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**Ethiopian Institute of Architecture, Building Construction and City
Development (EiABC)**

Addis Ababa University

AFFORDABLE HOUSING AND ECONOMIC SUSTAINABILITY

The case of the poorest of the poor housing in Debre Markos city

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Addis Ababa, Ethiopia

June 2022



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Addis Ababa University

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The case of the poorest of the poor housing in Debre Markos city

MASTER'S THESIS

This thesis is submitted to the Ethiopian Institute of Architecture, Building Construction, and City Development (EiABC) and Addis Ababa University's School of Graduate Studies for partial fulfillment of the MASTER OF SCIENCE in HOUSING AND SUSTAINABLE DEVELOPMENT requirements.

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June 2022

DECLARATION

I declare that this thesis, titled "**affordable housing and economic sustainability, The case of the poorest of the poor housing in Debre Markos city**" and prepared in partial fulfillment of the requirements for the degree of MASTERS OF SCIENCE IN HOUSING AND SUSTAINABLE DEVELOPMENT, is my original research work prepared independently by my own effort with the close advice and guidance of my adviser. I further declare that my thesis has not been presented at any university, and that all materials that I have utilized or mentioned have been referenced in full.

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Advisor's Confirmation

Under my supervision, MICHAEL MENBERU has completed this research study titled "affordable housing and economic sustainability, The case of the poorest of the poor housing in Debre Markos city." With my signature, I certify that it can be submitted for examination.

Dr. Elias Yitbarek

Signature: _____ Date: _____

This thesis is submitted to the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC) and to School of Graduate Studies of Addis Ababa University in partial fulfilment of the requirements for the degree of Master of Science in Housing and Sustainable Development.

Title of thesis: "**affordable housing and economic sustainability, the case of the poorest of the poor housing in Debre Markos city**"

Author: Michael Menberu Zewudie

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Abstract

The affordability of housing is an essential policy goal. Incorporating economic sustainability in affordable housing in the development of the poorest of the poor's housing programs has become a major concern. This paper examines the affordability and economic sustainability of the poorest of the poor affordable housing in Debre Markos city. To address this, this study uses both quantitative and qualitative methods, using questionnaire surveys, interviews, field observation, and household surveys. Households in the expanding area have lower monthly salaries than in the past, but they are satisfied with the housing quality, rental pricing, and tenure security of their dwellings, according to the data analyzed by Pearson correlation analysis. Households in the intermediate zone had significantly higher incomes after moving into their new homes. Housing is not truly affordable if it is in an inaccessible place with a long commute to work, high transportation expenditures, and land use that is homogeneous. In addition, the study examines several economic sustainability performance indicators. As a result, indicators have been established to examine new housing development schemes for the poorest of the poor. intensive literature analysis and investigation into the study area yielded a preliminary list of 15 critical economically sustainable performance indicators of affordable housing for the poorest of the poor's. The study suggested indicators for incorporating economic sustainability into the poorest of the poor affordable housing programs. The indicators suggest using mixed-use housing and neighborhoods, economic sustainability performance indicators, house location, affordable housing for the poorest of the poor women, house management and maintenance, infrastructure, and local community participation as parameters for evaluating key dimensions of the poorest of the poor affordable housing programs' economic sustainability.

Key words: Affordable housing, Sustainable housing, economic sustainability.

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List of Acronyms

AA: Addis Ababa.

AAU: Addis Ababa University.

AMP: Asset management Plan.

CBD: central business district.

CSA: Central Statistics Agency.

DM: Debre Markos.

Derg: Former Military Government of Ethiopia.

ESPI: Economic sustainability performance indicator.

EC: Ethiopian calendar.

EiABC: Ethiopian Institute of Architecture Building Construction and City Development.

EPRDF: Ethiopian People's Revolutionary Democratic Front.

GDP: Gross domestic product.

GIS: Geographic information system.

SPSS: Statistical Package for the Social Sciences.

UIIDP: Urban Institutional and Infrastructure Development Program.

UN: United Nations.

WASH: Water, sanitation and hygiene.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In many other countries around the world, affordable housing and economically sustainable development are currently major challenges. Concerns of sustainability and affordability are now frequently discussed and recognized as relevant to one another (Mulliner et al., 2013). Specifically, affordable housing should be found in mixed-use sustainable communities, and sustainable communities must provide cheap housing goods.

As a result, it's critical to address both affordability and economic sustainability concerns at the same time. Housing affordability, on the other hand, is typically defined and evaluated only in terms of economic viability. Other crucial considerations, such as sustainability, housing location, and quality, are sometimes disregarded. The most popular technique to define and measure housing affordability internationally is to compare the connection between housing spending and household income (Mulliner et al., 2013).

To address this issue, many governments have made affordable housing a priority in their efforts to improve the living conditions of low-income households. Affordable housing is commonly defined as housing that is affordable to certain eligible households whose income is insufficient to allow them to access market-rate housing (Winston & Pareja Eastaway, 2008).

The major goal of affordable housing programs, which are based on government initiatives, is to enhance housing affordability, particularly for low-income households (Azevedo et al., 2010). Despite the fact that numerous affordable housing programs have been established, there is a controversy about whether they are effective. The affordability of housing for low-income families has improved. For example, living in affordable housing might increase the spending on health care, energy bill, transportation and so on (Isalou et al., 2014).

According to (Charoenkit & Kumar, 2014), increased spending on non-housing concerns has harmed housing affordability. This results in poor demand and abandonment, resulting in a massive waste of resources. (Mulliner et al., 2013), for example, argue that economic viability is not the sole way to enhance housing affordability. Other sustainability considerations, such as

house design, neighborhood environment, location, transportation routes, and job prospects, should be considered instead (Isalou et al., 2014).

When it comes to tackling the housing deficit, especially in developing nations, sustainability considerations are frequently disregarded. Affordable housing schemes have drawn a lot of attention because of their economic viability (Winston & Pareja Eastaway, 2008). In order to create effective housing, both affordability and sustainability challenges must be addressed concurrently. Households require decent quality cheap housing that is well located inside good quality settings that are clean, safe, and have adequate access to jobs, important services, and cohesion.

Resources available to the general population. As a result, a number of studies have attempted to address noneconomic issues related to affordable housing. Better public facilities and amenities can also help to foster a strong sense of belonging. As a result, in this study it is critical to incorporate economic sustainability into affordable housing in order to increase housing affordability in the long run.

Ethiopia's economic expansion is accompanied by a high rate of urbanization, which has created a slew of socio-economic issues, including the lack of cheap housing. There is a shortage of at least 1.2 million units in Ethiopia. Ethiopia's government has responded to the public's need for housing by implementing a variety of condominium housing projects that have primarily benefited low and middle-income individuals. Private enterprises have made substantial contributions to meeting the demand for flats and other high-end residences among middle- and low-income individuals by fully paying the cost of homes and using various mechanisms to transfer properties, such as microfinance and low-interest loan. (UN-Habitat, 2011)

Debre Markos is a city in northwestern Ethiopia that serves as the capital of the east Gojjam zone political administration. It is 300 kilometers from Addis Ababa and provides low-income earners with affordable housing. The purpose of this the poorest of the poor housing project was to ameliorate the housing situation of the poorest of the poor households. This kind of project is one of the affordable house development options for the poorest of the poor residents in Debre Markos, particularly in the Amhara region. The construction of low-cost housing for the poorest of the poor housing provides a key opportunity to include economic sustainability into Debre Markos city housing initiatives. Incorporating affordable housing not only improves housing affordability for

the poorest of the poor's households, but it also indicates the program's long-term economic sustainability. (AMP FINAL2 Debre Marekos, n.d.)

1.2. Statement of the problem

Despite great efforts by the Debre Markos city administration to ensure the success of affordable housing programs, the economic sustainability of affordable housing has received very little attention. Making housing more affordable for the urban poor is one of the key goals of affordable housing. The existing affordable houses for low incomes earners are not consider the economic sustainability of affordable housing increases spending on health care, energy bill, transportation cost and a long commute to work. Because of the location of the residences, the poorest of the poor households are forced to spend more of their limited income on non-housing necessities.

It is not enough to just build additional houses; a major focus on developing sustainable communities is also required (Mulliner & Maliene, 2011). "Places where people desire to live and work, now and in the future" is how sustainable communities are characterized. They should be active, inclusive, and safe, as well as well run, environmentally conscious, well designed and constructed, well connected, prospering, well served, and equitable to everyone. Infrastructure can and has contributed to poor demand and abandonment in places.

Residents reside in the poorest of the poor affordable housing that lack durability, enough space, good water and sanitation and infrastructure. While central and intermediate communities have far better access to utilities like water, sanitation, solid waste, and power, these services are still in short supply. Almost every family has access to drinking water from a public tap and can rent electricity from private individuals. Solid waste management is also a concern, because it is regularly discarded in open areas, endangering public health. The construction material for the walls of all housing units is "wood and mud," commonly known as chikabet (wood/mud + straw-mortar house). "Soil" is the most widely used flooring materials in housing units, indicating moderate-quality housing.

These the poorest of the poor housing schemes should meet the needs of the customers. Location, income, and employment status of residents are not considered in the housing strategy. The housing types do not allow residents to work efficiently and earn money from their homes. Community participation is not emphasized in affordable housing programs as it is not only effectively improves social relationship but also doesn't satisfies the residents' needs of the current

and the future. It does not pay attention to effective property maintenance and administration, which is critical for fostering a sense of belonging and community stability.

Recent studies have focused on the sustainability in affordable housing programs; this research paper therefore aims to assess the economic sustainability performance indicators; and develop a framework to support the integration of economic sustainability into affordable housing programs. The research incorporates economic sustainability performance indicators for the poorest of the poor into the project feasibility study, project planning, and project post-evaluation, as well as systematic integration of economic sustainability into D/ Marko's city administration affordable housing programs.

1.3. Objectives of the study

1.3.1. General objective

The main goal of this research is to incorporate the economic sustainability into the poorest of the poor affordable housing development programs in Debre markos city.

1.3.2. Specific objectives

This study has the following specific objectives within the aforementioned broad objective:

- To investigate the current economic situation of the residents living in the poorest of the poor affordable housing.
- To investigate the prospects and challenges faced by the residents of the poorest of the poor affordable housing.
- To assess economic sustainability performance indicators for the poorest of the poor affordable housing in order to ensure long-term economic sustainability.
- To develop indicators for incorporating economic sustainability into the poorest of the poor affordable housing development programs.

1.4. Research Questions

The research had answered three important questions throughout the procedure. The last question is a normative one that suggests answers to the research questions.

1. How is the economic status of the tenants who are currently residing in the poorest of the poor affordable housing development program affected?
2. What are the prospects and challenges of the poorest of the poor people living in the poorest of the poor affordable housing development program in terms of economic sustainability?
3. What are the economic sustainability performance indicators for the poorest of the poor affordable housing?
4. What should be the indicators to incorporate economic sustainability into the poorest of the poor affordable housing development program?

