in a study of property prices in Port Moresby, Ezebilo et al., (2016) found that most low-income households may find it difficult to afford housing. As more people migrate to Port Moresby in search of opportunities to better their lives, there are social, economic and environmental challenges associated with housing that need to be addressed. Furthermore, Yala (2010) found that provision of affordable housing in PNG major cities is mainly affected by high costs associated with building houses. This implies that there is a need to develop an efficient and effective framework for analyzing and tracking affordable housing in Port Moresby in order to achieve sustainable affordable housing and urban development. This paper contributes to this framework. It reports on international standards used to measure housing affordability and explores whether the housing sector in Port Moresby has

been able to meet the requirements for providing affordable housing. It also explores ways to promote an effective affordable housing strategy in the context of Port Moresby and in PNG in general.

### 1.1 The aims of this paper

The aims of this study are two-fold. The first is to examine international standards used for measuring housing affordability and to assess the housing sector in Port Moresby using these standards. The second is to explore strategies for developing an effective affordable housing program that could be applied to meet housing needs of Port Moresby residents.

It is hoped that findings from this study will contribute to improving housing policy, especially the affordable housing program that was initiated by the government in PNG. This would help ensure that the target group benefits from the program. The findings will also provide greater understanding of housing affordability in Port Moresby and in PNG more broadly. Policy lessons learnt will provide policy-makers and urban development planners with strategies to design a more acceptable and sustainable housing policy that meets societal preferences and demands for housing.

## 2. Measuring housing affordability and factors influencing it: an international review

Housing cost to income ratio is the most commonly used standard for measuring housing affordability (Kutty 2005). This ratio is often applied in European countries and in Australia, Canada, China, India, New Zealand and the United States (Hui 2001; Rea et al. 2008; Robinson et al. 2006; Stone 1993, 2006; Hulchanski, 1995; Moore and Skaburskis 2004). For example, housing in the USA is affordable if households spend at most 30% of their income on housing (Housing and Urban Development 2016). Households that spend more than 30% of their income on housing have an affordability problem. In India, housing is affordable when households spend no more than 40% of their income on housing (Hulchanski 1995). Many policy makers and academics, as well as the general public, are more familiar with the use of ratio of housing cost to income as a measure of affordability. This is because it is simple to calculate, can be easily applied in practice and has the sanction of governments of most countries (Stone 2006).

However, academics such as Stone (1993, 2006) have argued that using housing cost to income ratio as a measure of housing affordability is not convincing; once a household has paid housing costs it becomes “shelter poor” if the remaining income is not enough to cover other basic non-housing

necessities. This implies that it is important to also consider money spent on other necessities, as well as family size, when discussing housing affordability. To incorporate non-housing costs into the measure of housing affordability, Stone (1993, 2006) proposed the use of “residual income”. This posits that housing is affordable if a household can meet its non-housing needs after paying for housing (Stone 2006). The residual income approach leads to a sliding scale and reflects that housing affordability is sensitive to differences in household size and income. However, other authors (e.g. Bogdon and Can 1997; Mulliner and Maliene 2015) have suggested that housing affordability measures should focus more on the condition, location and neighborhood characteristics of housing rather than only on housing costs. For example, a study of housing affordability in relation to attributes of a housing area found that affordability depends on the amenities present and that this influences the welfare of households (Fisher et al. 2009). In a study of low-income renters’ perceptions of housing affordability, Seelig and Phibbs (2006) found that low-income families do not often choose housing areas that have poor amenities. This suggests that it is important to consider the availability of basic amenities in the provision of affordable housing.

Several factors influence housing affordability. For example, in a study of affordability of housing in the Netherlands, Haffner and Boumeester (2010) found that shortage in supply of housing relative to demand increases housing prices, which increases affordability problems, especially among low-income earners. They also found that housing policy instruments that promote rent regulation, housing allowance and the allocation of social rental housing facilitate the entry of low-income groups into the housing market, which consequently increases housing affordability. In her study of housing-induced poverty in the USA, Kutty (2005) found government policies that lead to a rise in income at the lowest end of the economic spectrum increase housing affordability. In a review of the concepts and definitions of affordability in Flanders and the Netherlands, Haffner and Heylen (2011) found that increasing the ability of households to access loans from financial institutions increases housing affordability. They also found that affordability of housing depends on people’s preferences; some people prefer to spend more money on housing and less on non-housing goods. In a study of housing price and affordability in Malaysia, Hashim (2010) found that low regime interest rates can help improve the affordability of home ownership. This indicates that lower interest rates on housing can motivate people to invest in housing and lead to an increase in housing affordability. In their assessment of sustainable housing affordability in Merseyside and Cheshire in England, Mulliner et al. (2013) found that

quality of housing, location, access to services and economic factors influence housing affordability. Kamal et al. (2016) found that housing price in Penang, Malaysia is mainly influenced by location, demographic factors, macroeconomic factors, land and industry. Furthermore, in their review of housing affordability in the USA, Quigley and Raphael (2004) found that increase in household income is associated with increases in housing affordability. This brief review of a broader literature shows that there are many factors determining housing affordability. However, there is no single set of solutions to housing affordability problems. Hence, it is important to consider many factors when exploring housing affordability in a geographical area.

### 3. Study area and data collection and analysis

#### 3.1 Port Moresby

Port Moresby is the capital city and largest city of Papua New Guinea, and has the largest residential property market in the country (Ezebilo et al. 2016). As a result of economic boom and various projects springing up in Port Moresby, many people have moved from rural areas to the city in search of opportunities to better their lives. This has contributed to the expanding population of Port Moresby; in 2011, the population was 364,125 and in 2015 it was over 400,000, with an average population density of 16 people per hectare (Global Cities Research Institute 2015; Papua New Guinea National Statistical Office 2015).

Port Moresby is divided into 15 suburbs: Badili, Boroko, Erima, 8 Mile, 5 Mile, Gerehu, Gordons, Hohola, Korobosea, 9 Mile, Sabama, 6 Mile, Tokarara, Town (also known as Downtown), and Waigani. For a more detailed description of Port Moresby, see Endekra et al. (2015).

