Measurement of Real Estate Affordability in Bahir Dar City

Getahun Fetene Dinku (✉ gthn055@gmail.com)

University of Gondar School of Technology

Abstract

Today, the increasing population in urban areas is forcing government agencies, builders and investors to focus on building real estate housing. However, the affordability of these housing is becoming a concern. This research examines the affordability of real estate housing in Bahir Dar. The study utilizes household income survey; conducts real estate market assessment; explores town housing policy and land tenure system; values financial accessibility; investigates the housing demand; compares and contrasts the experience of international housing policy and land tenure system with local system. The study develops a conceptual housing policy framework to address the housing affordability challenge. Four common internationally accepted approaches were used to measure the affordability of real estate housing. Based on the study a median household has 4,500 Birr monthly income. Results show that only 20% of residents have their own housing unit, while the majorities are living on rent and/or other means. Price of a prevailing standard real estate housing unit is approximately 2,200,000 Birr. Presently, only 14% of real estates are owned by local residents from more than 600 real estate houses sold in the city. This study can help the Municipal Government in identifying possible groups who need housing subsidy and can take a lesson to improve the housing policy. In addition, real estate investors can use it in improving their market strategies. Individuals can also benefit from the research for decision-making when investing in real estates.

1. Introduction

Real estate refers to land and associated elements made permanently a part thereof and the nature and extent of one's interest there in. Real estate may be acquired, owned and transferred by any legal entity as determined and defined by law (Ariyawansa, 2009). This entity may take the form of individuals, businesses and nonprofit organizations. Real estate market is the market that encompasses all transactions, which involve dealings of rights or interests in land and buildings. Real estate generally contributes either directly or indirectly to a country's economic development due to the corresponding growth in the demand for materials, labor inputs and the like in the economy. According to the official annual report on Macroeconomic Developments, real estate in particular grew by an annual average of 14.1% per year in the past five years to 2008/09 (Access Capital, 2010).

Real estate can also play an important role in satisfying affordable housing needs to a community. Housing is a critical part of a community's economic infrastructure, as important as schools, roads, and bridges. Because households need safe and suitable housing that they can afford. When housing is affordable, low and middle income families are able to put nutritious food on the table, receive necessary medical care, and provide reliable daycare for their children (Anacker, 2019), (Rosen et al., 2021). Communities are stronger and healthier when economic, educational, and housing opportunities are available to everyone. Hence, a community needs to offer housing of varying types of affordable housings for different income levels and desires of people at different stages of life to remain competitive. Without a sufficient supply of affordable housing, a household cannot fulfill all the above benefits to its family members. However, the need for affordable housing has escalated significantly in

urban Ethiopia. The problem is mostly associated with rapid increase of population in major towns, income of households, and market price of houses, housing policy and land tenure system of Municipalities (Endashaw, 2012).

According to the reports of (UN-Economic & Social Affairs, 2017), Ethiopia is the second-most populous country in the continent of Africa next to Nigeria. Based on the latest UN estimates, the population of Ethiopia is approximately 104,957,000. This ranks Ethiopia in 14th place as the most populous country in the world. In Ethiopia, about 20.2% of the total population is estimated to reside in urban areas. Trends suggest that the size of urban population is likely to continue to grow at a high speed in the future. For example, according to Bahir Dar City administration the city has a population of 311,723 with average population growth rate of 4.2% per year.

Based on the reports of (Central Statistical Agency of Ethiopia, 2017) the dependency ratio, which is the ratio of people who are generally not in the labor force to the workforce of the country, is much higher in rural areas than that of small and large town areas (100%, 69% and 48%) respectively. The dependents include the population under 15 years old and people aged 65 and over. The productive part of population accordingly consists of population between 15 and 64 years. Bahir Dar, which is considered as one of the major towns in Ethiopia has a dependency ratio of 48%. This indicates that 52% of the population in the city is independent/working force which is pushing the demand for houses and better living conditions.

The standard housing construction method in major towns of Ethiopia is by using concrete. However, construction materials and housing infrastructure costs are increasing to high levels. In addition, financial access and access of land for housing are very limited. These and other facts push the independent/working force for affordable homes for them to be productive and support job growth and contribute to the economic development of the nation.

According to (UN-Habitat, 2011), using different housing affordability measures could provide a better platform in housing affordability research. Because each measure provides a different but valuable perspective on the fundamental relationship between rents, incomes, and housing allowances. Thus, this study assesses the current practice of real estate in terms of affordability; identifying the purchasing power of residents in new residential properties; and evaluation of housing policies of Municipalities.

2. Methodology

2.1. Data Type and Source

Both the qualitative and quantitative aspects of the study are based on primary and secondary data types. Ethiopian household survey report database (Central Statistical Agency of Ethiopia, 2017), data from Bahir Dar City Mayors Office and monthly salary of civil servants obtained from Amhara National Regional State (ANRS) Civil Service Bureau are the major secondary data components which facilitated this study. On the other hand; real estate market data, availability of long term loan and, income data obtained from household income survey process are the major primary data used.

2.2. Data Collection Methods

Primary data was collected through questionnaire, in-depth interview and personal observations. Both open and close ended format questions were designed to obtain information on the affordability of real estate housing for all income groups in the city, for government and non-government banks and for real estate developers. Secondary data were collected from published and unpublished literatures and responsible bodies such as ANRS Civil Service Bureau, Central Statistics Agency of Ethiopia, Bahir Dar City Mayors Office, UN reports and others.