1.5. Scope of the study

1.5.1. Spatial scope

Both geographical and intellectual boundaries are defined in this study. In terms of geography, the study focuses on a specific study site; these types of housing scheme are located in several kebeles surrounding D/Markos. The study area is limited to the area surrounding the University Treatment Plant site in Kebele 07, which houses the poorest of the poor households.

1.5.2. Thematic scope

The study's scope is limited to an analysis of the poorest of the poor in terms of economic sustainability of affordable housing schemes. The article on approaches and strategies for governments to provide rental housing to the poorest of the poor households in urban areas also includes a review of supporting literature. The study focuses on the residents' economic situation, the development process, and the management of the houses. The study's scope is confined to responding to the research questions that have been stated. Furthermore, the study's scope is narrow, focusing exclusively on the long-term economic sustainability of the poorest of the poor's affordable housing development program in the study area.

1.6. Significances of the study

The goal of a sustained affordable housing program is to improve the quality of life for the poorest of the poor people by providing well-located, high-quality housing that is clean, safe, and has appropriate access to jobs, critical services, and affordable housing cohesiveness. This study also aims to address the primary economic difficulties that poor people face in order to improve their quality of life. This study focuses on the economic sustainability of the poorest of the poor affordable housing in Debre Markos by studying a specific study area from numerous sites where projects for the poorest of the poor are being developed.

Because the majority of Debre Markos city's the poorest of the poor affordable housing projects are considered slums, and this research focuses on economically sustainable affordable housing development. The study's final output could serve as a starting point for those interested in conducting additional research on the pillars of sustainability in affordable housing development programs. It would also be a valuable contribution to academic institutions, as it would excite the interest of other graduating students, encouraging them to contribute to the solution and, as a result, improving the poor's living conditions and the city's image.

1.7. Description of the study area

1.7.1. Historical background

Debre-Markos is located north-west of Addis Ababa in the Amhara Region. It is 300 kilometers from Addis Ababa and 265 kilometers from Bahir Dar, the regional capital. Debre-Markos was the capital of the Gojjam Administration until the early 1980s, when it became the seat of the East Gojjam Zone Administration. Debre Markos had a population of 262,497 people in 2012, with 129,921 males and 132,576 women. The city's entire population is 97 % Amhara and 97.3% Orthodox Christians. Debre-Markos' urban communities account for 92.3% of the population, while rural settlements account for 7.7%. (*AMP FINAL2 Debre Marekos*, n.d.).

1.7.2. Geographic Location

Approximate geographical coordinates of 10° 19' North latitudes and 37° 42' east longitudes. In relative terms, Debre Markos city is found at a distance of 300 km along with Addis Ababa.

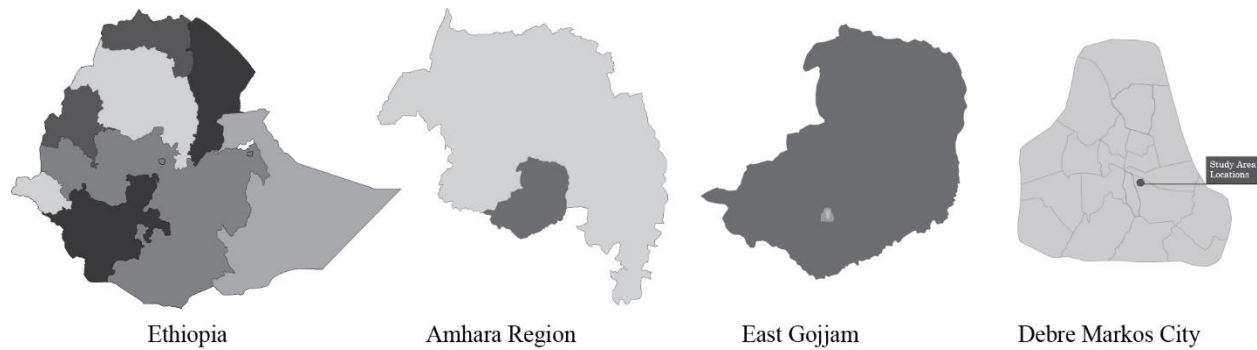


Figure 1: location of the study area

1.9. Organization of the document

The study is divided into six chapters, the first of which introduces the entire study. The first chapter covers introduction, statement of the problem, research objectives, questions, scope, significance, and a description of the study area. The second chapter is a literature review, in which the study topic is explored in various contexts, terminologies are defined, research questions are posed, and global experiences are shared. The third chapter presents contextual background information on housing in Ethiopia and Debre Markos in particular. For the study themes, the context to the case, research findings, and implications are given. The fourth chapter explains the general research methodology as well as the specific methods used in the study. The chapter also discusses the research method's validity and reliability. In Chapter five, different findings are presented based on the data obtained and processed. This chapter also includes a context analysis based on the findings from the previous chapter. This chapter includes a general description and maps of the case areas, as well as data collected from the case areas. The sixth and final chapter concludes the research paper by providing answers to the study questions in the form of conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

As previously stated, this research evaluates the economic sustainability of affordable housing for the poorest of the poor. The purpose of the literature review is to learn more about these topics. The researcher believes that the various topics that are written by various scholars are critical to the study's effectiveness. As a result, in this chapter, intensive literature study done, along with a list of sustainability, urban poor, housing affordability, economic sustainability, and performance indicators from various authors' papers. The following sections address the relationship among the core concepts as well as the various points of view of the various authors.

2. Operational definitions, theories and concepts

2.1. Urban Poor

A poor person is someone who does not have the bare needs of existence. The poorest of the poor are women, newborns, and the elderly. This is because these people suffer the most in a poor family and are deprived of the most basic requirements. Poverty and poor populations are defined in a variety of ways. Poverty is defined by the United Nations as a limitation of choices and opportunities, as well as a violation of human dignity. This entails a lack of basic capacity to engage effectively in society, as well as living in marginal or vulnerable locations with limited access to essential utilities like clean water and sanitation (Nations, 2009).

Poverty is also defined by the World Bank in terms of income. If a person's income falls below the level required to cover basic requirements, he or she is termed poor. The poverty rate based on the international poverty line of 1.9 USD per day per person. What is required to provide basic requirements varies across time and across countries. As a result, poverty lines change over time and place, and each country employs lines that are suited to its degree of development, societal norms, and values (Jolliffe & Prydz, 2016).

Apart from the aforementioned, there are three types of poverty: absolute poverty, relative poverty, and social exclusion. Absolute poverty is described as a lack of sufficient resources to maintain one's physical and mental well-being. The food poverty line, which is estimated based on the cost of a bundle of food that gives a minimum daily caloric requirement (2200 Kcal), was set at 3772 Birr per year per adult person in 2016. One out of four individuals in Ethiopia is unable to meet

the cost of buying the amount of calories sufficient to meet recommended daily calorie requirements. Food poverty is substantially higher in rural Ethiopia (27.1 percent) as compared to that of urban Ethiopia (15.2 percent). Tigray, Afar and Amhara have the highest proportion of food poor. In most of the regions, the level of food poverty is slightly higher than the level of absolute poverty. This may suggest that much of the persistent poverty in Ethiopia is triggered by lack of sufficient food at household level. Between 2000 to 2016, food poverty marked 40.8 percent reduction at national level. Relatively faster pace of reduction of food poverty was observed in Harari (about 81 percent), Gambella (about 70 percent), Addis Ababa (59.8 percent), Ben-Gumuz (57.1 percent), Dire Dawa (55.8 percent) and SNNP 55.2 percent). Registering just 3.7 percent reduction in food poverty, Amhara region fared the least performance over the stated period.

Relative poverty refers to a person's income or resources in comparison to the national average. It is concerned with the lack of material requirements for full participation in acceptable daily life. Unemployment, poor skills, low incomes, poor housing, high crime environments, poor health, and family breakdown are all examples of social exclusion, which is a new term that refers to a shorthand label for what can happen when individuals or areas suffer from a combination of linked problems, such as unemployment, poor skills, low incomes, poor housing, high crime environments, bad health, and family breakdown (Nations, 2009).

On paper, the designation of urban inhabitants as impoverished is not difficult based on the aforementioned definitions. Geographically locating and identifying such communities based on the aforementioned characteristics, however, is difficult. To avoid the complexities of poverty definition, categorization, and implementation, this study considers that people living in the poorest of the poor housing programs in Debre Markos city lack sustainable economic development and other supporting infrastructure services and facilities, and thus are poor. As a result, the spatial concentration of poverty in this study is determined by the location of a poor community's residence.

2.2. Defining sustainability

Sustainability is a difficult and complex subject, as well as one that is difficult to define. It is crucial because it has everything to do with humanity's chances of survival on this planet. At the rate at which the human race is depleting scarce and limited resources, it looks that the future of civilization, at least as we know it now, is dubious, to say the least, unless measures are done now,

while there is still time. As a result, such a complicated subject cannot be treated in a simple and obvious manner, especially since sustainability is a process rather than a goal. It leads to a better living for the current generation as well as the survival of future generations, improving their ability to cope with the world they will inherit. As Chief Seattle put it so very well, “We do not inherit the earth from our parents; we borrow it from our children” (*CHAPTER 3 – SUSTAINABILITY IN*, n.d.).

The problem of sustainability is not entirely technical or logical. It is about a shift in mindset and behavior. As a result, sustainability must include a social discourse in which basic concerns are discussed cooperatively within the groups or communities involved. We do not do a good job of it, partly due to rising populations, complexity, distractions, and mobility, but mostly due to certain desired aspects of the current paradigm.

People, institutions, natural resources, and the environment are all part of the sustainability process. It is implemented in a group setting and truly looks to the future. It is a process that encompasses significant changes in behavior, attitudes, consumption patterns, spending and purchasing habits, and how society views and values the environment most of the time. It also depends on laws like recycling and reusing that are implemented and enforced. For example, instead of releasing industrial wastewater and compensating with clean water from city sources, industry may be forced to treat and reuse it.

Naturally, there are many definitions of "quality of life," but there are several common indications that can be used, but the majority of them are dependent on what each society desires. Once a community has reached an agreement about its vision and interpretation of quality of life, how do they measure it? To illustrate, a few quality of life indicators are listed below:

- The proportion of persons who own their homes. Naturally, this is a reflection of both social fairness and economic realities in a certain place.
- The number of new homes constructed on previously developed land. This is significant since it pertains to the quantity of new land acquired for housing, which is frequently at the expense of agricultural land. It is healthy for the environment when old houses on huge lots are demolished and new dwellings are built on the vacant ground because it recycles a resource by making better use of the land. In addition, considering population density.