Over the years the supply of housing in Port Moresby has not been able to meet demand, which has led to housing shortages, and house rentals and sale prices beyond the reach of many residents. Shortage of secure land for economic development contributes to the housing shortages. For example, 60% of land in Port Moresby is owned by the state and it is almost exhausted. However, the remaining land is customarily owned and private property developers are often reluctant to invest in it because it does not have a secure title and is often associated with high transaction costs. There is a large informal housing sector in Port Moresby and the cost of building a house is high due to the high cost of building materials, land and labour (Yala 2010). The PNG government has introduced initiatives aimed at accessing customary land for economic development such as the National Land Development Program. The National Executive Council re-

cently established the Office of Customary Land and Development (NEC Decision No. 33/2016) to focus on making customary land more accessible for economic development. The government also contributes toward the provision of housing through the National Housing Corporation (NHC) and National Housing Estate Limited (NHEL). These state-owned businesses are theoretically involved in the development and supply of housing to the market. Recently, several private property developers, including EDAI Town, the Glory Group of Companies and the Curtain Brothers, have emerged and are involved in providing housing.

### 3.2 Data collection and analysis

The data used in this study are based on a limited literature review that focused on the subject “measuring housing affordability” in selected English speaking countries. To do this, published and unpublished (grey) papers on housing affordability and affordable housing programs were reviewed. This included information collected from the websites of agencies associated with affordable housing programs in four countries that were purposively selected from four continents. Papers on the subject were identified using Google and Google Scholar search engines. These search engines were used because most papers that appear in notable citation databases such as Web of Science, Scopus and Econpapers are generally found in Google and Google Scholar. Moreover, these two search engines do not attract subscription fees, which make these engines more useful for a country like PNG where most research institutions find it difficult to raise funds to subscribe to citation databases and conventional peer-reviewed journals. The published and unpublished papers were identified in Google and Google Scholar using the following keywords: housing affordability, affordable housing program, and measuring housing affordability. The first 50 hits in Google and Google Scholar respectively were used to identify papers using each of the keywords.

The titles of all captured papers were screened for relevance to the review. Papers that did not have relevant titles were excluded and the abstract of papers whose titles were relevant were read. If an abstract contained content about measuring housing affordability, affordable housing programs or factors influencing housing affordability, the full paper was sought for reading. However, in some cases a subscription was required to access the full paper; as such, only full papers that could be accessed without a subscription were read and used in this study. This review was used to generate information about possible ways to measure housing affordability, and to understand which groups of people are targeted by affordable housing programs and which factors affect housing affordability.

For comparative purposes, four countries (Australia, the Republic of Ireland, Singapore and the USA) from four continents were purposively selected. Information about affordable housing programs was collected from the websites of relevant housing agencies of these countries. The information collected included the resident groups targeted by the programs, basic standards used to measure housing affordability, the role of the government and private property developers in providing housing, and the main focus of the program in terms of house rentals or sales.

Information about providing housing to Port Moresby residents in PNG was collected from documents produced by institutions such as the PNG National Research Institute, NHC, Independent Consumer and Competition Commission (ICCC), National Housing Taskforce (NHT), NHEL and private property developers such as EDAI Town.

The main objective of this paper is to use the attributes of affordable housing programs in the four selected countries that were reviewed to assess the provision of housing for Port Moresby residents in the context of PNG.

### 3.3 Limitations of the literature review

The main limitation of the methods used in this review is that it focuses on housing affordability and affordable housing programs in only English speaking countries. Thus, it did not capture housing programs in non-English speaking countries. Moreover, only two search engines (Google and Google Scholar) were used for the review, which implies that papers not picked up by Google or Google Scholar were not captured. Furthermore, the review was of affordable housing programs in four countries on four continents. Thus, the review did not capture programs in two continents, namely South America and Africa. This is because almost all countries in South America are non-English speaking and housing programs in English speaking African countries have not been successful.

On the other hand, the affordable housing programs that were reviewed were from four developed countries, whereas PNG is a developing country. This is because PNG aspires to have organised, effective and efficient affordable housing programs as well as move towards becoming a developed country in the nearest future. It is important for PNG to learn from developed countries, especially those such as Singapore that were previously a developing country but have been able to develop successful housing programs. Furthermore, it is also important for PNG to learn from countries such as the Republic of Ireland that had affordable housing programs but later discontinued the programs. Australia and PNG have a longstanding relationship; thus, it important for

PNG to learn from Australia. For example, the conceptual framework related to customary land tenure reform laws in PNG is in line with the way land is planned, developed and marketed in the Australian Capital Territory, as reported by Yala (2010). PNG is made up of a highly diverse multicultural group of people, as is the USA. This suggests that the PNG housing sector could learn lessons from housing programs in the USA to meet the preferences and demands of a diverse group of residents.

## 4. A brief review of affordable housing programs in four selected countries

### 4.1 Affordable housing in Singapore

Residential housing development in Singapore is primarily built and managed by state housing agencies, and more than 80% of Singaporean residents live in public housing (Department of Statistics Singapore 2014). A shortage of housing in the 1960s led to the establishment of the Housing and Development Board (HDB), whose primary activity is providing affordable housing to Singaporean residents (HDB 2016). During the first five years of its establishment, the HDB built many low-cost housing units, primarily for rental to low-income households. A home ownership scheme was introduced during the fourth year. As there was a shortage of land in Singapore, the HDB focused on constructing high-rise buildings with multi-family flats (HDB 2016). After building low-cost housing, the HDB introduced a housing scheme that focuses on building and selling middle-income flats. To meet the demands of Singaporean citizens who do not want to live in flats, the HDB also built executive houses.

#### 4.1.1 Sales of Housing and Development Board new flats

The HDB has various new flat sales programs such as Built-To-Order (BTO) and Sale of Balance Flats (SBF). In the case of the BTO, Singaporean citizens who are interested in buying new HDB flats place their orders and the HDB begins construction of the housing units when the orders have reached approximately 70% of the units to be built. The flats that the HDB could not sell during previous BTO exercises are sold through the SBF program. In order to maintain quotas in relation to ethnicities, the HDB often ensures that each housing unit is sold to families from ethnicities that reflect the national average (HDB 2015a). The flats are sold on a 99-year leasehold. The following requirements must be met to buy a new HDB flat in Singapore (HDB 2015b):

- The applicant must be aged at least 21 years old, a Singaporean citizen and have a family.
- The monthly income of the household must be be-

tween S\$10,000 to S\$12,000.

- Single Singaporean citizens must be aged at least 35 years old with a monthly income of at most S\$5,000. They are only allowed to buy a two-room flat.
- Singaporean-foreigner couples are only allowed to buy a two-room flat.

It is important to note that the HDB flats are meant to be affordable, which makes them cheaper than privately built flats. For example, the sale price of a privately developed flat can be greater than that of a HDB flat by more than 50 percent. Although a flat owner can sell the flat, the selling price must be declared to the HDB. Furthermore, an owner can only sell their flat if they have lived in the flat for between one to seven years (HDB, 2016).