2.3. Sampling Technique and Sample Size

In this paper, simple random sampling method is used though there are different sampling techniques. Because, simple random sampling method gives an equal chance for each unit included in the sample. In Bahir Dar, there are only four real estate developers which are functional currently. As the number of real estates is very few and is easy to survey, the entire population has been sampled to achieve a desirable level of precision in the assessment of market conditions of real estates. According to Bahir Dar City Administration (2018), current population of the city is around 311,723 with an average household size of three. This implies that the approximate number of households in Bahir Dar is estimated to be 103,908. In order to study the income of residents, the sample size used is determined from similar studies done by Central Statistics Agency of Ethiopia, which is 384 and from published tables by (D.Israel, 2013). Thus, this study used 400 samples to represent households.

2.4. Data Processing and Analysis

Microsoft Excel and SPSS statistical packages are used as analysis tools in this study. According to the reports of (UN-Habitat, 2011), there are four common housing affordability measures which are associated with two components; housing costs and household income.

- Housing price-to-income ratio approach
- Housing expenditure-to-income ratio approach
- Residual income approach
- Rent-to-income ratio approach

According to (OECD, 2021), there is no international consensus on how to measure housing affordability and no single measure fully captures the range of concerns around the ability of households to secure housing for an acceptable price. However, it is increasingly becoming evident that using different housing affordability measures could provide a better platform in housing affordability research, because each measure provides a different but valuable perspective on the fundamental interplay between rents, incomes, and housing allowances. In this study the researcher has tried to use all the four approaches to get a better result on the concept of affordability of real estate houses in Bahir Dar City.

2.4.1. Housing Price-to-Income Ratio Approach

This approach is defined as the ratio of current median/mean market value of standard housing unit to median/mean income of a household. The housing price-to-income ratio can be seen as an indicator of the ability of households to access finance with which to purchase new residential housing. Housing affordability is considered to be severely unacceptable when the price-to-income ratio reaches 5.1 or more, and it's also identified as affordable when price-to-income ratio is less than or equal to 3. See Table 1 below for more understanding.

Table 1
Housing Affordability Rating Category

Affordability Rating	Median Multiple *
Severely Unaffordable (Sev.U)	≥ 5.1
Seriously Unaffordable (Ser.U)	4.1-5.0
Moderately Unaffordable (MU)	3.1-4.0
Affordable (A)	≤ 3
*Median Multiple: Median house price divided by median household income	

Source

(Felipe Carozzi, 2018)

2.4.2. Housing Expenditure-to-Income Ratio Approach

The expenditure-to-income ratio measures the housing affordability once the homeownership has been achieved. This approach simply conceives housing affordability as the measure of the ratio between what households pay for their housing and what they earn. A housing cost burden exceeding 30 percent of income is defined as unaffordable (US Department of Housing and Urban Development, 2021). In this study thresholds of the housing expenditure-to-income ratio will be set at 25%, 30%, 40%, and 50% to evaluate capability of households to afford a real estate house having a mean market value in a broader view. According to Kutty as cited by (Chen et al., 2010; Stone, 2006), households that exceed these ratios are regarded as having housing affordability problem.

2.4.3. Residual Income Approach

The residual income approach measures whether the households' income after deducting the standard housing consumption is sufficient to cover non-housing needs. In other words, a household could be considered having a housing affordability problem when its income after housing expenditures falls below the prescribed level of minimum socially acceptable or desirable non-housing consumption. Therefore, appropriate indicator of housing affordability should be the differences between housing costs and the residual income exist after paying for housing. A household would enter housing-induced poverty if its housing expenditures exceeded one-third of its income (Stone, 2006).

2.4.4. Rent-to-Income Ratio Approach

The fourth measure is house rent-to income ratio. This ratio is calculated by dividing the median annual rent of houses by the median annual renter household income. This method is used for assessing the housing affordability of rental households. Affordable rental-housing should cost no more than a certain percentage (usually about 25–30%) of household's monthly income (Bray, 1998).

3. Results And Discussions

3.1. Demographic Features of Respondents

Demographic features of the respondents included in the questionnaire survey are age structure, household size and educational level. However, only the age structure and the household size are presented in this subsection, as educational level is less important in housing affordability calculation.

Based on the questionnaire survey, the respondents' age structure lies within the range of 16–62 years. Young households, who are 18–30 years old category, take the greater share of the respondents' with 46%, while 31% of respondents' falls in the category of 30–40 years old. Those who are above 40 years old constitute 22% of the sample households. Figure 1 shows the detail contribution of each category in the age structure of respondents.

With regard to household size, more than 66% of the households constitute one to three family members, while 34% of households contain above three family members. Based on the survey, the average house hold size of Bahir Dar is three which is equivalent to the average household size determined by (Central Statistical Agency of Ethiopia, 2017). Figure 2 shows the break down.

3.2. Demand for Housing in Bahir Dar

In the problem statement, it was tested that demand for affordable housing is becoming a serious issue in Bahir Dar due to rapid urbanization rate. The reason for this urbanization is the migration/relocation of people in large quantity from rural areas into towns looking for a better life. The age structure of this large migrant is young who have the power to work and also need housing. Thus, urbanization will continue to place immense strain on meeting the demand for affordable land and housing provision.

The demand for housing has been discussed in this subsection briefly based on data collected from Bahir Dar City Mayor's Office, Central Statistics Agency of Ethiopia and questionnaire survey of residents. For example, Fig. 3 shows only 20% of residents have their own houses, while the majorities are living through rent and/or other means. This proportion can be an indicator of the demand for housing.

In 2018, there were around 1300 legalized housing cooperatives which were waiting for land in the city. Each cooperative consists of 24 members; which means 31,200 people were waiting for a plot of land to construct self-help housing. The percentage contribution of this figure in the households who do not have

their own housing in the city is 38%. In addition, there are many other cooperatives which are not yet legalized due to different reasons. Also, there were more than 7,000 individuals who participated in auctions to buy land through lease for housing development from Bahir Dar City Administration in 2019, which is an indicative of the housing demand.