- Per 1,000 households, the number of break-ins. This has to do with the area's safety, its economic situation, and the police force's efficiency.
- The percentage of people getting unemployment benefits, which is a reflection of both economic and educational situations.
- The average house price to average income ratio, which is influenced by social and economic factors.
- The percentage of household waste that is recycled, which relates to environmental stewardship and social engagement in reducing waste disposed in landfills.
- The number of traffic accidents per 10,000 people, which is linked to safety.
- The percentage of babies born with low birth weights, which has surprising links to public health and economic conditions.
- The number of days each year with clear skies and low air pollution, which links up with public health and the environment.

“sustainability is not a goal for a programme many bad programmes are sustainable but a constraint its absence may limit the usefulness of a good programme” (Marcuse, 1998). He suggests, Sustainable development is a constraint on the fulfillment of other goals, not a goal in itself. No one who cares about justice wants things to stay the way they are, he claims. He claims that future generations must prioritize sustainable development. It is necessary for them to do so.

Sustainability is both an honorable goal for carefully defined purposes and a camouflaged trap for the unwary. The acceptance of sustainability, at least in principle, represents a substantial victory for the environmental cause. However, it would not constitute an achievement in the cause of better housing or cities. Sustainable housing and urban development are fraught with conflict: what one person gains from the other causes harm to another.

According to Andrew Wightman, the concept of universal approval of meaningful aims is a phantom. He claims that "sustainability" is used in initiatives that are unrelated to the environment. "Sustaining Globalization" was the theme of the World Economic Forum in 1995. According to David Frum, the phrase "sustainability" refers to "maintaining the status quo." Frum: Sustainability is not a goal in and of itself because an unjust society cannot last. He claims that the current state is so stable that change is no longer an option.

Sustainability is not an independent goal, but a limiting factor in evaluating desirable measures. Many desirable measures have an immediate adverse effect on the environment: building houses for low-income people this year may be more desirable than ten a year for the indefinite future may. The costs of transitioning to environmental sustainability will not be shared equally. According to Andrew Keen, the benefits of better ecosystems may be unevenly distributed. "We need to find a method to tip the balances in favor of individuals with fewer money and resources,"

Sustainability at the individual level

Sustainability is neither solely a government responsibility nor something that should be left to local governments. When people put in a little more effort to sort out household goods for recycling, or when they decide to take the bus instead of driving downtown on an errand, they must think in a certain way. At the individual level, sustainability entails considering how each of us may contribute to society's wellbeing by taking a set of acts, most of which can be done on a daily basis, such as: (Hutagalung, 1967).

- Thinking twice before deciding to get rid of a three-year-old family car to get a new model. Is the change really worth it? What added features and advantages can one get from a new model?
- Consuming only the water needed, not wasting it. After all, who needs fixtures with four or five showerheads in the shower? Programming the laundry in order to save electricity, wastewater, and detergent going into the environment.
- Attending meetings relating to problems and solutions for the neighborhood.
- Making the effort to compost at home.
- Helping educational authorities prepare the curricula of activities for children.
- Not littering the streets, beaches, roads, or recreational areas.
- Buying in bulk, thereby avoiding paying extra for fancy packages.
- Donating unwanted clothing, kitchenware, furniture, electrical equipment, bikes, etc., to charitable organizations and churches, remembering that what one person's junk can be a treasure for someone else.
- Not leaving lights on unnecessarily.
- Retaining the lawn's humidity, thereby saving water, by mulching.

- Going up and down flights of stairs, instead of using the elevator. This is good for health and the environment.
- Consider biking or walking to work.
- Sorting unusable stuff made out of metal and taking it to a junkyard for recycling.
- Designating containers at home and in the office for recycling paper, aluminum cans, and bottles.
- Teaching one's children about environmental measures.
- Using as scrap paper sheets that have been used on one side.
- Using a time-programmed car block heater in winter. This measure not only provides a quick engine start and heats up the car's interior, but also eliminates the need for a warm-up period for the engine. During the 5 to 10 minutes generally used as a warm-up, exhausts can pollute the air considerably due to incomplete combustion produced by the car's still-cold engine.
- Delivering old tires to a tire-disposal facility.
- Buying and reusing fabric bags when shopping, instead of the plastic bags provided by supermarkets.

Many people believe that following these and other advice will have little impact on the environment. While this may be true, if millions of people took these and other easy steps, the planet's health would dramatically improve. Furthermore, the majority of these methods are cost-effective. For example, consider the cost of utilizing one's car solely to carry the driver. Its running costs, which include insurance and the risk of accidents, wear and tear, petrol, oil, parking fees, vandalism damage, traffic delays, and so on, far outweigh the fares paid on public transportation.

2.3. Sustainable development vs. economic growth

Many people believe that the phrase "sustainable development" is an oxymoron and that the concepts contradict one other: that is, some people believe that sustainability and development cannot coexist, and that the phrase is meaningless. Many others say it is not an oxymoron since they believe that sustainable development (in its broadest sense) and economic growth can coexist as long as the latter does not include extracting whatever is needed from the environment and society without regard for the needs of others.

Economic interests operate in a similar way in modern culture, albeit more quietly. They take what they need from the environment, as much as they need, and what they think will make them more money from society. This entails the indiscriminate use of natural resources, which results in poor working and economic conditions in some countries. Given this, it is likely that everyone would agree that society should strive for economic progress that does not come at the price of people or the depletion of natural resources. (Hutagalung, 1967).

Economic growth does not always imply a better standard of living: a society's Gross Domestic Product (GDP) can expand at a rapid rate, perhaps as high as 8% per year, due to brisk exports. That society, on the other hand, may have its own people living in poverty since the salaries offered to its workers (and even children) enable that export while failing to meet their most basic requirements. Workers. It's clear that conveying the meaning of these phrases is a challenge. They can, however, be easily comprehended when explained by Vaughan et al. (Bland et al., 2018), who describe them as follows:

Economic growth: is measured in terms of quantity. It is an economic shift or variation relating to investment, output, income, and consumption as compared to a baseline.

The term "**sustainable development**" refers to a shift in quality. This entails changes in the economy as well as institutional, social, and environmental factors.

If economic growth results in a large inflow of hard currency, a sustainable economy should direct a portion of these earnings toward ensuring that everyone has access to fair salaries, education, hospitals, housing, and food, as well as making judicious use of its resources. What a tragedy that such a country's products are no longer competitive with those of other manufacturers. So, what is the solution? Finding equilibrium is the key to solving the problem. (Bland et al., 2018).

People's participation

Without people actively engaged in the process, nothing can be done about sustainability. People's participation entails communicating people's needs and desires, working with local governments to define plans and policies, participating in the monitoring process, and giving ideas and analysis. People are rarely consulted; they may be politely queried about something, but just to conform to regulations requiring their participation; after that, decisions are made without taking such input

into account. Citizens, on the other hand, can speak up loudly, declare their intentions, and compel changes in decisions that have already been made. (Hutagalung, 1967).

1. A process with its basis in indicators. This means that any analysis of issues and decisions about them has to be made based on data supplied by indicators.
2. A consultation process, involving the above mentioned discussions that include the interested parties.
3. Process contribution, implying that everyone will contribute to the process, not merely act as observers but as achievers.

2.4. Housing as a Concept

If there are less than three people per usable room, a housing unit is regarded to provide suitable living space for household members. House and shelter are operationally distinct in that the latter refers to a structure with four corners and a roof intended to protect humans from harsh weather and predators, whereas the former is used in the field of human settlements to refer to more than just a four-cornered structure with a roof. (United Nations Human Settlements Programme, 2004).

Housing is a widely acknowledged notion; however buildings and the construction technology that support them have evolved significantly through time and space. Turner adds the 'tenure' dimension to the housing equation, claiming, "A house can only be a home if it is minimally accessible, provides minimal shelter, and gives minimal security of tenure." (Katz & Turner, 2007).

Housing is more than a technological solution, and it cannot be defined solely in terms of a house as a structure. Housing is instead extended to include macroeconomic variables, tying housing to a larger urban economy (e.g., city). The importance of shelter is recognized in housing literature as being linked to supporting services in the immediate area. Housing, in other words, is a method for achieving affordability, security, economic opportunity, and social harmony. Housing is defined in this study as a process in which the economic sustainability of the beneficiaries (e.g., tenants of houses) is established as a primary determinant in giving access to formal financial services, access to jobs, and access to education. Needed utilities and services, such as drinking water supply, drainage, sewerage, and power, are prioritized as supporting services. (United Nations Human Settlements Programme, 2004).

Housing and Sustainability

Housing is one of the most basic socioeconomic circumstances that determines people and places' quality of life and well-being. Where homes are located, how well they are designed and built, and how well they are integrated into a community's environmental, social, cultural, and economic fabric are all factors that have a direct impact on people's daily lives, their health, security, and well-being, and which, given the long lifespan of dwellings as physical structures, affect both current and future generations. As a result, housing is critical to long-term growth. (Kutty, 2005).

The strategies for sustainable housing address this intricate web of interrelationships between sustainability and housing. To accomplish housing development sustainability, these regulations take into account a wide range of underlying factors (along the four dimensions of sustainability environmental, social, cultural and economic), such as environmental and climate change impacts; home durability and resilience. housing economic activities and their links to the larger economy; community cultural and social fabric; and housing's impact on poverty reduction, social development, and quality of life. (Ibem & Azuh, 2011).

Although many people equate sustainable housing with money and prosperity, it does not have to be. Truly sustainable homes are inclusive and affordable to all. As a result, addressing the issue of affordability is a prerequisite for the move to sustainable housing. However, affordability is insufficient, because so-called affordable dwellings cannot be considered sustainable if they have detrimental environmental or social consequences. Affordability must be combined with other sustainability criteria. The connection between sustainability and affordability is examined in this Guide as part of the holistic concept of sustainable housing. (Golubchikov & Badyina, 2012).

2.5. Sustainable housing

Sustainable housing provides a wide range of opportunities for economic development, environmental stewardship, quality of life, and social equality, all while addressing the precarious convergences of issues such as population growth, urbanization, slums, poverty, climate change, lack of access to sustainable energy, and economic uncertainty. Housing's social, cultural, environmental, and economic aspects are rarely addressed in a holistic manner, especially in developing nations. (Ibem & Azuh, 2011).

Affordable housing, for example, is frequently evaluated on a cost basis, whereas environmental and social issues (such as people's choices, lifestyles, and cultural ambitions), as well as economic repercussions, are supposed to be addressed independently or completely ignored. Ignoring one or more aspects of sustainability, on the other hand, leads to an accumulation of vulnerabilities and unstable housing situations. (Golubchikov & Badyina, 2012).