#### 4.1.2 Maintenance of HDB units and estates

Town Councils and the HDB conduct maintenance work on HDB housing units and estates (HDB 2016). For example, Town Councils are responsible for maintaining elevators, water tanks, external lighting, common corridors, void decks and open spaces surrounding the estates. The HDB is responsible for maintaining rental flats and inspecting home renovations carried out by private individuals.

### 4.2 Affordable housing in the Republic of Ireland

In 2008, the Republic of Ireland's economy entered into recession. As a consequence of the financial crisis, the affordable housing program was discontinued from 2011 (Kenna and O'Sullivan, 2014). The affordable housing program mainly targeted low-income households. It supported them to buy their homes at prices below the market value (Housing Agency, 2016). If a house owner sold their house within 20 years of purchase, the owner paid the local authorities the difference between the sale price and the market value of the house (known as Clawback).

These days, the Housing Agency in Ireland plays a facilitating role by monitoring the quality of housing provided by private property developers and promoting good practice in housing management (Housing Agency 2016).

#### 4.2.1 Mortgages for affordable housing

There are two types of mortgages for funding affordable housing in Ireland:

1. Mortgages for affordable homes: For this case, local authorities and some banks provide mortgages for affordable homes. Low-income households are provided access to loans of almost 97% of sales price of the house they intend to buy. The beneficiary of the housing loan repays

35% of their household disposable income. Households that prefer to buy a house provided by private developers need to seek approval from local authorities.

2. Mortgage subsidy program: This targets beneficiaries of mortgages of affordable homes whose gross household income is less than €28,000 per year. They are provided a subsidy of between €1,050 and €2,550 annually by the government, which is paid directly to the local authority (Citizens Information Board 2016).

#### 4.2.2 Affordable housing strategies

The local authority uses various strategies to provide affordable housing.

4.2.2.1 Affordable housing scheme: this involves the local authority providing land on which new houses are built and sold. However, where there are more eligible applicants than available houses, the local authority uses a ranking system to select the most suitable applicant. The ranking is primarily based on the order of priority, while taking into account household circumstances. In order to qualify for affordable housing scheme individuals must be:

- in need of housing and have an income that satisfies the income test;
- registered on a housing waiting list with the local authority;
- a local authority tenant and wanting to buy a private house and return their present house to the local authority; and
- a tenant for more than one year of a home provided by a housing association and wanting to buy a private house and return their present house to the housing association.

It is important to note that all applicants to the affordable housing scheme must have enough income to meet their mortgage repayments after paying other bills (Citizens Information Board 2016).

The income limits for households applying for the affordable housing scheme are:

- Single-income household: Gross income between €25,000 and €58,000 per year.
- Two-income household: Joint gross income of at most €75,000 per year.

#### 4.2.2.2 Part V affordable housing

Part V of the Development Acts 2000–2002 stipulates that private property developers should set aside about 20% of

new developments of five or more houses for social or affordable housing. It is left for the local authority to decide how much of the 20% will be social, voluntary or affordable housing (Housing Agency 2016). A household becomes eligible for Part V housing if 35% of their income is not enough to pay for housing.

#### 4.2.2.3 Affordable housing initiative

For this case, the Office of Public Works provides land on which houses are built and sold to people who would otherwise have been able to buy a house, but found themselves priced out of the market (Citizens Information Board 2016). A household is eligible for the initiative if 35% of their income is not enough to buy a house.

### 4.3 Affordable housing in the United States of America

Affordable housing programs in the USA primarily target low-income households, i.e. households whose incomes are below local median income (Wallace 1995). They are used to support households who spend more than 30% of their income on housing (Housing and Urban Development, 2016). The Office of Affordable Housing Program in the Department of Housing and Urban Development administers grant programs, which are used to increase the number of houses available to low-income households. Prior to 1960, the government was the primary provider of affordable housing. In order to promote effectiveness and efficiency in managing affordable housing programs, the government developed public-private arrangements (von Hoffman 2016). The government provides subsidies to private property developers, while the developers reserve an agreed percentage of apartments for rentals by low-income households.

Notable examples of affordable housing programs in the USA include:

#### 4.3.1 The Low-Income Housing Tax Credit

Under this program, private developers interested in building low-income housing receive rights to a tax credit from the government, which they can sell to investors who become limited partners and provide equity and capital to the project (von Hoffman 2016). The tax credit is issued for 15 years to private developers whose investments in housing meets affordable housing program requirements (the Tax Reform Act of 1986). The main requirements for a housing project to be eligible for tax credit are (Wallace 1995):

- 20% of the housing units must be occupied by households with incomes at or below 50% of median income for the local area; or

- 40% of the housing units must be occupied by households with incomes at or below 60% of median income for the local area, adjusted for family size.

The rental price of the affected housing units must not be more than 30% of the applicable income limit. Furthermore, the property must be kept in service for the target households for at least 15 years. However, if the state credit agency cannot find a buyer willing to maintain the property as low-income housing within one year of the fifteenth year, the owner of the property can sell it or convert it to normal market housing and the tenants are given a three-year grace period to move out.

#### 4.3.2 Affordable home ownership programs

This focuses mainly on the construction of housing units for low-income households such as the Section 502 rural home ownership program. This provides a subsidy with an interest rate of 1% on loans. The program is targeted at households whose annual incomes are at or below 60% of the median income of the local area.

#### 4.3.3 Home Ownership for People Everywhere (HOPE)

HOPE involves recycling properties belonging to owners that have defaulted Housing and Urban Development insurance. The HOPE program focuses primarily on providing grants to low- and middle-income households to help them buy single-family houses that have been foreclosed and are owned by the government. The main requirements for the HOPE program are (Wallace 1995):

- The recycled properties must be made available to households with incomes no more than 80% of median income of the local area.
- The monthly carrying costs (i.e. principal, interest, taxes, and insurance) must be within the range of 20% to 30% of monthly income of the beneficiaries.

#### 4.3.4 The HOME Investments Partnerships Program

HOME was designed to provide grants to state and local governments to fund activities such as building, buying or rehabilitating housing for rent or home ownership. The grant can also be used to provide rental assistance to low-income households (Housing and Urban Development 2016).

### 4.1 Affordable housing in Australia

In a study tour of affordable housing in the Australian Capital Territory, Yala (2010) found that affordable housing there is based on research of income levels, stock housing and costs related to the supply of new housing stock. He also found that 30% of gross income is the minimum required to service

a mortgage.