3.3. Access of Land for Housing

The available ways to own land for housing are either buying by lease through auctions or forming housing cooperatives. Urban land lease law clearly states that an urban land for housing development shall be held by leasehold through tender or auction. In this process the City Administration shall prepare urban land plots. Then the City Administration will set lease benchmark price or ground rent based on the threshold price, determined by taking into account the cost of infrastructural development, demolition cost, compensation of displaced people in case of built up areas, and other relevant factors. The law confirms that urban land shall be granted for the highest bidder on the basis of market and competitive parameters.

According to Bahir Dar City Mayor's Office, unit price of land for sale by lease through auction has five ranks based on the location of the land. Land located in city center is ranked 1st with a starting price of 350 Birr/m^2, while land outside the city center ranks 5th with a relatively lower price of 150 Birr/m^2. Ranks of 2nd, 3rd, and 4th have a price of 300, 250, 200 Birr/m^2; respectively. Therefore, for residents who want to buy land by lease, the average starting price of land per square meter is 275 Birr/m^2. However, in 2018 actual winners won with a minimum of 10,000 birr/m^2 which makes land very expensive with no sufficient reason. Allocation of urban land through auction only benefits higher income groups and marginalize the lower and middle income groups. Even the amount of land presented for auction and the number of people registered in the competition are not comparable. As described in the above section, the number of individuals who participated in the auction was more than 7,000 while the available land presented for auction was around 231 plots of land.

Residents who formed housing cooperatives acquire land from the City Administration after each cooperative has saved 30% of the approved construction cost of houses in Bank. There are many cooperatives who owned land for building residential houses before 2014. Some of the individuals have completed the construction and started to live in. But providing land for housing cooperatives is not customary and exposed for corrupt activities. In this program there are illegal modulators between the Mayor's Office and housing cooperatives. These modulators manipulate the system by forming housing cooperatives with family members or other members which are not eligible for the program. In Bahir Dar, the last time land was provided for housing cooperatives were five years ago. Even though there were 1300 legalized housing cooperatives, none of them acquired land since the start of 2019. Generally, limited access and the high cost of land are fundamental constraints to increase the supply of affordable housing in Bahir Dar.

3.4. Financial Access for Housing

In Bahir Dar, there are 17 different banks which are functional currently. Except the commercial bank of Ethiopia all of these banks have no a special system for housing construction finance. In other words, the banks do not have any financing system to support residential housing construction programs in the town (Condominium housing program, Cooperative housing program, Real estate housing program, etc.). Individual households, cooperatives and real estate developers are expected to mobilize 100% of the construction finance on their own.

Few banks lend to individuals, housing cooperatives and real estate developers in a conventional way only if they provide a 70% completed house as a collateral for the bank. That means if they provide a 70% completed house as a collateral to the bank, the bank can lend them the remaining 30% to complete the house. As the banks have no special system for housing construction finance, the interest rate they provide is very high which is not affordable for most of individual households in the city. Very few banks lend for staffs of NGOs and the bank itself depending on the borrowing capacity of the individual with a relatively small interest rate. Some of the banks have a Diaspora account, which means any diaspora can open an account and can save money in this account. If the diaspora saves 60% of the construction cost, then he can borrow the remaining 40% of the construction cost in that bank.

Generally, most of the households in Bahir Dar are hardly hit by lack of financial access to own new residential houses. Table 2 shows few banks and the loan system they provide for individuals in Bahir Dar.

Table 2
Available Loan System for Individuals

Name of Bank	Loan System For Individuals			
	Interest Rate (%)	Loan Period (year)	Loan Amount (Birr)	Preconditions
Abay Bank	7%	24	Depends on the borrowing capacity of the individual	For staffs of the bank itself
United Bank	9–12%	25	>>	For staffs of NGOs and the bank itself
Buna Bank	18%	10	>>	For staffs of the bank itself
Zemen Bank	17–18%	5	>>	For staffs of NGOs and the bank itself

3.5. Assessing Household Income and Consumption Expenditure

In this section income and consumption expenditure of households in Bahir Dar is assessed based on data from 400 sample households and data from (Central Statistical Agency of Ethiopia, 2017). Income of the sampled households is divided into four equal groups (quartiles) to identify the income level of the

residents. From the sampled income data a median household has a monthly income of 4500 Ethiopian Birr. In other words, 50% of the households have a monthly income of less than 4500 Birr. Also the third quartile of the income data is 7500 Birr which implies that 75% of households have a monthly income of less than 7500 Birr. Only 24% of the households earn more than 7500 Birr monthly income. Figure 6 shows income and percentage contribution of the sampled households.

Household consumption expenditure is the value of consumer goods and services acquired, used or paid for by a household through direct monetary purchases, own account production, barter or as income in kind for the satisfaction of the needs and wants of its members (Central Statistical Agency of Ethiopia, 2017). Based on the particular household survey made for this research, average consumption expenditure of the residents of Bahir Dar is around 63% of their total monthly earnings. The result shows that, 75% of the households consume approximately 58% of their monthly earnings while the lowest 25% of the households consume approximately 67% of their total monthly incomes as indicated in Table 3.

Table 3
Consumption Expenditure of Respondents

Group	Monthly Income	Consumption expenditure	Percentage consumption
1st Quartile	3000	2000	66.67
2nd Quartile	4500.00	2,900.00	64.44
3rd Quartile	7500.00	4,350.00	58.0
Average			63.04

3.6. Assessing Real Estate Market in Bahir Dar

There are more than 600 houses of different sizes sold in all the real estates in Bahir Dar. Almost all of these houses have more than 250m^2 plot areas (construction space). Price of houses sold varies from 640,275.45 to 4,500,000 Birr. The lower priced houses are those sold in one of the Real Estates at the beginning of the project in 2007/08. From the total houses sold, G + 0 villa house is the most sold house types in real estates of Bahir Dar with a share of 76%. Figure 5 shows the detail contributions of each housing type to the total housing units. So that, a median G + 0 villa house lay on 250m^2 plot areas has a price of 2,200,000 Birr. Taking this house as a benchmark, affordability of real estate houses will be discussed in detail in the next section.