For example, there is a significant disparity between regulations for "regular housing" and "cheap housing," which frequently coexist in parallel universes. The so-called pro-poor, slum improvement, and refugee housing programs frequently give substandard homes or places where people would only live out of desperation and necessity. Standardized dwellings are developed in large-scale "matchbox" projects at a low cost, away from mainstream urban employment and services, and do not accommodate to the diverse requirements and values of households. Saving money on construction typically means using subpar materials and procedures (rather than looking for sustainable, affordable alternatives) that lead to dwellings that are both short-lived and unhealthy (a sick house syndrome).

Furthermore, these initiatives do not give proper regard to energy and water efficiency, resulting in inefficient behaviors and unsustainable operating costs for homes. Unemployment and poverty segregation can only be replicated rather than resolved in such places.

Housing will not only be more accessible to low-income households if it is planned and built within an integrated sustainability framework, but it will also respond to their diverse social and cultural needs and have multiple positive outcomes for people's physical and mental health and safety, the economy, and the built and natural environments. Furthermore, sustainable houses last longer, making them an excellent investment for the government and other stakeholders. (Golubchikov & Badyina, 2012).

Economic sustainability

The basic goal of affordable housing programs is to make housing more affordable for low-income families. Integrating economic sustainability necessitates taking into account both the original buying cost as well as future transportation and energy costs. (Fuhry and Wells, 2013; Isalou et al., 2014). Low-income households can spend more of their limited resources on non-

housing necessities by lowering transportation and energy costs. (Golubchikov & Badyina, 2012; Ibem & Azuh, 2011).

This can increase employment opportunities while also increasing the number of persons available for work. In addition, the popularity of affordable housing programs (which refers to how well they fulfill and surpass consumers' expectations) is a key economic indication of long-term viability. according to (Gan et al., 2017). Affordable housing programs should also consider the economic sustainability of developers (e.g. the cost effectiveness of the projects) to ensure that these programs can be developed on a continuous basis. While developers can use cost-cutting tactics (such as using locally accessible materials and processes), they must be provided with stable financial incentives in order to maintain financial viability (Gan et al., 2017).

2.6. Economic sustainability of housing

The economic dimension of housing sustainability arises from the housing systems various economic functions and ramifications, such as:

- Housing and related infrastructure are among the most valuable and lasting human-made capital assets;
- Housing provides the basis for human welfare, labour productivity and mobility;
- Housing is an important part of household expenditures and public expenditure and if unaffordable creates numerous socio-economic problems;
- House building, housing services and real estate markets are among the key economic and employment activities;
- Housing is a platform for home-based activities and entrepreneurship.
- Housing is part of economic flows of natural resources and energy,

Affordable housing is a valuable resource that contributes significantly to national welfare and economic development. Furthermore, quality, cheap housing and related infrastructure are among the fundamental variables that make local communities more appealing, inclusive, and competitive, and are thus critical to long-term economic development. Indeed, areas with a lack of housing have a difficult time attracting talented people and investments, but areas with expensive housing are frequently bordered by slums, resulting in major social conflicts and stress, as well as sub-optimal local economies. (Golubchikov & Badyina, 2012).

All of these economic ramifications of affordable housing, however, are frequently ignored in emerging countries' national growth objectives. Affordable housing is primarily viewed as a social welfare tool (to alleviate poverty, promote equity, and protect housing rights), rather than a system to promote economic development. (Tibaijuka, 2009). While the social welfare imperative is unquestionably pressing, there is still a pressing need to link affordable housing to long-term economic viability.

The Importance of affordable housing activities for economic development

Housing that is affordable contributes to economic development by allowing people to:

- Stimulate economic growth through housing markets and homebuilding activities;
- Stabilize and reduce volatility of housing markets;
- Improve health conditions and labor productivity through better living conditions;
- Add to the growth of capital assets of the gross capital stock;
- Support regional and urban regeneration, development and growth;
- Contribute revenues to local, regional and national governments (e.g. via taxes) and individual wealth (e.g. via housing markets);
- Generate employment and income through residential and building activities and their multiplier effects in other sectors;
- Strengthen local building industry and enterprise and promote local and traditional building materials and techniques;
- Provide domestic financial mobilization through housing finance institutions;
- Generate additional income by raising collateral for business start-ups and small firm growth as well as through home-based enterprises and renting. (Golubchikov & Badyina, 2012).

2.7. Economic sustainability performance indicators for affordable housing programs

Affordability of housing is an essential public policy goal. It should not, however, be judged on its own. If a house is located in a less accessible neighborhood, it is not genuinely inexpensive. Less accessible locations increase not just the time and money expenses of households, but also a variety of indirect costs, such as infrastructure costs, employment costs, energy consumption costs, and diminished economic opportunity for the urban poor.

As a result, more inexpensive housing in accessible places encourages economically sustainable growth by allowing residents to access vital services and activities with less travel. When analyzing affordable housing projects, researchers have begun to consider housing affordability based on Economic sustainability performance indicators in recent years. Table 1 shows a list of economic sustainability performance indicators for affordable housing projects compiled by several academics, with explanations drawn from various research articles.

Table 1: Economic sustainability performance indicators for affordable housing projects compiled by several academics, with explanations drawn from various research articles.

<u>No.</u>	Economic sustainability performance indicators for affordable housing	References
1	Financial viability	(Chiu, 2003; Turcotte and Geiser, 2010)
2	Cost effectiveness	(Isalou et al., 2014)
3	Desirability	(Pullen et al., 2010)
4	Affordable price/renting	(Winston and Montserrat, 2007)
5	Reduced life cycle cost	(Roufechaei et al., 2014)
6	Provide human resource for economic development /Mixed land development	(Muazu and Oktay, 2011)
7	Ensure balanced housing market	(Golubchikov and Badyina, 2012)
8	Generate job opportunities	(Chiu, 2003)
9	Reduced transportation cost	(Isalou et al., 2014)
10	Cost recovery	(Isalou et al., 2014)
11	Reduced energy bills	(Fuhry and Wells, 2013)

2.8. Housing affordability

Housing affordability has a significant literature base. The link between household income (and, more broadly, means) and housing expenditure is usually characterized as affordability; housing is affordable if expenditure relative to income is fair or modest. The ratio of housing prices to income is a standard metric for determining affordability. (Also known as rent burden or owner cost burden). According to Amen kamate The cost-to-income ratio is a measure of how much money you spend compared to how much money This method still needs to figure out what the best ratio is for academics, practitioners, and policymakers. This ratio has the potential to be more meaningful than the arbitrary rule of thumb. In most developing economies, a cost-to-income ratio of three or four has been seen. This suggests that a house should cost three to four times a family's annual income on average. According to Insalu A commonly used rule-of-thumb is that housing affordability means that that household spend less than 32% of their income on housing expenses, including rents or mortgages and basic utilities (Nguyen, 2005; Ndubueze, 2007). Five affordability problems are detected in households who surpass these cost burdens; this is a recommended category for specific sorts of housing help. (Kutty, 2005)

The US Department of Housing and Urban Development considers housing prices up to 30% of income to be acceptable. If the cost of housing (mortgage or rent) is less than 30% of a family's income, it is termed inexpensive. A cost burden is defined as a family spending more than 30% of their income on housing.

Some people interpret the poverty concept's multiplication by three as a normative expectation that a low-income family that spends one-third of its income on food will spend another one-third on housing and the remaining one-third on clothing, education, medical services, transportation, and other goods. Housing cost burden affordability metrics, on the other hand, do not examine whether the income available after housing expenses is sufficient to fulfill non-housing demands. Food, education, health care, training, and child care are all essential expenses for a household, so determining whether it can afford them after paying for shelter is critical. From a policy perspective, it's critical to know which households can't afford non-housing needs after paying for housing because they're more vulnerable than those who have significant cost burdens but can still afford little non-housing consumption. Housing subsidies would be targeted at households unable to pay for such products under a rational housing policy approach. (Kutty, 2005)

A high cost-to-income ratio may simply reflect a family's desire for a large number or high quality of housing. As a result, policymakers should not be concerned about a high cost burden alone: Even high-income households can be considered cost-burdened. Although most operational definitions of housing cost burden include a maximum income limit for housing assistance programs, they do not differentiate between the severity of the problem for households that are within the limit and have enough income left over after paying for housing to meet non-housing needs versus those who do not. A high cost-to-income ratio can be generated by a household's taste for large or expensive housing. (Kutty, 2005)

According to Lerman and Reeder (1987). As a result, they suggest an affordability metric based on the cost of renting a suitable amount of dwelling, as measured by a standard basket of home characteristics. Instead of utilizing actual rentals, this cost is calculated using hedonic rents. If the cost of this item is more than a particular percentage of the household's income, the household is considered unaffordable. Because of market inefficiencies and complex regulatory frameworks, this strategy is limited when the cost of a sufficient amount of housing varies considerably among submarkets and locales. It also assumes that there is enough appropriate housing at average rents to meet the demand.

(Thalmann, 1999) presents a metric that incorporates a rent-to-income ratio, a quality-based indicator, and a housing consumption indicator. For an adequate combination of housing and household income, he advises utilizing the market's average rent ratio. The average rent for an appropriate bundle of dwellings in a given market is calculated using hedonic price estimations for various home features. This information is then utilized to create a housing consumption index that distinguishes between apparent affordability issues (when a household consumes more than the standard housing package) and genuine affordability issues (where the household either pays above-average rents for the housing it consumes or has too little income to afford the standard bundle). Furthermore, this metric can identify households that do not currently experience affordability issues since they pay below-market rents but could be vulnerable in the future if they are forced to relocate or their rent reductions are terminated.

The theoretical model of (Thalmann, 1999) implies that housing can be divided into any number of small units and is available anywhere. Housing market defects, such as indivisibilities and other non-income limitations, may hinder a household from consuming the proper quantity of housing,

even if the rent is inexpensive, as (Hancock, 1993) points out. The (Thalmann, 1999) model also assumes that appropriate dwellings are available at the average rent, which may not be the case.

Despite the fact that the measures proposed by Lerman and Reeder (1987) and (Thalmann, 1999) improve on the standard percentage-of-income affordability measure, they do not take into account the actual financial constraints faced by low-income households, many of whom cannot afford to spend even 25% or 30% of their income on housing. However, the measure of housing-induced poverty proposed in this article clearly considers a household's standard of living and concentrates on the severe affordability concerns of a subset of very low-income households who are unable to buy even the poverty basket of non-housing items.

Stone, the father of the housing-induced poverty measure, coined the term "shelter poverty" to describe a measure of the housing affordability problem (C. N. Stone, 1993), he argued that the traditional measure understates the problem for families with children and other large families compared to one- and two-person households. To address the problem, he defined shelter poverty as the inability of households to afford non-housing essentials due to excessive housing prices. The maximum amount available to spend on housing in (C. N. Stone, 1993) model is the household's disposable income minus the cost of a minimum appropriate level of non-housing spending.