Affordable housing programs in Australia target low to middle income households. The primary aim of the Australian National Affordable Housing Agreement (NAHA) is to ensure that all Australians have access to affordable, safe, and sustainable housing that contributes to social and economic participation (Department of Social Services 2016). The NAHA provides 6.2 billion AUD worth of housing assistance to low and middle income Australians for the first five years (Department of Social Services 2016). Examples of affordable housing schemes in Australia include the National Rental Affordability Scheme (NRAS) and the Affordable Homes Program (AHP).

#### 4.4.1 National Rental Affordability Scheme (NRAS)

The NRAS aims to reduce rental costs for low to middle income households as well as increase the number of affordable rental houses (Department of Social Services 2015). To be eligible to rent a house under the NRAS, the person must:

- be an Australian citizen, have permanent residency or have Temporary Protection visa XA visa subclass 785 or Temporary Protection visa XC visa subclass 785;
- not own or part-own property in Australia or overseas;
- not have money in bank accounts, shares or investments exceeding 87,125 AUD; and
- not have a household combined annual gross income exceeding 47,904 AUD, 66,228 AUD, and 84,552 AUD for one, two, and three adults respectively at the commencement of the NRAS tenancy.

During the tenancy period, the person's income should not exceed 59,880 AUD, 82,785 AUD, and 105,690 AUD for one, two, and three adults, respectively.

#### 4.4.2 Affordable Homes Program (AHP)

The AHP provides low to middle income household access to properties below the market price. It is used to support single people and couples whose annual income is at most 75,000 AUD and 95,000 AUD, respectively to have their own home (Department for Communities and Social Inclusion 2016). In order for a person to be qualified for the program, the person must meet the following requirements (Department for Communities and Social Inclusion 2016):

- be a current Housing South Australia or Community Housing tenant;
- be aged at least 18 years old and be a South Australian resident;
- not own or part-own any residential property or land;

- intend to be the owner occupier;
- meet the income and asset tests for the AHP; and
- not have a debt with Housing South Australia.

## 5. Provision of housing in Port Moresby

The National Housing Corporation (NHC), which is the main government housing agency in PNG, was established in 1968. Following its creation, the NHC's activities focused primarily on building houses for government workers such as low cost houses for low and middle income government workers as well as houses reserved for high income workers. As the government has been providing houses to its workers, the private sectors also provide houses for its workers (Stretton 1979). There was not enough economic incentive for investment in residential properties, development of housing market and real estate related businesses. At that time, there was virtually no housing market because public and private sectors provided houses for their workers, which meant that the workers were unaccustomed to paying for housing. Over time, more economic developments took place in Port Moresby, which led people from rural areas all over PNG to migrate to the city in search of better employment opportunities. However, the supply of houses to accommodate the migrants could not meet demand, resulting in housing shortages in Port Moresby and increased housing prices. In order to tackle the housing shortage, the government established the National Housing Taskforce (NHT) in 2007, and NHT was given the task of studying the housing problems and coming up with solutions to address them. The NHT recommended that governmental housing agencies should play a facilitating role in providing housing rather than being directly involved in building houses, and that private sector participation in residential property development should be encouraged to spur economic growth and employment in the housing sector. However, these recommendations were not adopted and governmental housing agencies continued to attempt to build houses for government workers.

As housing shortages reached critical levels and caused corresponding increase in house prices, the government requested that the Independent Consumer and Competition Commission (ICCC) review activities relating to housing and the real estate industry in PNG (ICCC 2010). The ICCC found that government housing agencies had little success in providing housing to city residents. The high housing prices are primarily triggered by inefficient and insufficient supply of land, irregularities in the allocation of land to developers and unclear government policy on housing (ICCC 2010). Despite this, only a few of the ICCC's recommendations have been

adopted. One example is the continued work of the National Land Development Program in raising awareness among customary landowners about the need to register their lands under Incorporated Land Groups. Recently, the Office of Customary Land Development was established to help promote efficiency, effectiveness and transparency in customary land registration processes.

In 2011, the government established the National Housing Estate Limited (NHEL), which is a subsidiary of the NHC. The primary task of the NHEL is to build houses in Port Moresby and other major cities in PNG to help boost housing supply. To affirm their commitment to providing affordable housing, the government launched a social housing program at Duran Farm Housing Development, involving the NHEL, in 2014. Affordable land and housing program led to the launch of Gerehu 3B in 2015 by the Office of Urbanization. The Duran Farm and Gerehu 3B are expected to supply 40,000 fully serviced land allotments over five years, of which the beneficiaries will primarily be government workers. To date, little is known about their progress or implementation.

In another development, the government launched the "two million district housing program" for government workers in 2015. This involves the state government allocating one million Papua New Guinean Kina (PGK) to each district administrator. In addition, provincial governors, in collaboration with open members of the parliament, contribute one million PGK for building 10 houses in each of the 89 districts in PNG (Hausples 2015).

Furthermore, in order to address the housing shortages and the continuous increase in housing prices, the government allocated 200 million PGK to the First Home Owner Scheme (FHOS) in 2013 (Bank of South Pacific 2016). The FHOS is managed by the Bank of South Pacific. The primary purpose of the FHOS loan is to provide PNG citizens with an opportunity to buy houses of their choosing. To be eligible for the FHOS loan, an individual must be a citizen of PNG, employed and willing to pay 10% of worth of the loan. The maximum loan amount an individual can get from the FHOS is 450,000 PGK with an interest rate of 4% and repayment period of 40 years. The minimum loan amount is 250,000 PGK.

### 5.1 Private sector participation in provision of housing

Several private property developers are involved in providing housing in Port Moresby. Unfortunately, to date, these developers have not received any support from national, provincial or local government. The private developers face challenges

such as shortages of secure land, inadequate trunk infrastructure and shortages of skilled labour and building materials (Webster et al. 2016). This contributes to the increasing cost of building houses, which pushes up housing prices. The notable private developers operating in Port Moresby are EDAI Town, Glory Group of Companies and the Curtain Brothers.

#### 5.1.1 EDAI Town

EDAI Town originated from a partnership between Borea village and private developers (i.e. Kym Yong and Robert). It is located 20km from Port Moresby along the PNG liquefied natural gas corridor and the land is under a state lease for 99 years. EDAI Town primarily builds four types of houses: the traditional home (3 + 1 rooms), modern two storey home (3 + 1 rooms), double storey duplex (3 rooms) and double storey town house (3 rooms). House prices in EDAI Town range from 268,000 PGK to 790,000 PGK (EDAI Town 2016).