The customers of these real estate houses have different origins. More than half of the customers (66%) are Ethiopians living abroad (Diasporas), while 20% are people who reside outside Bahir Dar City. The share of the residents of Bahir Dar City is only 14%, which is very small. Figure 6 shows the origin of real estate customers in Bahir Dar City.

3.7. Measuring Real Estate Affordability in Bahir Dar City

In this section, income and consumption expenditure data, real estate market data and individual's borrowing capacity are primarily used to evaluate the affordability of new real estate houses in Bahir Dar. As discussed in section 3.5, a median household's monthly income is 4,500 Birr which is equal to annual earnings of 54,000 Birr and the average consumption expenditure of these households is 63%. Similarly, the price of a standard housing unit is 2,200,000 Birr as presented in section 3.6. Based on these results the affordability of real estate houses in the town is evaluated using different approaches below.

3.7.1. Housing Price-to-Income Ratio Approach

As defined in section-2 housing price to income ratio approach is the ratio of a mean price of a standard house to the annual disposable income of a median household. Housing affordability is considered to be severely unacceptable when the price-to-income ratio reaches five or more. A house is said to be affordable when price-to-income ratio is less than or equal to three. Table 4 reveals that, the top 25% of the households, which have a relatively better annual income than the other groups, have 18.33 housing price-to-annual disposable income ratios. This indicates that the households must wait more than 18 years to own these houses if they save 100% of their income, while a median household must wait 46 years to afford the properties if it saves 100% of its annual disposable income.

Table 4
Mean Housing Price-to-Annual Disposable Income Ratio

Income group	Median income (birr)	Price-to-Income ratio (No.)
Bottom 25%	2,187.00	83.83
25–50%	4,000.00	45.83
50–75%	5,728.50	32.00
Top 25%	10,000.00	18.33

With this affordability measurement criteria, the houses are generally far from international standards to be afforded by most households of the city. It is important to note that the extent of the problem is more than this, because no one can save 100% of its income as he/she must expend some proportion of the income for living. As discussed above in section 3.4, price of land is very expensive and there is little access land for housing construction. In addition, construction cost is escalated with a significant amount in Ethiopia. Associated with the down fall of the purchasing power of Birr, price of most construction materials has increased by more than 50% in 2018. This high house price-to-income ratio is particularly associated with high construction costs and land prices.

3.7.2. Housing Expenditure-to-Income Ratio Approach

This approach reveals the progress of housing affordability for each income group once housing has been achieved. It measures the ratio between what households pay for their housing and what they earn. Once a mortgage is obtained to attain access for housing, it is necessary to assess whether capital and

interest payments are reasonably affordable in the sense that it does not prohibit in meeting other basic living costs. As it has been discussed in section 3.4 mortgage financial access for housing is not available in Bahir Dar. Although there are around 17 governmental and private banks in the town, none of them provide a special loan system for construction of residential housing. An individual can only borrow in a conventional way from any bank by providing collateral with high interest rate (> 15%). This high interest rate significantly reduces the borrowing capacity of individuals and makes them unable to afford real estate housing. The borrowing capacity of individuals with 25%, 30%, 40% and 50% annual savings of their disposable annual income is assessed with different interest rates. The results are compared to identify which percent of saving and which interest rate makes households to afford real estate houses.

Figure 7 reveals that a median household's borrowing capacity with 50% saving of the annual income and 15% interest rate within 30 years loan period is only 177,281 Birr. This indicates that a median household in Bahir Dar is very far from the level of affording standard real estate housing. Figure 8 also reveals that high income households with 50,000 Birr monthly income cannot afford a standard real estate housing having a price of 2,200,000 Birr with 50% savings, and 15% interest rate within 30 years loan period. For a household to afford this house, its monthly disposable income must be more than 55,843.41 Birr.

Therefore, it should be understood that the borrowing capacity of individuals with annual savings of less than 50%, higher interest rates of more than 15% and relatively shorter loan periods of less than 30 years will be decreased to a level that households cannot conceive to own real estate houses.

3.7.3. Residual Income Approach

In this approach the appropriate indicator of housing affordability should be the difference between housing costs and the residual income that exist after paying for housing. In other words, a household could be considered having a housing affordability problem when its income after deducting housing expenditures falls below the prescribed level of minimum socially acceptable or desirable non-housing consumption. Housing is generally deemed affordable when a household spends less than one-third of its income on housing related expenses (Bray, 1998). That means, the residual amount after deducting housing expenses should be around 67%. As shown in Fig. 9, no one can afford houses with 33% income expense for housing. For example, a median household can only access 117,006 Birr to be paid back within 30 years. This amount of money is far less than the total amount of money required to afford a mean price real estate house. With this affordability measurement criterion even high income households could not afford real estate houses as easily as possible. Because high income households with 50,000 birr monthly income could only access 1,300,064 Birr which should be paid back in 30 years. Therefore, for households to afford houses with 33% maximum expense for housing, they should have at least 83,765.11 Birr monthly income to pay back the mortgage value in 30 years.