A household is considered to be shelter poor if it pays more than the maximum amount. He described the non-shelter components (other than taxes) of the Lower Budgets, which were abolished in 1981, as the minimum sufficient basket of non-housing items. He used the CPI to update the levels, but he didn't revise the basket of commodities to reflect changes over time. These figures were greater than two-thirds of the poverty line for the time period in question.

Housing cost burdens vary by income level, household size, and household type, resulting in both shelter poverty and housing-induced poverty. These policies recognize that very low-income households cannot afford to spend even 25% or 30% of their income for housing while still meeting their basic needs. Housing-induced poverty uses a well-known, current concept: poverty thresholds, which are widely used for judging impoverishment or the lack of it.

Shelter poverty relies on a less well known concept and an out-of-date basket of goods. Data on poverty thresholds and statistics on the extent of poverty are widely available and evaluated by

policy makers. Overall, (Stone 1990,1993) normative minimum basket of non-housing goods is more generous than the basket implied in the new measure.

According to Amin Y Kamete, Affordability is a key measure of housing access, particularly for low-income people in developing countries. Affordability is a fascinating topic to research because of its intricacy and elusiveness. Affordable housing does not require people to "pay beyond their competence and willingness to spend," as is now widely accepted. External and internal factors influence the ability to pay. (Kamete, 2001)

External and internal factors influence the ability to pay. The external aspects are related to the project's characteristics, such as the cost of housing. Internal factors are primarily concerned with the socioeconomic circumstances of the target group's socioeconomic profile. (Kamete, 2001)

2.9. The conceptual clarity of the affordability

Conflict between the conceptual clarity of the affordability standard and the practical policy implications such as recognition of potential perverse incentives (if used for rent setting), fiscal constraints, broad economic and social goals, and political interests. The various literatures, which had tried to reconcile these demands. (M. Stone et al., 2011)

Housing affordability v. 'affordable housing'

Affordability is frequently described in terms of "affordable housing" in many parts of the world. However, affordability is a relationship between housing and people, not an essential property of a housing unit. For some, all housing, no matter how pricey, is inexpensive; for others, no dwelling is affordable until it is free. Only three key questions may be answered in order for 'affordable' housing to have meaning:

1. Affordable to whom?
2. on what standard of affordability?
3. for how long?

In light of the discussion about housing standards, one might also ask: What physical standard are we talking about? The introduction of the affordable housing idea, which can more accurately tie the affordable price or rent to the income of certain income groups, is one means of bringing greater precision to the phrase. (M. Stone et al., 2011)

Housing affordability v. ‘affordable rents’ in social housing

Even though public and non-profit social housing does not or cannot generate profit for its owners, it still needs to generate enough revenue from residents and other sources to cover much or all of the costs of operations, as well as, depending on the financing scheme, repayment of capital costs for construction and any subsequent modernization. This raises the question of how reasonable household rents that are ostensibly geared for housing affordability are in reality. (M. Stone et al., 2011)

Housing affordability v. affordable living

In developing countries, having access to high quality, affordable housing is critical for reducing poverty, improving equality, and ensuring long-term progress. Because standard affordability measures ignore the trade-offs between cheap or affordable property and the commuting costs associated with living in such regions, a household in an outlying metropolitan or regional area may have an affordable home but not an affordable lifestyle. Despite the limited efforts made to date in cities, this issue will become more serious as emerging countries cities become more politicized. Because many out-of-town house purchasers and renters live and work in the same region, determining the extent to which this is a problem is a measurement issue. (Wang et al., 2013)

Housing affordability v. housing standards

Housing deprivation can take several forms, one of which is lack of affordability. Households may live in housing that does not meet ‘decency’ physical requirements, in overcrowded conditions, with insecure tenure, or in risky or inaccessible places. While each of these additional forms of deprivation is logically distinct from a lack of affordability, most families who experience one or more of them are unable to afford adequate housing and living conditions. (M. Stone et al., 2011)

If other types of housing deprivation are mostly due to the affordability crunch, how do we account for those households that do not appear to have an affordability problem (as assessed by some criterion of affordability) but suffer from one or more other forms of housing deprivation? Simply said, if the cost of acquiring suitable houses and residential settings within the same housing market area exceeds what such people can pay, they should be considered to have an affordability problem, even if an economic affordability test does not indicate this.

Only if such a household can afford decent housing and it is truly accessible could they be said to be living in substandard housing by choice. Despite the fact that housing deprivation is complex and can take many forms, standards for most types of deprivation are pretty well established; hence, measuring deprivation and its relationship to affordability is, in theory, very tractable.

To summarize, home affordability and housing standards are inextricably linked. Adjusting for over-housing would reduce the number of households considered to have a 'true' affordability problem, while an analysis of the breadth and distribution of affordability difficulties that takes into account other forms of housing deprivation would increase the number. Because of these opposing inclinations and the difficulty of defining them, housing affordability studies should ideally be iterative, i.e. starting with an economic affordability criterion and then looking for ways to improve the precision of the analysis to account for under- and over-housing.

Such 'quality-based' measures have been developed and applied by Lerman and Reeder (1987) and Thalmann (1999, 2003), which classify a household as having an affordability problem based on what it would cost to obtain housing of a basic physical standard within a given local housing market, rather than the actual housing cost in relation to income. Lerman and Reeder employed the ratio standard in developing their model; Thalmann utilized a ratio standard in his initial publication (1999), but a residual income standard in his later paper (2003). Because it is difficult to define and measure homeowner occupancy expenses consistently, both studies focused on renters. Lerman and Reeder focus on rental housing units in the United States that meet certain physical standards of adequacy, calculating the minimum hedonic rent for units of various sizes (number of bedrooms) within a given census region and city population size, which they refer to as the 'minimally adequate' rent.

They then estimate the required housing unit size for a household of a specific size by reference to the 'predicted rent,' which is the minimum sufficient rent for such a household. According to Lerman and Reeder's argument, if the expected rent for a specific household type is no more than 30% of their income, the household does not have an affordability problem, even if the actual rent exceeds 30% of income. According to them, a household in the latter situation has a "strong taste for housing," or is willing to spend more than 30% of its income on housing.

The flaw in this claim is that, while it may be true for some relatively high-income households, it is not necessarily true for all or even most low-income households. Some households paying more

than 30% of their income on housing may be willing to move into substandard units to save money, but those units may not be available: They are likely to be occupied already, as evidenced by the above-mentioned study, they may be in inaccessible or undesirable locations, and they may effectively be off-limits to some people. Because of discrimination, or relocation costs may be high economically and/or socially. As a result, this model, which considers all households with a 'conventional' affordability problem but not a 'quality-based' affordability problem to be 'misclassified,' tends to exaggerate the magnitude of such misclassification.

2.10. Factors of Affordable Housing Ownership

The concept of housing affordability entails describing how and what factors influence housing ownership. In most cases, affordable housing purchasers have a tough time deciding the type of housing to purchase. Ironically, present researchers have not conducted a logical investigation into the factors that influence purchasers and homeowners' decisions.

The components that govern the reasons that households evaluate when making purchasing decisions will provide a broad "solution" to housing markets. Households to determine their housing affordability use the choice elements. For example, in the process of developing a specification, functional space, the user analysis is the first stage. Without this, poor distribution, overhang size, unsold and vacancy rates would likely continue to rise, and property transactions will continue to be a problem (Olanrewaju et al., 2017).

Extensive studies have discovered numerous factors/determinants that influence housing preference/satisfaction in the past literature, but only a few studies have looked into inexpensive housing. Despite the fact that no systematic studies have been conducted to investigate the determinants of affordable housing choice, factors that influence general housing satisfaction, such as housing quality, income, policies, markets, and conditions, were some of the determinants that would influence affordable housing decision (Olanrewaju et al., 2017).

According to (Said et al., 2016), in a study conducted in Northern Mexico, roughly 12 factors taken into account while purchasing a home. Location, floor size, number of bedrooms, number of bathrooms, number of parking spaces, number of floors, gated and guarded, security, green area, distance to school, distance to commercial area, and accessibility were among the attributes. According to (Khan et al., 2017), the number of bedrooms, type of property, age, income, total household, and expenditure are the most important drivers in housing preference.

The happiness of having a home, however, is the most crucial factor to consider while purchasing a home. As a result, the physical and neighborhood factors are critical in achieving harmonies. In Malaysia, some research has been done to look into people's housing preferences and contentment. For example, concluded that social capital was a crucial component of satisfaction when he researched housing satisfaction in Malaysia by assessing numerous characteristics that boosted residents' contentment. (Khan et al., 2017), looked examined the preferences of first-time homebuyers in Malaysia when it came to purchasing a home. The issue of first-time homebuyer house ownership is essential since they are bound by budget as well as selecting the best option for their needs. The findings suggest that in Malaysia, first-time homebuyers value economic, neighborhood, structure, and location criteria when deciding to purchase a new home. (Faizul, 2019).

Malaysia's Royal Institution of Surveyors studied housing motivation and satisfaction and discovered that social capital in the form of social capital investment and residential stability were the two most important elements in determining housing satisfaction. Furthermore, examined the contentment of low-income inhabitants and discovered that it is necessary to improve neighborhood amenities in order to boost resident satisfaction. According to Zyed et al. (2016), the most important indicators for housing affordability are house price, household income, and housing choice. Furthermore, (Mohit & Azim, 2012), Evaluated the residential satisfactions of newly designed low-cost housing and found moderate satisfaction among inhabitants, based on which policy recommendations for changes were made. The relationship between demographic and social-economic problems in housing affordability was also examined by (Jeklin, 2016).

According to Andersen (2011), several criteria must be present to ensure that the chosen environment and neighborhood are suitable for habitation. These characteristics are grouped into four groups:

- Physical Environment - This includes the building's physical characteristics and external condition, the entry, physical disturbances such as sound and contaminants, and the standard of maintenance. Aside from that, the distance to the green space should be taken into account.
- Social Environment - This includes the chosen area's status, safety, social network, and way of life.

- Location and Public Facilities - The availability of facilities such as a shop and a restaurant is the most essential factor in deciding where to live. Aside from that, institutions, sports areas, playgrounds, and places that can be used to socialize and symbolize culture must all be considered.
- Accessibility to or from the chosen residence - Accessibility to or from the chosen house is defined here as location and transportation. These distances include the distance to employment, the distance to the nearest town, the distance to relatives' homes, and the distance to a retail complex. In this study, a few key criteria were chosen to be investigated further in terms of their role in affecting low-cost house ownership in Malaysia.

2.11. Correlation analysis

Before reaching a judgment on the primary variables affecting affordable housing, it is critical to determine whether all parties are in agreement on the listed factors. A statistical tool that can be used to accomplish this is correlation analysis. The statistical tool of correlation analysis can be used to describe the degree to which variables are linearly related to one another. Obtaining the correlation coefficient is one approach of determining the correlation (r). The correlation coefficient (r) is used to determine the degree of link between various factors or parties.