#### 5.1.2 Glory Group of Companies

The Glory Group of Companies was established in 2008 and consists of Glory Estate Ltd, Glory Holding Ltd, Glory Development Ltd and other subsidiaries (Glory Group 2016). It has residential properties in several areas of Port Moresby including Ela Vista at Ela Beach, Glory Garden at 8 Mile and Skyview. The Glory Group has more than 500 houses, which have been built to meet the demands of middle and high income households as well as corporate clients. For example, houses in Glory Garden are primarily built for middle and high income households, Skyview for middle income households and Ela Vista for corporate clients. Prices of Glory Group houses range from 500,000 to 1.2 million PGK (Webster et al. 2016).

#### 5.1.3 Curtain Brothers

The Curtain Brothers was established in 1996 and at that time they focused primarily on construction of infrastructure (Curtain Brothers 2016). For example, they played an important role in the development of Harbour City and constructed the wharf in Port Moresby. The Curtain Brothers has indicated their interests in developing residential properties. To this end, they have established South Pacific Homes to manage the properties.

## 6. Is Papua New Guinea ready to provide affordable housing?

For PNG to move toward provision of affordable housing in Port Moresby, there are crucial questions that need to be evaluated, which are informed by the analysis in the preceding discussions.

### 6.1 Do we have an established standard for measuring housing affordability?

Some countries that provide affordable housing use housing cost to income ratio as a standard measure of housing affordability. For example, housing in the USA and Canada is considered affordable when housing costs do not exceed 30% of a household's gross income (Housing and Urban Development 2016; Canada Mortgage: Housing Corporation 2011).

However, in PNG there are no guidelines or standards for measuring housing affordability. This makes it difficult for planners and policy makers to assess contributions made by the housing sector toward providing affordable housing to people in need. Thus, affordable housing programs in PNG appear to exist in theory, but not in practice. For example, in a study of residential property prices in Port Moresby, Ezebilo et al. (2016) found that low-income households cannot afford even the lowest house rental price. This is because the lowest monthly rental price for a house in Port Moresby exceeds the average monthly income of low-income households.

Furthermore, low-income households in Port Moresby may find it extremely difficult to buy their own house. For example, one of the lowest prices for a house in Port Moresby is 292,800 PGK, including GST (EDAI Town 2016). According to Ezebilo et al. (2016), the monthly income for an average low-income earner in Port Moresby is 1400 PGK. This indicates that if a low-income earner has access to the FHOS to buy the lowest priced house, the repayment amount would be 304,512 PGK, which includes a 4% interest rate. If we use 30% and 40% of household income as benchmarks for measuring housing affordability, it would take an average low-income earner in Port Moresby 60 years and 45 years, respectively, to repay the money sourced from the FHOS. As the repayment period stipulated in the FHOS conditions is 40 years, this suggests that low-income earners may not be able to benefit from the home ownership scheme.

To move PNG toward providing affordable housing, there is a need for the government agency in charge of housing to develop standards for measuring affordability and guidelines for providing affordable housing within a PNG context. This will help planners and policy makers to evaluate the impacts of affordable housing interventions. It will also serve as a reference guide for public and private property developers that are involved in providing affordable housing.

### 6.2 What categories of people are targeted by affordable housing programs?

In most countries, affordable housing programs are primarily

designed to support low-income households. For example, in the USA, Australia and Singapore several affordable housing programs are used to support low-income households whose income is not enough to pay for housing and at the same time afford other basic necessities. Furthermore, these countries have developed indicators to identify low-income households to ensure that the most relevant people benefit from affordable housing policies and programs.

For example, low-income households in the USA are those with incomes at or below 50% of the local median income (Wallace 1995). However, in PNG it is not clear which categories of residents are targeted by affordable housing programs, and there are no guidelines for classifying households according to their incomes (i.e. low-income, middle-income and high-income).

Affordable housing programs in PNG appear to not target low-income households. For example, for an individual to access a housing loan from the FHOS, the individual is required to pay 10% of the loan amount. This may be difficult for low-income households to afford. To develop an efficient and effective monitoring system of an affordable housing program in Port Moresby, it is important that government housing agencies clearly specify which resident groups are targeted by the program and develop criteria for classifying income groups. This will help in the planning and evaluation of the affordable housing program.

### 6.3 How long can a household benefit from affordable housing?

The housing need of households often vary in respect to their income and savings. Some may require emergency shelter, others may need housing for rentals and some may be interested in buying their own house. For various relevant households to benefit from affordable housing there is a need to provide emergency shelter, non-market rental (social or subsidised) and affordable home ownership schemes so that households facing different circumstances can benefit. As argued by the Australian Council of Trade Unions, affordable housing should involve a number of schemes that exist along a continuum that starts with emergency housing and ends with affordable home ownership (Australian Council of Trade Unions 2007).

In PNG, affordable housing programs provided by the government and private developers have focused primarily on home ownership schemes. It is important to note that some households barely have enough money to pay for housing and meet other basic needs, which indicates that they may not have sufficient savings to meet the requirements for home ownership scheme. Thus, if the intention of the government

is for the most relevant households to benefit from affordable housing schemes, as a matter of urgency, effort may have to be placed on providing housing for rentals at subsidised rates.

### 6.4 Do we have clear policy on affordable housing?

An affordable housing program that is effective and efficient requires funds and a strong legal backing. To this end, some countries that promote affordable housing programs have legislation that empowers the government agencies that are in charge of overseeing activities related to affordable housing. For example, the success of the HDB in Singapore is strongly linked to government support through funding and legal powers given to it. This is also the case for Housing and Urban Development in the USA. The countries that promote affordable housing programs also have policy elements related to affordable housing and offer several affordable housing schemes that households can choose from. For example, in Australia, the standard and location of affordable housing should be adequate for low- or middle-income households. This includes the requirement that the household should be able to afford to pay for all costs associated with the house and at the same time afford to meet other basic needs.

Australia has several affordable housing schemes such as the National Rental Affordability Scheme and the Affordable Home Program. In the USA, the National Housing Act of 1990 stipulates that every American family must have a decent home in a suitable living environment and that housing must be affordable. Affordable housing schemes in the USA include the low-income housing tax credit and the affordable home ownership program.

However, in PNG there is no policy on affordable housing and the objective of the affordable housing program is not clear. The FHOS appears to be the only potentially promising affordable housing scheme. However, it requires some modification for low-income households to benefit from it.

To move PNG towards providing affordable housing for its citizens, policy on affordable housing should be clearly defined, developed and executed. Concurrently, several affordable housing schemes that target low-income households should be introduced so residents could choose the scheme that would most benefit them.