3.7.4. Rent-to-Income Ratio Approach

This ratio is calculated by dividing the median annual rent of houses by the median annual renter household income. This method is used for assessing the housing affordability of rental households. Affordable rental-housing should cost no more than a 25–30% of household's monthly income (Bray, 1998). In Bahir Dar, there are few households living in real estates on rental bases. Median housing rent in these real estates is 4,000 Birr per month. As it has been discussed in section 3.5, monthly income of a median household is around 4,500 Birr. That means if a median household wants to live in real estate houses on rental bases, he/she must pay 89% of its income per month, which is not affordable. With this affordability measurement criterion, a household should have more than 13,300 Birr monthly income to rent a real estate house. Based on the particular household income survey made for this study, only the top 7% of the households can afford renting these houses. Figure 10 shows the proportion of households who could afford real estate houses by rent.

3.8. Conceptual Housing Policy Framework

In the previous sections of this chapter, it is observed that only 20% of the households live in their own houses while the remaining 80% live in rental or other sort of houses. Furthermore, access to land and finance for housing is very limited. Due to these and other reasons, most of the Bahir Dar residents cannot afford real estate houses by any of the measurements discussed above. The housing market works well for people with higher incomes, but the market is unattainable for middle and low income families who seek affordable housing options. Thus homeownership is increasingly out of reach. If the provision of housing in the city continues with the current pace, the pressure of getting affordable housing will be intensified to a level that the Government couldn't manage it in the near future.

Now the question is; what should be done to avoid this critical problem? The only solution to solve this critical problem is applying for an efficient supply of housing. Efficient supply of housing is closely associated with policies, delivery systems in land, finance, building material supply, construction space and technology. The existence of inappropriate regulations and inefficient planning systems can also cause chaos with housing supply for households. Therefore, this section attempts to develop a conceptual housing policy framework that may be used to integrate the provision of affordable housing. Effective housing policy framework has a multi-dimensional relevance for people living in poverty. Figure 11 reveals the framework consisting of four main strategies, which are very important to achieve the goal of providing affordable housing. These strategies are:

- Policy measures for access of land
- Policy measures for construction area
- Policy measures for access of finance
- Policy measures for method of construction

The interaction between these strategies determines the effectiveness of the policy framework. The strategies have a sum up impact on the provision of affordable housing. That means as the interaction between the strategies increases, the effectiveness of providing affordable housing will increase. But if

the interaction between the strategies decreases, the effectiveness of providing affordable housing will also decrease.

3.8.1. Policy Measures for Access of Land

The first step for affordable housing is ensuring the right to access land with a reasonable cost or free of cost. As it has been discussed in section 3.3, buying land by lease through auction is very expensive. It is beyond the capacity of most households in the town. In addition to this, peoples who are participating in the auction are any Ethiopians from anywhere which makes the residents of the town unable to compete in the auction and won land for housing. Also getting land from the City Administration by forming housing cooperatives is not regular and exposed for corrupt activities. Generally, it has been discussed that limited access of land is a fundamental constraint to increasing the supply of affordable housing in Bahir Dar.

In order to solve this problem the City Administration should only allow the residents of the town, who don't have their own house, to participate in the auction. Because 80% of the households in the town have no their own houses and around 38% of these households are waiting for land from government by forming legalized housing cooperatives. Based on these facts, allowing every citizen to participate in the tender process is a gritty act that only targets to grasp a lot of money in the account of the Administration. Second the City Administration should provide land to eligible households forming legal housing cooperatives at a regular and coordinated fashion. It should be responsible and committed to close doors of corrupt activities. Third the City Administration should provide land for private sectors working on housing programs with a reasonable cost. As the number of private sectors working in the town is very few, the government should motivate them to participate in the provision of affordable housing for the community.

3.8.2. Policy Measures for Construction Space (Plot Area)

Once we ensured the right to access land, limiting the construction area of the land to a reasonable extent is very important. According to EU housing statistics as cited in (Chen et al., 2010), average construction space of residential housings in urban areas of developed countries is 80–100 m^2. But as we have seen in section 3.6, the most prevailing size of residential real estate housing in Bahir Dar is 250 m^2. Within a city having limited access of land for housing, using this large area of land for a single household is not wise, because land given for two households can be enough for five households with international standards. So that reducing the construction space of house's can be a solution in increasing affordability of houses. Because, higher density development allows for more units to be built on less land. Therefore, the government must consider the relaxed land development and building standards.

3.8.3. Policy Measures for Access of Housing Finance

As we have seen in section 3.4, even though there are around 17 private and government banks, none of them have a mortgage finance system for housing. Mortgage finance should be an integral part of a housing program, because greater access to housing finance will enhance the ability of high and middle

income households to purchase houses and allow the government to focus on implementing housing programs for the low-income. Mortgage lending is critical to reach housing targets because there is potential for the private mortgage market to serve a large portion of the middle and lower income households with much less subsidy than traditional government housing programs. This allows the government to concentrate its limited resources on those who need them most. NGOs and non-profit organizations can also participate in providing finance if a working environment is created for them. Generally households need to have a uniform housing program which makes sure them to have a housing unit within few years because most of the households in Bahir Dar are not sure when they will own a housing unit in their life.

3.8.4. Policy Measures for Method of Construction

Another means of reducing the overall cost of supplying affordable housing is to allow other methods of construction besides to the conventional methods. The conventional concrete construction method is more expensive and is one of the major factors contributing for unaffordable residential houses. Therefore, building codes and standards should not be a hindrance in the process of providing affordable houses. Rather proper specifications and calculations should be done for new construction materials and building elements. For example, using hydra form blocks, cement stabilized soil blocks, adobe blocks, agro-stone partition wall boards, agro-stone ceiling boards, agro-stone doors, Ferro cement and many others could be alternative options for affordable houses. Some of these construction techniques are very well suited to application in developing countries for several reasons. Most of them are based on earthen materials which are locally available in large quantity and do not require industrial processing. They allow houses to be built with much less damage on global energy and resource, they do not require sophisticated machinery or specialized expertise to construct, and can be constructed quickly. These factors not only make alternative construction technologies attractive for developing countries in general, but also make them particularly well suited to solve economic, social and environmental related problems. Therefore, exercising these and other alternative options could bring a decisive result in the provision of affordable housing units in the city.