Sample statistics that indicate the strength and nature of linear connections are computed in correlation analysis. It is useful for examining relationships between a large number of variables. Pearson's correlation coefficient (r) is used to evaluate sample data as proof that two quantitative variables have a linear relationship.

- Data for the two variables were gathered using a randomized, unbiased study method, thus the anticipated value of r is the genuine correlation for the population.
- The distributions of both variables are roughly normal.
- The "real" relationship between the variables is linear (Leblanc, 2004).

For this investigation, the Pearson's correlation coefficient is shown to be appropriate. The " r " of Pearson ranges from -1 to 1. The +1 indicates perfect correlation, -1 indicates inverse correlation, and 0 indicates that there is no correlation between the two parties. Pearson's coefficient was calculated using the formula below.

The sample is X and Y , and the correlation coefficient is r ,

$$r = \frac{\Sigma(\bar{X} - \bar{X})(Y - Y)}{\sqrt{\Sigma(\bar{X} - \bar{X})^2 \Sigma(Y - Y)^2}}$$

Summary of the literature review

According to the different literatures reviewed, a poor person is someone who does not have the bare needs of existence. The poorest of the poor are women, newborns, and the elderly. "Sustainable development" is described as "development that fulfills present requirements while not jeopardizing the ability of future generations to meet their own." Economic growth, social improvement, and environmental conservation are all examples of progress in development. It is critical since it is directly related to humanity's continued existence on our planet.

A shift in quality is referred to as "sustainable development," and includes changes in the economy, as well as institutional, social, and environmental issues. Many people believe that sustainability and development cannot coexist, and that the phrase 'sustainable' is an oxymoron.

Turner's definition of housing encompasses both shelter and the stability of a minimum tenure. A house can only be considered a home if it is minimally accessible, offers minimal shelter, and provides minimal tenure security. Housing is one of the most fundamental socioeconomic factors that affects the quality of life and well-being of individuals and regions. Long-term growth is dependent on where homes are built, how well they are designed and built, and how well they are integrated into a community's environmental, social, cultural, and economic fabric.

Housing's social, cultural, environmental, and economic dimensions are rarely considered together, particularly in developing countries. When it comes to building, saving money usually entails adopting inferior materials and processes. When one or more parts of sustainability are overlooked, vulnerabilities and unstable housing circumstances develop.

Housing for low-income families is made more affordable through affordable housing programs. By cutting transportation and energy expenses, low-income households may spend more of their limited resources on non-housing essentials. Developers' economic sustainability as well as their long-term viability should be considered in affordable housing schemes.

Housing that is both affordable and accessible is a valued resource that contributes greatly to national well-being and economic progress. Housing of high quality and low cost, as well as

accompanying infrastructure, are critical factors in making local communities more desirable, inclusive, and competitive. Housing that is affordable is primarily seen as a social welfare instrument (to alleviate poverty, promote equity, and protect housing rights). Affordability refers to the relationship between household income and housing spending.

Housing expenditures of up to 30% of income are seen as reasonable. All of these expenses are necessary: food, education, health care, training, and child care. After paying for housing, policymakers need to determine which households cannot afford non-housing requirements. A high cost-to-income ratio might simply indicate a family's desire for a big number of or high-quality dwelling units.

A high cost burden should not be the only concern for policymakers. Even households with a high income might be deemed cost-burdened. Housing, according to the theoretical concept, may be split into any number of tiny units and is available wherever. Even if the rent is low, housing market flaws such as indivisibilities and other non-income limits may prevent a household from consuming the appropriate amount of housing. The cost of housing varies depending on the household's income, size, and kind. For low-income people in developing countries, affordability is a key indicator of housing access. People who live in affordable housing do not have to "pay beyond their ability and willingness to spend."

The term "housing affordability" refers to the process of describing how and what factors influence home ownership. Despite the fact that no systematic research on the causes of affordable housing choice have been undertaken, elements that impact general housing satisfaction are among the important determinants that will influence affordable housing decisions. According to Andersen to choose, these are Location and Public Facilities, Social Environment, Physical Environment, Accessibility to or from the chosen residence.

CHAPTER THREE

CONTEXTUAL BACKGROUND

INTRODUCTION

As a result, extensive information from the city administration and literatures is covered in this part, as well as because the goal of this study is to include economic sustainability into the poorest of the poor affordable housing development programs, it's crucial to understand Ethiopia's and Debre Marko's' history and current housing development. How the city was founded, how it developed historically, and how the housing sector evolved through time. The other aspect is that the city's housing supply alternatives and challenges are discussed in this chapter. This section of the debate helps to understand the current issues of housing development over time and the degree of housing supply in the city, as well as how the poorest of the poor participate and have access to housing at various levels. All of these things are written in a logical manner.

Introducing Ethiopia and Debre Markos

Ethiopia is Located in north-east part (horn) of Africa, 9.1450° N, 40.4897° E; the country covers an area of 1,128,176 sq. km out of which 1 million sq. km land and 104,300 sq. km water. Administratively Ethiopia is divided into ten regions and two chartered cities. The regions have a significant degree of autonomy. Ethiopia is and has been among the poorest nations of the world, the Ethiopian economy is highly dependent on the agricultural sector. Recently Ethiopian economy has been mentioned as one of the fastest growing economy, but still it is highly dependent on the agricultural sector. Ethiopia with 5-6% estimated growth of urbanization per year is currently the least urbanized country with only current estimates put it 18-19% of its population living in urban centers. (CSA)

3.1. In the Context of Ethiopian Housing Development

Ethiopia's housing and land sector can be divided into three periods, each representing a different administration period: before 1974, the imperial era, 1974-1991, and after 1991, the current time. Prior to 1974, housing was given less attention, and the feudal land holding system, in which land and housing were primarily controlled by feudal land owners, characterized land holding and housing supply.

Housing ownership before 1974 at imperial period

During the early part of the twentieth century, a small number of individuals and groups who owned and tightly controlled the land dominated land and housing development in Ethiopia. Government Ownership of Urban Lands and Extra Houses' nationalized all urban land in an attempt to impose a more equitable distribution of wealth throughout the country. Government-owned rental units, overseen by the Agency for the Administration of Rental Houses, and Kebele Housing, managed by Kebele Administration Units, the smallest government administration unit working at the neighborhood level, were developed as two new typologies in the housing sector. Approximately 60% of housing in Addis Ababa at the time was rented, with Kebeles accounting for 93 percent of this rental accommodation. (Daniel, 2013).

Housing from 1974-1991 Derg period

Land and house ownership for the purpose of renting was made illegal. (Alemayehu, 2008). All excess housing owned and rented by private individuals was nationalized. The Agency for the Administration of Rental Houses and a hierarchical network of urban dwellers associations (Kebeles, keftegnas, etc.) were established.

From 1991 to the present

The private rental sector in Ethiopia accounts for 37% of the housing stock in Addis Ababa, while the state sector stays stable. The State has sole ownership of all rural and urban land, as well as all natural resources. Land belongs to Ethiopia's Nations, Nationalities, and Peoples as a common property that cannot be sold or traded in any way.

The lease period for real estate was changed from 60 to 99 years by Proclamation No. 272/2002, which was issued in 2000. Building rental houses with monthly rates up to birr 100 were eligible for a 90% discount under Legislation No.2/1994. The privatization of Proclamation No. 47/1975 was examined. Due to the complexity of the houses' characteristics and a lack of resources, the procedure will never be completed. (Alemayehu, 2008)

3.2. The historical development of Debre Markos town

Pre foundation

Before 1881 E.C., the area was known as Menkorer, which was a person's name. Sarn, the owner and governor of the village in ancient times, was supposed to have two offspring, "Zinna" and

"Menkorer." One of his offspring was responsible for the town's name. "Zinna and Menkorer," two Sarn children, were serving Merkorios church, which existed before the foundation of St. Markos and was afterwards struck and destroyed by thunder lightning.

Dejzmach Tesema Guwalu, the Governor of Gojam, built the town of D/Markos in 1845 E.C. When the town was founded, the residents clustered around St. Markos Church, also known as the "Kahin Sefer." Then, on 6.8 acre (272 hectares) of land, roughly 300–400 priests serving the church and property lords who were Christian believers settled. What were the key motivations for establishing the town at its current location?

1. The majority of ancient monarchs (warlords) built their own palaces (campus) on the hillsides or in mountainous areas because the highest places or mountains were utilized as strategic positions to control the movement of opposing forces and protect against any possible attack.
2. The area offered abundant and ideal natural resources for agriculture and the creation of a town, including perennial rivers, a large plain and extremely fertile soil.
3. The physical landscape, as well as the highlands' favorable climate, helped to protect humans and animals from serious diseases like malaria (which is frequent in low-lying areas).

The name of the city

As previously stated, the old name "Menkorer." After his coronation in 1880, King (Nigus Taklehaymanot of Gojam passed a decree in 1882 renaming D/markos town "Melite Adbar Debre Markos." He also issued a proclamation requiring the town's residents to accept and implement the new nomenclature. He also gave orders to his aides to make their own efforts to assist the public in practicing and adopting the town's new nomenclature. The name gained wide acceptance among the people and it's became popular very soon. Due to this reason, D/Markos church became the head of all other churches in Gojam until the Derg era, and the other churches were administered under it. The moniker was quickly adopted by the public and became well known. D/Markos church became the head of all other churches in Gojam as a result of this, and the other churches were administered under it until the Derg era. ("DM Master plan report)

Village names in the city

Kahin Sefer (The Priest Village)

The kahin sefer was a part of Debre Markos town that stretched from the southern direction of D/Markos church to the current surrounds of D/Markos Hospital. During the feudal era, the "Kahin Sefer" was handed to church servants and prominent affluent priests for residential use. During ancient times, the priests were given extra attention and respect for a variety of reasons. First, the church owned 1/3 of the land, and the government was religious at the time. To put it another way, there was a close bond between religion and governance.

Feres Bet (Horse House)

Between the previous D/Markos prison and King T/Haymanot School, Feres bet is located. Because no one had settled in this area up to the Wutrín River, it was granted to traders to use as a rest stop. Traders transported products from one location to another using donkey, mule, and horseback. It was decided to extend the trading route all the way to Sudan. Fitawuraris' and other dignitaries' (officials') saddle mules and horses were also grazed and rested at the "Feres bet" area.

Qire Sefer

06 kebele was the name of the Qire Sefer in D/Markos. It served as the town's commercial hub. This location served a variety of local alcoholic beverages, including Tella, Tej, and local Katikala (Areki). Women who oversaw company operations and waiters who worked to entice clients or sold drinks to males were dubbed "Qirewoch nachew." Because it wasn't pure love, the word "qire" denotes "passion" or "not true love." For a long time, the area was known as "Qire Sefer" because of this.