### 6.5 What are the roles of public and private sectors in providing affordable housing?

In order for an affordable housing program to be effective it is important to delineate the primary roles of public and private sectors to avoid conflicts of interest. For example, in Singapore, the public sector is primarily involved in providing

trunk infrastructure and building affordable housing, while the private sector builds houses for rental and sales at market value. Previously in the USA, the public sector was primarily in charge of providing affordable housing. Currently, however, the public sector plays a facilitating role by providing infrastructure and subsidies and monitoring the quality of houses, while the private sector builds houses. The situation in the Republic of Ireland and Australia is similar to that of the USA.

In PNG, the roles of the public and private sectors are not very clear. In theory, the state is in charge of providing trunk infrastructure; however, in practice, private developers have been providing the infrastructure (e.g. EDAI Town provided water, sewage, electricity and a road into the estate). Government housing agencies are directly involved in building houses and at the same time are involved in administering housing loans such as the FHOS.

It is important to note that the state provision of housing to its workers is not affordable housing as there is no continuity in the process. If a worker loses his or her job or retires, the worker will automatically lose their house and may be rendered homeless. Hence, an affordable housing scheme should be sustainable and the individual that secures the housing should be able to live there as long as they wish.

To move PNG forward, it is important that policy makers and planners develop effective guidelines that clearly delineate the roles of government housing agencies and private developers in the provision of housing and that each sector sticks to their own roles.

### 6.6 Is affordable housing for rental, sales or both?

As people's preferences, demands and economic circumstances differ, so does their ability to pay for housing. In principle, affordable housing primarily targets low-income households, which implies that in the short-term they may not have enough money to buy a house. Thus, low-income households could rent a house in the short-term and when they save enough money to pay the initial deposit required for housing loan then they may buy a house. For example, in the early stages of affordable housing programs in Singapore, the focus was primarily on building houses for rental and in the long-run houses were built for sale. Other countries that were explored in this paper had similar procedures.

In PNG, it appears that most of the affordable housing targets houses for sale. As this requires a huge amount of money, low-income households may find it difficult to benefit from affordable housing. The households may also find it difficult to access the FHOS, which requires that the applicant pays

10% sales value of the house. For PNG to move forward, the housing sector should urgently put greater effort into building affordable housing for rentals until the housing shortages in major cities, especially Port Moresby, have been addressed.

### 6.7 Are there enough incentive to attract private developers?

The cost of building houses in PNG, and in Port Moresby in particular, is high. For example, in a comparative study of affordable housing in the Australian Capital Territory and PNG, Yala (2010) found that the cost of building a house in PNG is high and that building materials, land and labor account for 50%, 30% and 20% of these costs, respectively. However, the provision of affordable housing entails house rentals and house sales below market value. As the primary motive of private developers is to maximize profit they may not have economic incentives to invest in affordable housing. In order to attract private developers it is important for the state to develop an incentive mechanism that reduces costs associated with providing affordable housing.

For example, in the USA, a low-income housing tax credit has been used as an incentive to attract private investment in affordable housing. In the Republic of Ireland local authorities provide land where houses are built and sold under affordable housing schemes.

Moreover, in all four countries explored in this paper, government often provide trunk infrastructure to help reduce housing development costs. However, incentives to attract private developers to provide affordable housing in PNG are lacking. There is a shortage of secure land for building houses, and building materials and machines need to be imported from other countries. To attract private developers to provide affordable housing, it is important for the PNG government to introduce economic incentives such as a tax credit scheme and to review import duties of building materials and machines.

### 6.8 What type of housing should we build?

In the course of providing affordable housing, it is important to maximise available resources and apply the principles of economy of scale; that is, the more the housing units we build the lower the housing unit cost. For example, Singapore has a shortage of land and has focused on building high-rise multi-family apartments to maximise use of land as well as reduce production costs, which consequently lowers housing prices. In other countries that were explored in this paper, high-rise multi-family apartments have also been built in order to meet the demand for affordable housing.

However, the focus in PNG has been more on building standalone houses and less on high-rise multi-family apartments. Standalone houses require more per unit land area than multi-family apartments. As there is a shortage of secure land for economic development in major cities, especially Port Moresby, there is a need to encourage housing developers to focus on building high-rise multi-family apartments until more customary land is made available for development. In fact, increasing the supply of secure land from customary land to the formal market will play a lead role in increasing the supply of houses to the market.

## 7. Policy implications

Housing affordability standards are important for planning and evaluating progress of housing programs. The housing sector in PNG, especially in major cities such as Port Moresby, has focused on building houses without establishing standards for measuring affordability. This has made housing become a luxury good, which implies that only rich people can access housing. In developing an effective housing program it is important to consider supply and demand, as well as standards for assessing the program's progress.

Low-income households are the major target of affordable housing programs. Low-income households are often hit harder in the event of a housing crisis. However, the majority of these households seem not to be benefitting from the housing interventions provided by the state in PNG. In other words, it is important for the state to specify the categories of residents (e.g. low-income) targeted by the affordable housing program. Criteria for identifying the thresholds of income categories in Port Moresby and other major cities should be developed so that potential beneficiaries of affordable housing programs can be easily identified.

There is not enough economic incentive to attract private developers. The main goal of private investment is to maximise profit. As such, private developers will only invest in housing when they are certain of making a profit. In PNG, most building materials and machines are imported and are expensive, which increases the cost of building houses and consequently increases house rental and sales prices. On the other hand, shortages of secure land for economic development and high selling prices of available land contributes to push up housing costs. As private developers often play an important role in providing housing, the PNG government should consider reviewing import duties of building materials and machines, providing tax credits to private developers that are involved in provision of affordable housing and putting more effort into releasing customary land for development.

Trunk infrastructure is either inadequate or lacking, which contributes to housing costs. Trunk infrastructure such as roads, piped water and electric power attract huge costs, and private developers may not have the economic means to provide them. Moreover, it is the duty of the state to provide trunk infrastructure. Government agencies in charge of infrastructure should put more effort into maintaining existing infrastructure and providing infrastructure where it is lacking, as proposed by Ezebilo et al. (2016). This will help lower the cost of building houses, which in turn results in an increased supply of houses in Port Moresby and other major cities in PNG.

More high-rise multi-family apartments need to be built. As there are shortages of secure land for development in major cities in PNG, especially Port Moresby, there is a need to maximise use of the available land by incorporating the principle of economy of scale to reduce the unit cost of land. To do this, residential property developers should be encouraged to build high-rise multi-family apartments until the shortage of secure land has been addressed. This will help provide housing for many people per unit area of land.

The role of the state and private developers in providing housing is unclear. The current PNG housing sector is characterised by mismatched roles of government housing agencies and private developers. For example, providing trunk infrastructure is the exclusive role of the state. However, in several cases, private developers have been directly involved in providing trunk infrastructure. Furthermore, government housing agencies have been directly involved in building houses for profit, which is similar to the motives of private developers.