4. Conclusions

Affordable housing is an essential building block for a community. A community needs to have housing affordable to a variety of income levels. But the continued growth and expansion of the city has placed an increased gap between the supply and demand of urban land and housing. According to (Central Statistical Agency of Ethiopia, 2017), 52% of the population of Bahir Dar is productive (15–65 years old). In addition, around 80% of the residents have not their own home and 38% of them are waiting for a plot of land by forming legal housing cooperatives. Plus to this 7000 peoples were participated in auction for a plot of land for housing development in 2018 only. A median household's monthly disposable income is 4,500 Birr and the most sold (prevailing) real estate house is G + 0 villa house with an average price of 2,200,000 Birr. Using four internationally accepted housing affordability measurement criteria, the capability of the residents to afford real estate houses was assessed. But the real estate houses

developed and sold through the formal market are generally not affordable for the vast majority of the residents. Because the income of residents is too low and factors affecting housing cost and access are too expensive. For example:

- Urban land for housing development is increasingly scarce, poorly regulated and therefore expensive.
- Construction materials and housing infrastructure costs are increasing from already high levels.
- Housing finance is either not available or simply unobtainable for most of the residents due to high down-payment requirements, short loan periods and high interest rates.

Thus revising the housing policy and land tenure system, closing corrupt activities in the provision of land for housing, creating financial access for housing and allowing other construction techniques different from the conventional method are very important measures for providing affordable houses in the city. It is not the right choice to go with the current pace. Because it is a tragedy for a community lacking one of the basic needs with poor governance of the City Administration. Therefore, the residents need a real change which can bring a brighter future.

Finally the researcher has developed a conceptual housing policy framework which can probably reduce housing affordability problem in the town. The frame work consists of four strategic policy measures which have a sum up impact on the affordability of houses.

References

Access Capital. (2010). *SECTOR REPORT— Real Estate*.

Anacker, K. B. (2019). Introduction: housing affordability and affordable housing. *International Journal of Housing Policy*, *19*(1), 1–16. https://doi.org/10.1080/19491247.2018.1560544

Ariyawansa, R. G. (2009). *Principles of Real Estate Development & Management*.

Bray, J. L. (1998). *Alternative Approaches to Measuring Rental Housing Affordability in Australia*. http://library.bsl.org.au/jspui/bitstream/1/235/1/natsem_discussion paper no 16.pdf

Central Statistical Agency of Ethiopia, N. B. of E. and L. S. M. S. (2017). *LSMS-Integrated Surveys on Agriculture Ethiopia Socioeconomic Survey*. https://microdata.fao.org/index.php/catalog/1315/related-materials

Chen, J., Hao, Q., & Turner, B. (2010). *Assessing Housing Affordability in China: A Case Study of Shanghai 1995-2005*. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.538.9837&rep=rep1&type=pdf

D.Israel, G. (2013). Determining Sample Size. In *Program Evaluation and Organizational Development (PEOD6)*. https://www.google.com/search?q=determining+sample+size+glenn+d.+israel

Endashaw, E. B. (2012). Urban Land Policy and Housing for Poor and Women in Amhara Region : The Case of Bahir Dar City. *FIG Working Week*, *TS07J-Land Policy and Reform II*, *5594*, 6–10. https://www.fig.net/resources/publications/index.asp

Felipe Carozzi, P. C. and C. H. (2018). Rating Middle-Income Housing Affordability. *14th Annual Demographia International Housing Affordability Survey*. http://www.demographia.com/dhi.pdf

Organiztion for Economic Co-opration and Development. (2021). *Hc.1.5. overview of affordable housing indicators*.

Rosen, K., Bank, D., Hall, M., Reed, S., & Goldman, C. (2021). Housing is Critical Infrastructure: Social and Economic Benefits of Building More Housing. *Rosen Consulting Group*, ii–18.

Stone, M. E. (2006). What is Housing Affordability? The Case for the Residual Income Approach. *Housing Policy Debate*, *17*(1), 151–184.

UN-Economic & Social Affairs. (2017). *World Population Prospects*.

UN-Habitat. (2011). *Affordable Land and Housing in Africa*. http://www.unhabitat.org

US Department of Housing and Urban Development. (2021). *New Housing in High-Productivity Metropolitan Areas:Encouraging Production*.

Declarations

Funding

Competing interest

The authors have no relevant financial or non-financial interests to disclose.