Negarit Mechi Sefer (Drumist Village)

"Negarit Mechi Sefer") covered the region between the main market and the Abima full-cycle elementary school. The king's drummers were given the land as a property for residential apartments. The place's nomenclature is agentive, meaning it reflects the residents' activities.

Sefii Sefer (Tailor Village)

On the king's direct decree, this region was designated as a residential area. The region was open to palace employees and costume tailors. "Sefi Sefer" is currently under the control of the 08 kebele.

Telba Sefer (Flax Village)

"Telba Sefer" is the area south of D/Markos. It is a residential area for those who work in agriculture. It was particularly well suited to flax (telba) production; the area was named after the oilseed "telba."

Demera Sefer

It was the name of a neighborhood in the vicinity of Abima Mariyam Church. Meskel damera has been held at this location from the reign of King T/Haymanot. The official parade was held here as well.

Hailu Gebia (Maksegnit) Sefer

It extends from the Endamata Eyesus church to the airport. This location was transformed into a market and a meeting place for traders by Ras Hayilu T/Haymanot. For a long period, however, it did not serve as a commercial center. The business center was relocated between the current 01 and 02 kebele areas.

Gimjabet (treasury)

It is the name given to the area between D/Markos Hospital and Kidane Mihirat Church, and it is being used today. Since the year 1580, when the "Gimjabet Kidane Mihiret Church" was founded in the area, it was known as "Gimjabet." Atse Yohanis is reported to have transported the Addis Ababa "Arada Giorgis's Church Ark" and the D/Markos town "Kidus Mark Ark" from Egypt to Ethiopia at the same time. For Atse Minilik of Shoa and King T/Haymanot of Gojam, he castled a lot. As a result, Saint Mark was won by King T/Haymanot, while St. George Church was won by Atse Minilik. This agreement was kept as a treasury at Kidane Mihiret Church for 15 years until the construction of St.Mark Church was finished. It later relocated to St.Mark Church after its construction was completed.

Baso Barr

This location is in the south-eastern part of D/Markos town. It can be located at the entrance to the Liban district. This location's name dates back to the reign of Prince Ras Hayilu. The current generation has lost most of the earlier names of places in D/Markos, and only a few elders remember them; the new generation does not use those earlier place names. This is due to the fact

that towns are reformed into kebele administrations using numerical designations such as kebele 01, 02, 03, and so on. Debre Markos City Administration Information Office

Development of municipal/town administration

Prior to the establishment of the D/Markos town Municipality, it was administered by regional lords (such as Chika shum and Nechi labash) and was also administered by district and province administration. The administration of D/Markos town, on the other hand, was created before that of all other Ethiopian towns. Furthermore, before Addis Ababa city, the Mayor administered D/Markos town. The reason for this is that the first liberation (winning) flag was raised in Gonder around Metama at "Omidla" when Hailasillasie returned from exile through Sudan. In 1993 E.C., the second freedom flag was raised in Debramarkos, the capital of Gojam. Addis Ababa has not yet been completely liberated from enemy occupation during this time. As a result, Hailasillasie spent a month in D/markos. Then he authorized the construction of a town administration to maintain Debramarkos' peace and stability.

Fitawuraei (later Dejzmach) Beyene Bishaw, a well-known patriotic in the region, was the first designated administrator of D/Markos town. In March 1933, E.C. appointed him. Fitawurari Beyene kept the town in order from 1933 to 1937 E.C., until Dej. Kebede Tesama took over as governor of Gojam. Because there was no formal police force at the time, Fitawurari Beyene organized his employees to maintain peace and order in the town. Fitawurari Beyene was also in charge of the legal proceedings and tax collection.

Hailasillasie moved Fitawurari Beyene Bishaw to another region of the country as district governor after Dejzmach Kebede Tesama was appointed governor of Gojam. In 1937 E.C., when Dejzmach Kebede Tesama was appointed as the governor of Gojam with complete authority, a Showa person named Ato Kebere H/sillasie was appointed as the Mayor of Debre Markos and accompanied Dej. Kebede Tesama. After that, the Municipality was formed. The police station was founded in the same year (1937 E.C.) and took over the responsibility of keeping peace and stability from Fitawurari Beyene Bishaw's employees. (Debre Markos City Administration Information Office)

The development of the city master plan

Municipality engineers Mr. Taddese W/Gebriel and Mr. Welde Hanna produced the first Debre Markos master plan in 1941 E.C. after the Municipality was established. Italian engineers in 1958 E.C. then produced the second Master plan. Furthermore, in 1990 E.C., the National Urban Planning Institute developed a Master plan for Debre Markos town, and last year, the Amhara Regional Planning Institute began preparing a structural plan for the town (2012).

The Municipality's establishment and involvement in the advancement of town services and good governance: - The town of Menkoror (Debere Merkos) was divided into about 14 sub-cities. The nomenclature of the sub-cities follows the same pattern as the administration of the town, which was based on a monarchical governing system. Thus, good governance was formed to serve the interests of Dajazmatches, Fitawuraries, other dignitaries, and officials of the ruling class, rather than the interests of the town people.

For their own profit, feudal authorities constructed their own residential communities and controlled certain basic infrastructure and social services. For example, the clergy area (sefer) was expanded from Debere Markos church to Debere Markos Hospital, and this section was designated as a residential unit for church servants, renowned and affluent clerics.

Because the church held 1/3 of the property during the feudal era and it was a religious government system, the clergy were granted particular treatment and privileges in the town. Furthermore, the king's direct command allowed for the establishment of Sefi-sefer (tailors) as a residential unit, as well as artisans, saddle makers, and dressmakers or tailors for palace officials. Other sub-cities, such as Feres-bet (horse house), housed and deployed the saddle mules and horses of Dajazmatches, Fitawuraries, and other authorities.

This demonstrates the system's partiality in not taking into account the interests of the entire town's residents. As a result, there was a lack of effective governance in the town's administration structure. Apart from taking land from feudal lords and changing the nomenclature of sub-cities to kebeles, the dergue government did not bring fundamental development and good governance to the town. (From the Debre Markos City Master Plan document)

3.3. The city's housing development over time

Trend in physical development

The settlement was founded by King T/Haymanot, as stated at the outset. Saint Marqorios church was wrecked by thunder lightening in the past, and Saint Markos church was built in its place. This location was near the palace, and the churchmen congregated around "Kahin Sefer" (Clergymen Village).

The town widened in diverse directions over time and under different regimes. Because there was less population, the king's loyal people owned large land on their whims and randomly possessed to the certification of ownership-ness of the land, they were planting trees or ploughing by tenants. Because it was based on the wishes of feudal chiefs, the whole process of urbanization was unplanned. During the Ras Emiru administration, land was distributed to settlers, and any unused land was sold to those who could afford it.

The paucity of land was noticed under the Derg era, and Derg redistributed land under the guise of extra dwellings and the proclamation of urban land nationalization.

By EPDRF, the settlement had vigorously expanded. When we observe the town divided into three governments (Emperor Haile Selassie, Derg, and EPDRF), we can see the following:-

- From the other directions, the town extended to the northern side, away from the founding site.
- The town grew from Tekle Haimanot Square to Abima Church during Emperor Haile Selassie's reign.
- During the Derg period, the development was from Abima Church to Mesaleima.

Currently, from Mesaleimia's point of "Robu Gebiya" to the access road where one of the main tankers is stationed, and both sides of the road surround Bole, Filiqliq, and Tekle Haimanot Monastery, the road is impressively expanding. Because the northern section is flat and appropriate for habitation, and because the majority of the population come from the north – east Gojam area zone or are predominantly highlanders, they prefer to settle in the direction of their hometowns.

I try to see the history of land tenure system problems when we look at the southern half of town. Because the property was owned by clergymen, establishing a colony there was extremely

difficult. During King Tekle Haimanot's reign, the clergymen occupied that area. Ras Hailu (son of King Teklehaimanot) occupied much of the southern section, while Ras Emiru, the Governor of Gojam following Ras Hailu, enabled the aristocracy, clergy, and poor urban people. He was instrumental in the town's expansion by distributing land to other residents.

Emperor Haile Selassie's expansion was from Kahin Sefer to Gimjabet Kidanemihirat, as far as we know. From Gimjabet to Kutaba bet was built before the Derg, and from Kutaba bet to the prison area was greatly expanded under EPDRF authority. The community was surrounded by a recognizable urbanized shape to the east, particularly north – eastern from Kahin Sefer to Motta Sefer.

The inhabitants had no intention of moving to Tekle Haimanot square in the past because of the unfavorable topography of the area (hilly and windy). Despite the fact that Qoda Tera is directly across from Tekle Haimanot Square, settlers prefer to reside in Motta Sefer. It was because the bus terminal, hotel, butcheries, and traditional liqueur establishments were all located in Motta Sefer, and it was discovered to be the town's heart.

Even though “Maksegnit Gebiya” was established under the Ras Hailu Governship, enlargement is unlikely unless the surrounding interior areas are expanded, however there is a slight expansion from the upper square to the lower square. Because of the few people who lived there at the time of Derg's departure, the internal corridors of the lands around the Mosque on the banks of the Wusata River were dubbed Arab Sefer, and it is difficult to spot on maps. The Ethiopian Road Authority has occupied the land to the east, or Shewaber, and minor villages were created during the Derg period and the EPRDF as well. As a result, future expansion in this direction is improbable.

When we look west during Emperor Haile Sellassie, we can see from Tekle Haimanot square to an earl guy named Fitawrari Ayelew residence or the Wutrin River far away until the place called "Feres Bet" spread. Later, during the Derg dictatorship, from Feres Bet to the public school, and then, during the EPDRF regime, from the public school to Delge kebele – 04 on a massive expansion. (Debre Markos City Master Plan document)

Housing in Debere Markos

Regardless of the urban society's income level, housing is the greatest investment sector. Debre Markos was one of Ethiopia's 19 key city areas in the 1970s. The town had a total housing stock of 8,557 units in 1976, according to information acquired from the municipality, with a projected extra housing requirement of 9,936 units over the years 1976-1995. Debre Markos had a total housing stock of 6,690 before 1967, according to the same information the researcher acquired from the municipality, whilst Debrezeit had 6,350 and Bahirdar had 3,940. Such disparities, as well as the ongoing housing standstill in Debre Markos, are significant. Debere Markos is one of the cities in Ethiopia that has a housing shortage, both in terms of quantity and quality. The majority of the houses (more than 80 percent) are in poor condition. In terms of safety and health, less than 20% of the houses meet the minimum requirements.