To move PNG forward, government agencies in charge of providing housing should focus on playing a facilitating role by providing trunk infrastructure, monitoring the quality of houses and developing housing policy. Private developers should focus on building houses. It is important for the PNG government to streamline the roles of government housing agencies and private developers in the provision of housing and for each party to stick to their own roles.

More houses for rentals are needed in Port Moresby. The affordable housing program in PNG has focused primarily on home ownership. However, some people, especially from low-income households, may not have the capacity to pay the initial deposit (i.e. 10% of loan amount) required to access a housing loan. Furthermore, house prices, coupled with the interest rate of the loan (minimum of 4%), are expensive. As a matter of urgency, there is a need to supply more houses and apartments for rentals, so more households can benefit from affordable housing. This will provide tenants time to

save enough money to buy a house if they so wish.

There is a need to introduce several affordable housing schemes. PNG residents are diverse and so are their preferences and demands. In order to meet housing needs of the PNG residents there is a need to introduce several housing schemes so that the residents could choose the ones that they prefer. To do this, government housing agencies should collaborate with private developers in developing effective and efficient housing schemes that meets the demand and preferences of PNG residents. Currently, there is primarily one notable housing scheme, the FHOS, which may not meet the needs of all residents in need.

## 8. Conclusions

This Issues Paper revealed that standards for measuring housing affordability are lacking in PNG, it is unclear which households are targeted by the affordable housing program, and the roles of government housing agencies and private property developers in providing housing are not clearly delineated. Housing prices are generally high and many people may find it difficult to meet the requirements to access the FHOS, especially the initial 10% housing loan amount as well as the 4% interest rate on the loan. Furthermore, there are few economic incentives to attract private developers to provide affordable housing and a shortage of secure land for development, which increases housing costs.

The policy lessons that can be drawn from findings of this Issues Paper include the need to develop a standard for measuring housing affordability in PNG and a housing scheme that primarily targets low-income households. There is a need for more access to building materials, customary land and tax credits. Other recommended actions include providing trunk infrastructure, streamlining the roles of government housing agencies and private developers, building more high-rise multi-family apartments, supplying more houses and apartments for rentals, introducing more housing schemes and effectively monitoring the quality of houses supplied by private developers.

Housing affordability standards and guidelines are required to identify target groups of residents and ensure that they benefit from the affordable housing scheme. The findings of this Issues Paper contribute to this and provide policy-makers and urban development planners with strategies for designing an effective and efficient affordable housing program that meets the preferences and demands of PNG residents. The findings have the potential to contribute to housing policy and urban planning in PNG.

## References

- Anderson, L.M., St Charles, J., Fullilove, M.T., Scrimshaw, S.C., Fielding, J.E., Normand, J., and the Task Force on Community Preventive Services. (2003). Providing affordable family housing and reducing residential segregation by income: A systematic review. *American Journal of Preventive Medicine* 24(3S): 47–67.
- Australian Council of Trade Unions (2007). *Affordable housing: Issues, principles and policy options*. Australian Council of Trade Unions, Canberra.
- Bajari, P., and Kahn, M.E. (2005). Estimating housing demand with an application to explaining racial segregation in cities. *Journal of Business and Economic Statistics* 23(1): 20–33.
- Bank of South Pacific (2016) First Home Ownership Scheme (FHOS) Loan FAQ. Retrieved from [http://www.bsp.com.pg/Personal/Retail-Banking/Loans/Home-Loans/First-Home-Ownership-Scheme-\(FHOS\)-Loan-FAQ.aspx](http://www.bsp.com.pg/Personal/Retail-Banking/Loans/Home-Loans/First-Home-Ownership-Scheme-(FHOS)-Loan-FAQ.aspx) (Cited 5 July, 2016).
- Bogdon, A.S., and Can, A. (1997). Indicators of local housing affordability: comparative and spatial approaches. *Real Estate Economics* 25(1): 43–80.
- Bramley, G. (2012). Affordability, poverty and housing need: triangulating measures and standards. *Journal of Housing and the Built Environment* 27(2): 133–151.
- Canada Mortgage: Housing Corporation (2011). *Affordable housing: What is the common definition of affordability?* Government of Canada.
- Chen, J., Hao, Q., and Stephens, M. (2010). Assessing housing affordability in post-reform China: a case study of Shanghai. *Housing Studies* 25(6): 877–901.
- Citizens Information Board (2016). Affordable Housing Schemes. Retrieved from [http://www.citizensinformation.ie/en/housing/owning\\_a\\_home/help\\_with\\_buying\\_a\\_home/affordable\\_housing.html](http://www.citizensinformation.ie/en/housing/owning_a_home/help_with_buying_a_home/affordable_housing.html) (Cited 29 May, 2016).
- Crook, A.D.H., Monk, S., Rowley, S., and Whitehead, C.M.E. (2006). Planning gain and the supply of new affordable housing in England: understanding the numbers. *The Town Planning Review* 77(3): 353–373.
- Curtain Brothers (2016). History. Retrieved from <http://www.curtainbros.com.au/> (Cited 14 June, 2016).
- Department for Communities and Social Inclusion (2016). Eligibility for affordable homes. Retrieved from <https://www.sa.gov.au/topics/housing-property-and-land/buying-and-selling/affordable-houses-to-buy/eligibility-for-affordable-homes>

fordable-homes (Cited 11 June, 2016).

Department of Social Services (2016). National Affordable Housing Agreement. Retrieved from <https://www.dss.gov.au/housing-support/programmes-services/national-affordable-housing-agreement> (Cited 14 June, 2016).

Department of Social Services (2015). National Rental Affordability Scheme. Retrieved from <https://www.dss.gov.au/our-responsibilities/housing-support/programmes-services/national-rental-affordability-scheme> (Cited 16 November, 2015).

Department of Statistics, Singapore. (2014). Latest Data. Retrieved from [http://www.singstat.gov.sg/statistics/latest\\_data.html#18](http://www.singstat.gov.sg/statistics/latest_data.html#18) (Cited 23 June 2014).

EDAI Town (2016). Prices for limited period. Retrieved from <http://www.edaitown.org/price.html> (Cited 16 June, 2016).

Endekra, B., Kwapena, F., and Yala, C. (2015). Understanding property price movements in Port Moresby: Lessons from a price tracking experiment. *National Research Institute Issues Paper*, No. 14, Port Moresby.

Ezebilo, E., Hamago, L., and Yala, C. (2016). Assessment of market prices for residential properties in Port Moresby: Do location and property type matter? *National Research Institute Issues Paper* No. 19, Port Moresby.