Author contributions

Conceptualization, literature search, data collection and analysis, writing the 1st draft of the manuscript, editing and writing the final manuscript were all performed by *Getahun Fetene Dinku*.
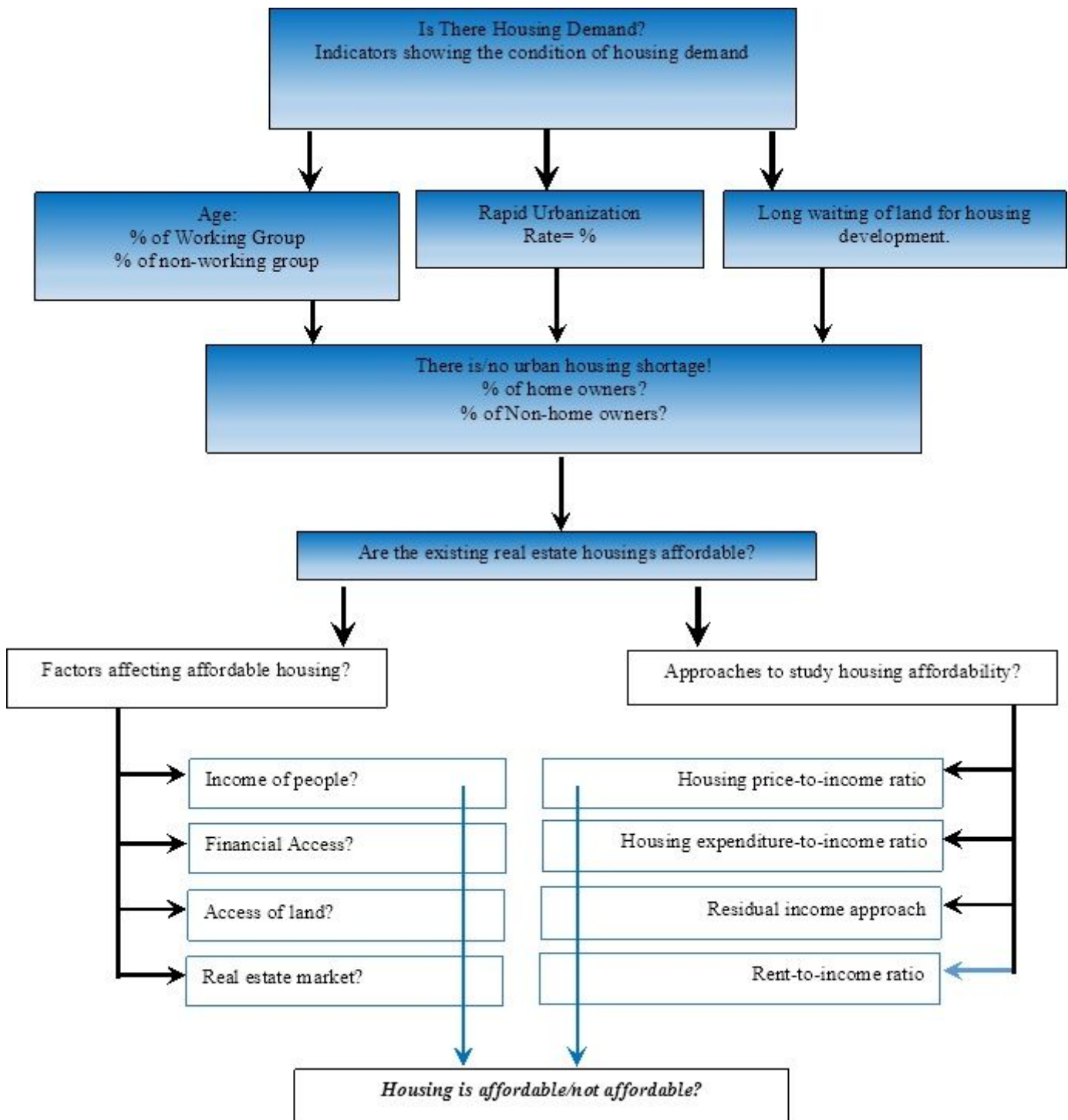
Figures

Figure 1

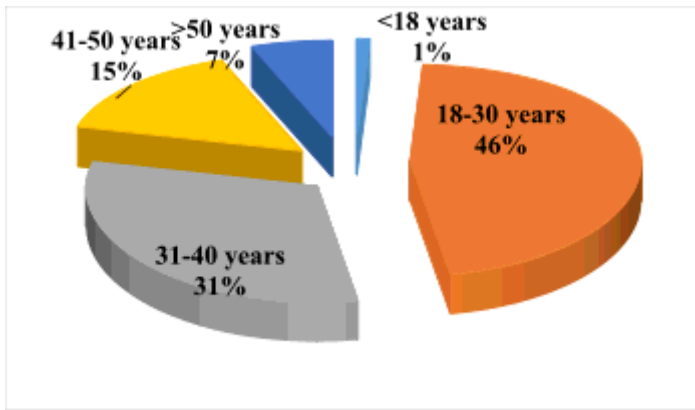Conceptual Framework showing how to Check Affordability of Housing

Figure 2

Age Structure of Households in Bahir Dar

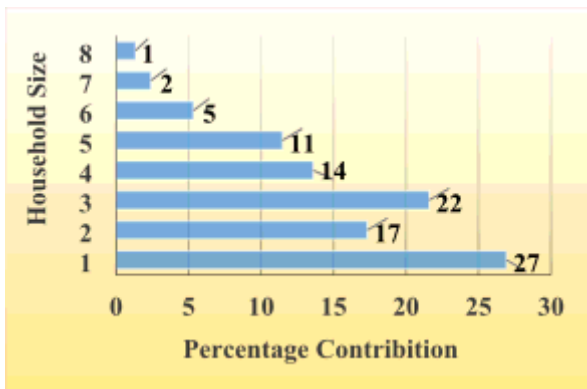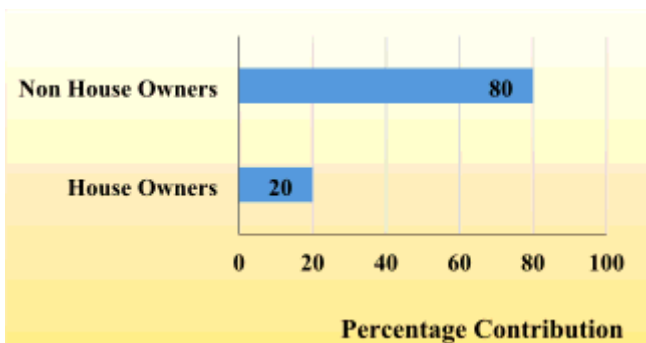Figure 3