Ezebilo, E. (2015). Papua New Guinea's drive for self-sufficiency in food production: Are we ready? *Spotlight with NRI* Vol.8 No.3. Port Moresby: National Research Institute.

Fisher, L.M., Pollakowski, H.O., and Zabel, J. (2009). Amenity-based housing affordability indexes. *Real Estate Economics* 37(4): 705-746.

Global Cities Research Institute. (2015). Port Moresby – Papua New Guinea. Retrieved from <http://global-cities.info/placemarks/port-moresby-papua-new-guinea> (Cited 8 January, 2016).

Glory Group of Companies (2016). Glory Group of Companies. Retrieved from <http://glorygrouppng.com/> (Cited 16 June, 2016).

Gurran, N., and Phibbs, P. (2013). Housing supply and urban planning reform: the recent Australian experience, 2003–2012. *International Journal of Housing Policy* 13(4): 381–407.

Haffner, M.E.A., and Boumeester, H.J.F.M. (2010). The affordability of housing in the Netherlands: an increasing income gap between renting and owning? *Housing Studies* 25(6): 799-820.

Haffner, M., and Heylen, K. (2011). User costs and housing expenses. Towards a more comprehensive approach to affordability. *Housing Studies* 26(4) 593–614.

Hashim, Z.A. (2010). House price and affordability in housing in Malaysia. *Akademika* 78(Jan–April): 37–46.

Hausples (2015). Affordable housing for PNG. Retrieved from <http://hausples.com.pg/more-affordable-housing-for-png/> (Cited December 15, 2015).

Housing Agency (2016) Living in an affordable home. Retrieved from <http://www.housing.ie/Housing-Information/Home-Ownership/Living-in-an-Affordable-Home> (Cited June 01, 2016).

HDB: Housing and Development Board (2015a). Ethnic integration policy and SPR quota. Retrieved from <http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/resale/conditions-after-buying> (Cited December 15, 2015).

HDB: Housing and Development Board (2015b). HDB Flat. Retrieved from <http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/hdb-flat> (Cited October 16, 2015).

HDB: Housing and Development Board (2016). Conditions after buying a Resale Flat <http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/resale/conditions-after-buying> (Cited June 03, 2016).

HDB: Housing and Development Board (2016) HDB InfoWeb: Guide on home maintenance: Living in HDB flats. Retrieved from [www.hdb.gov.sg](http://www.hdb.gov.sg) (Cited June 1, 2016).

Housing and Urban Development (2016). Community Planning and Development: Who needs affordable housing? Retrieved from [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/comm\\_planning/affordablehousing/](http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/) (Cited May 26, 2016).

Hui, E.C.M. (2001). Measuring affordability in public housing from economic principles: case study of Hong Kong. *Journal of Urban Planning and Development* 127:1(34): 34–49.

Hulchanski, J.D. (1995). The concept of housing affordability: six contemporary uses of the housing expenditure-to-income ratio. *Housing Studies* 10(4): 471–490.

ICCC: Independent Consumer and Competition Commission. (2010). *PNG housing and real estate industry review: Final report*. Independent Consumer and Competition Commission, Port Moresby.

Kamal, E.M., Hassan, H., and Osmadi, A. (2016). Factors influencing the housing price: developers' perspective. *Inter-*

- national Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering* 10(5): 1594–1600.
- Kenna, T., and O’Sullivan, M. (2014). Imposing tenure mix on residential neighbourhoods: a review of actions to address unfinished housing estates in the Republic of Ireland. *Critical Housing Analysis* 1(2): 53–62.
- Kutty, N.K. (2005). A new measure of housing affordability: estimates and analytical results. *Housing Policy Debates* 16(1): 113–142.
- Lux, M. (2007). The quasi-normative approach to housing affordability: the case of the Czech Republic. *Urban Studies* 44: 1109–1124.
- Moore, E., and Skaburskis, A. (2004). Canada’s increasing housing affordability burdens. *Housing Studies* 19(3): 395–413.
- Mulliner, E., Smallbone, K., and Maliene, V. (2013). An assessment of sustainable housing affordability using a multiple criteria decision making method. *Omega* 41(2): 270–279.
- Mulliner, E., and Maliene, V. (2015). An analysis of professional perceptions of criteria contributing to sustainable housing affordability. *Sustainability* 7: 248–270.
- National Executive Council (2016). NEC Decision No: 33/2016 (16 February). Port Moresby: NEC.
- Papua New Guinea National Statistical Office (2015). *Results of 2011 National Census*. Port Moresby: National Statistical Office.
- Quigley, J.M., and Raphael, S. (2004). Is housing unaffordable? Why isn’t it more affordable? *Journal of Economic Perspectives* 18(1): 191–214.
- Rea, W., Yeun, J., Engeland, J., and Figueroa, R. (2008). The dynamics of housing affordability. *Perspectives on Labour and Income* 20(1): 37–48.
- Robinson, M., Scobie, G.M., and Hallinan, B. (2006). *Affordability of housing: Concepts, measurement and evidence*. Working Paper No. 06/03, New Zealand Treasury.
- Seelig, T., and Phibbs, P. (2006). Beyond the normative: low income private renters’ perspectives of housing affordability and need for housing assistance. *Urban Policy and Research* 24(1): 53–66.
- Stretton, A. (1979). Urban housing policy in Papua New Guinea. The Institute of Applied Social and Economic Research, Papua New Guinea, Monograph 10.
- Stone, M.E. (1993). *Shelter poverty: new ideas on housing affordability*. Philadelphia: Temple University Press.
- Stone, M.E. (2006). What is housing affordability? The case for the residual income approach. *Housing Policy Debate* 17(1): 151–184.
- von Hoffman, A. (2016). *To preserve affordable housing in the United States: A policy history*. Joint Center for Housing Studies of Harvard University, Working Paper, March 2016.
- Wallace, J.E. (1995). Financing affordable housing in the United States. *Housing Policy Debate* 6(4): 785–814.
- Webster, T., Chand, S., and Kutan, L.P. (2016). Property and housing policy development. Results from consultancy services submitted to the National Research Institute, Port Moresby. 19 February, 2016.
- Whitehead, C., Monk, S., Clarke, A., Holmans, A., and Markkanen, S. (2009). *Measuring housing affordability: a review of data sources*; Cambridge Centre for Housing and Planning Research: Cambridge, UK.
- Yala, C. (2010). Study tour of land development in the Australian Capital Territory: lessons and policy options for the national land development programs. The National Research Institute, Papua New Guinea Special Publication No. 63.

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