Distribution of Household Size in Bahir Dar

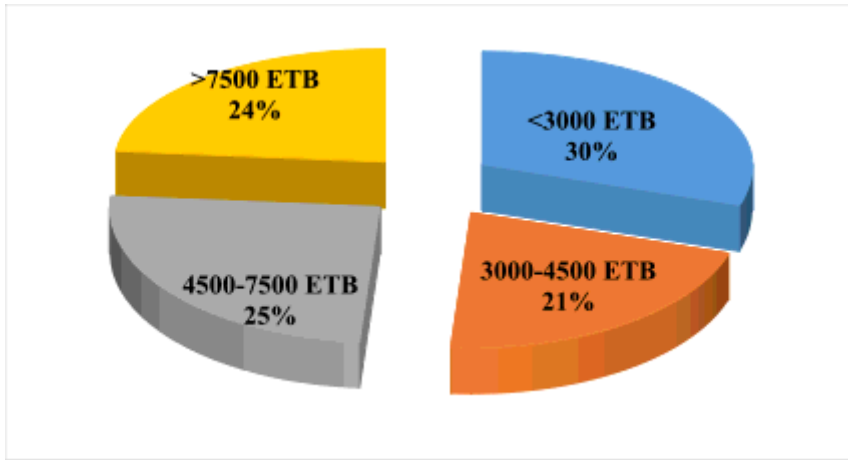Figure 4

Percentage Distribution of House Ownership
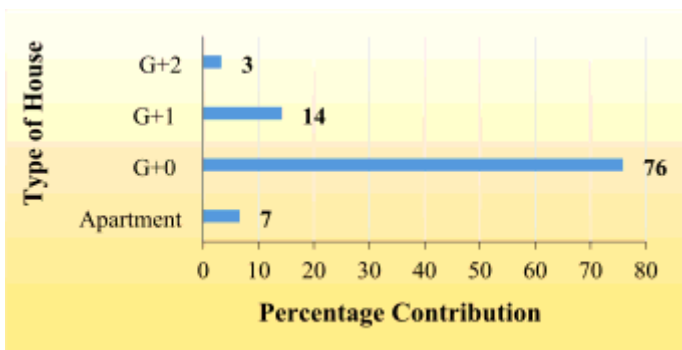
Figure 5

Income Groups and their Percentage Contribution

Figure 6
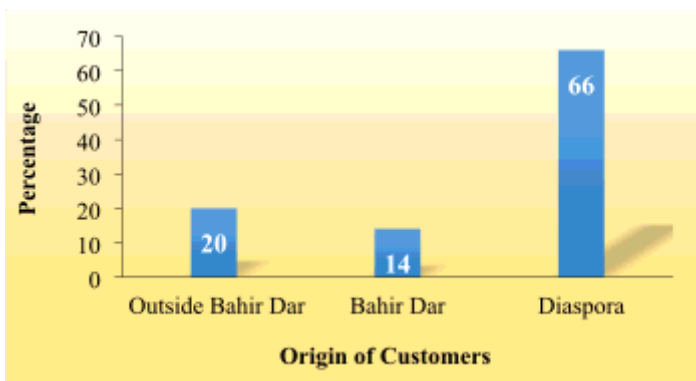
Percentage Contributions of Housing Types in Real Estate

Figure 7

Origins of Real Estate Customers in Bahir Dar
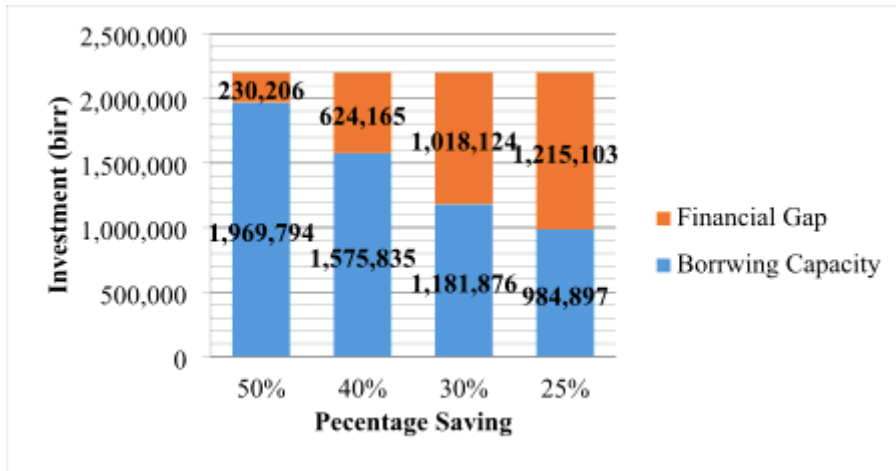
Figure 8

A Median Household's Financial Gap

Figure 9

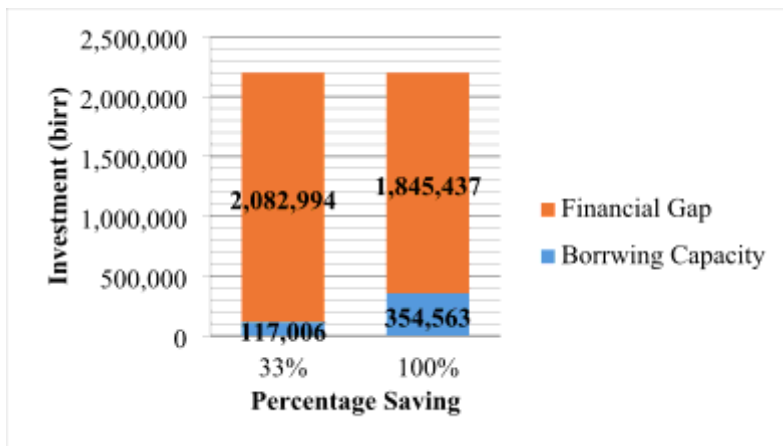### Financial Gap of a Household Having 50,000 Birr Monthly Income

Figure 10

A Median Household's Financial Gap

Figure 11

Real Estate Housing affordability by Rent

Figure 12

A Conceptual Housing Policy Framework