According to the 1984 housing and population census (CSA, 1984) and other research, Debere markos had a total housing stock of 8368 units. The total housing stock has expanded to 9617 units ten years later in 1994, and the total housing units of the city are roughly 18,479 units according to the 2007 E.C (CSA 2007). The housing backlog has been exacerbated by low yearly dwelling production. According to data gathered from the city administration and Debre Markos' general background research (1998 EC); the town's entire housing stock is projected to be 11,359 units (Debre Markos City Administration 2007). Only 1,742 housing units have been built in 13 years. Substandard and low-quality homes, on the other hand, predominate in the city's current housing stock. This is primarily due to a lack of routine maintenance, bad housing-related infrastructure, old houses, substandard building materials used in house construction, and people' financial issues.

Housing Distribution by type of Ownership Status

The percentage of all residential units owned by their occupants is known as owner occupancy. According to data obtained from the city administration of Debre Markos, 66% of the houses are privately held, while 21.45% are kebele-owned. The city administration and the housing development office possess 2.6% and 1.16 percent of the dwellings, respectively. 7.79% are owned as a replacement for the kebeles in other towns for which they have given up their homes.

Table 2: Housing distribution

S/No	Type of Tenure	Number of Houses	%
1	Kebele Built	114	1
2	Housing Development office	130	1.16
3	Built by Urban Administration	293	2.6
4	Compensated	880	7.79
5	Kebele Houses	2437	21.45
6	Private houses	7492	66
	Total	11359	100

Source: *Debre Markos City Administration.2007.Debremarkos.*

Housing according to affordability

When housing markets are functioning well, households are not obligated to devote an excessive amount of their income to housing; housing is considered affordable if it consumes less than 30% of the household income. Housing prices may be pushed beyond the limit of affordability if supply does not keep up with demand. Kebele rental housing accounted for 84 percent of all rental housing in 1984. In 1984, the rent-to-income ratio was at 5%, which is around 1/3 of the countries in Sub-Saharan Africa.

A rating of 5% implies that rent values in Addis Ababa and other large cities are under artificial (non-market) downward pressure. This is not the case for people who live in private rental homes. 29.5 percent of Debre Markos residents pay less than 5 birr per month, and 50% pay more than 20 birr per month. The majority of them are tenants in private rental homes. Those who live in kebele dwellings pay a lower rent. There has been no rent adjustment for kebele rental houses since then.

3.4. The Housing Demand and Supply Situation

The ability of housing supply to keep up with effective demand for housing is one indicator of a robust and efficient shelter sector; when demand rises, housing suppliers should be able to raise production accordingly. This response is influenced by the availability of supply inputs (land, infrastructure, and building materials) as well as the ease with which one can enter the construction industry. Land supply, housing finance, building materials, infrastructure, social services, institutional frameworks, labor availability, and property rights all influence housing supply and demand conditions.

The Housing need vs Demand

When it comes to the town of Debre Markos' housing need and demand, a number of reasons have contributed to the high demand. First, everyone requires a home with essential amenities such as running water, electricity, a road, a footpath, a drainage system, and ventilation, among others. In summary, everyone requires a safe, healthy, and secure living environment that fulfills the basic level. Natural population expansion, the need to replace old and decrepit buildings, and rural-urban and urban-urban migration are all factors that influence housing demand.

The majority of the existing dwellings are damaged and old, having served for decades and being difficult to maintain. Aside from it, other factors are also contributing to the city's rising housing demand. Because the rental price of private residences has been rapidly growing, the housing demand of the poorest of the poor is increasing. The essential infrastructure facilities in freshly constructed residences are lacking. Existing old and decaying structures are not maintained or replaced with new structures. These and other reasons have all contributed to the increased demand for housing. Housing demand is also influenced by the property rights that exist in a certain country or location.

Housing Supply (production) of the town:

The Overall Housing Supply vs stock

Institutional arrangements, land supply, building material, housing finance, and skilled and unskilled labor are the five key housing supply components that typically influence housing supply circumstances. The supply side of housing would be influenced by the adequate availability of the aforementioned housing components.

Condominium Houses in Debre Markos Town

While trying to analyze the housing supply and demand side in Debre Markos, more emphasis was given for the condominium housing supply and demand situation of the town. Accordingly, the three phase condo housing supply situation was seen. The first phase was the 1999 condo housing development program, in which 539 houses were constructed. The second phase is the 2000 budget year housing development program, in which 961 houses are constructed in 5 sites. Totally 45 blocks are constructed. Out of the total 961 houses, 926 are residential and the remaining 35 houses are for shops. In the town a total of 1500 Condominium houses are constructed through the condominium housing development program. In contrast, for the 2001 budget year, 12 hectare of land provided and developed for condominium houses.

Discussions have been made with the housing transfer office staffs on the housing transfer situation. According to the discussions made with experts 458 applicants are registered for buying houses. The majority of them are transferred to people who have made the down payment and met the other criteria.

Previously, many hundreds of applicants were registered to buy the houses. Later on, because of the price escalation of the houses and affordability issue almost all who were originally registered (mainly people within the income range of 3000-7000 birr) to buy withdrew to buy.

People were encouraged to buy these residences at the time because of their proximity to the city center, as well as their proximity to the inner city and transportation connections. Because of the improved transportation connectivity, demand for houses in the stadium area is extremely high, as is the desire for residences with greater transportation access. Condominium houses for rent along the Bahirdar road are in high demand.

The efforts made by the city administration of Debre Markos, in providing land for new house builders is remarkable. However, due to the skyrocketing prices of building material and other housing inputs, significant numbers of the houses are not produced. In order to relieve the housing production of the city, Government is directly involved in the construction of Condominium houses.

Table 3: Condominium houses in D/M

S/No	Name of the site	No. of Blocks	No. of stock house	Shops	Total
1.	03/ Bole site	20	432	18	450
2.	04/Dibza site	4	80	9	89
3.	Wuseta	14	209	15	224
4.	Old hospital	5	104		104
5.	Geter manged	14	220	4	224
6.	Markos church	4	75	5	80
7.	Total	61	1120	36	1171

Source: *Debre Markos City Administration Information Office.*

In order to address the national housing issue, Government has launched a national condominium housing development program in selected urban centers of the country. Debre Markos is one of those selected urban centers. The objective of the housing program was not only to address the

housing problem, but also to create employment opportunities and also to integrate housing with other development activities.

Habitat houses built by the UN in Debre Markos

Since 1993, Habitat for Humanity Ethiopia has been active. Since then, it has aided thousands of families in the construction of decent homes with better water and sanitation. Habitat Ethiopia has a diverse and innovative program that is tailored to local housing needs.

This project aids low-income families in relocating to new dwellings with improved sanitation and safe drinking water. Renovation of houses, building of communal toilets, communal water stations, pathways, and ditches are all part of the project. Through hygiene and sanitation training and the encouragement of money saving behaviors, urban slum upgrading provides long-term use facilities and creates a healthy living environment. The intervention focuses on actions at the community and household levels. Low earnings, advanced age, and a history of poor health are among the family selection criteria.

Habitat Ethiopia work with target families in the communities of Debre Markos, Bahir-Dar, Debre Berhan, Kombolcha, and Dessie in the Amhara Regional State. Construction of new residences, water reservoirs, communal water stations, and pipelines are among the initiatives in the integrated vulnerable group housing and WASH project.

UN Habitat has been working on the construction of group housing in Debre Markos City as a result of these projects. The UN Habitat project makes housing a priority in their attempts to enhance the living conditions of low-income families by providing affordable housing for those whose income is insufficient to afford market-rate housing.

The poorest of the poor housing program

The poorest of the poor housing program is one of the projects launched at the regional level by the support of UIIDP, which was launched in 2006. This project is a project that is intended to directly benefit the community's underprivileged community. The purpose of this project is to help the poorest of the poor families in Debre Markos. The goal of this project is to improve the living conditions of poor and vulnerable families who are dealing with health issues, impairments, and the poorest of the poor's. New housing is being built, but the bathrooms and kitchens are being built by the residents, and water and electricity are being rented from neighbors.

In the city of Debre Markos, 560 residences have been erected so far with the help of the government, UIIDP in this housing program, and the community. Out of the 560 dwellings erected, 205 are for men and 355 are for women. Females are given special consideration in this program, which is why the number of females is higher than the number of males. Individuals are elected through public participation in all kebeles through elected committees.

Recent year’s data about housing development in Debre Markos

The following is a list of Debre Markos' city administration. From 2006 - 2010 E.C. They are considered to as homeless since the newly created housing societies are organized and save money on a regular basis. From 2011 – 2013 E.C. On the other hand, organized housing associations are still being investigated and are on the lookout for genuine home seekers and homeless persons. They are buying land and building houses. However, So far in the 2014 year, no planning has been made. In the months ahead, from 2011 to 2013, E.C. provides homes for organized associations. As a result, the number of housing associations and individuals who have formed and taken up housing space each year is shown below. As a result, between 2006 and 2010 E.C., associations and land acquisitions were organized.

Organized housing associations

Table 4: Organized housing associations

In the year 2006	Number of organized associations	108
	Male	1215
	Female	487
	Total	1702
In the year 2007	Number of organized associations	140
	Male	1530
	Female	672
	Total	2202
	There is no organized association in 2008	
In the year 2009	Number of organized associations	58
	Male	452

	Female	421
	Total	873
In the year 2010	Number of organized associations	44
	Male	405
	Female	213
	Total	618

Individuals who have leased space

The number of housing individuals who have lease space and taken up housing space each year in two phases and shown table 5. As a result, in the year between 2006 and 2010 E.C.

Table 5: Individuals who leased spaces

In the year	1st Lease round	<u>No</u>	2nd Lease round	<u>No</u>
2006	First round	57	Second round	178
	For residence	52	For residence	173
	For Business	4	For Business	4
	By Association	1	By Association	1
2007	First round	215		
	For residence	206		
	For Business	5		
	By Association	4		
2008	First round	311	Second round	145
	For residence	299	For residence	143
	For Business	12	For Business	2
	By Association			
2009	First round	363	Second round	58
	For residence	343	For residence	56
	For Business	20	For Business	2
2010	First round	167	Second round	42
	For residence	157	For residence	39
	For Business	7	For Business	3

	By Association	3		
2011	First round	98		
	For residence	94		
	For Business	2		
	By Association	2		
2012	First round	42	Second round	35
	For residence	38	For residence	32
	For Business	4	For Business	3
2013	First round	25	Second round	22
	For residence	21	For residence	20
	For Business	4	For Business	2

An individual who has moved out of their home due to development

Table 6: Individuals who move for development

S/No	In the year 2014	No of household
1.	2010	138
2.	2011	104
3.	2012	101
4.	2013	98
5.	2014	85

Source: *City Administration of Debre Markos (2014)*

In the case of Debre Markos' housing development, an attempt has been made to see land supplied for residential house building for eight years. As a result, between 2006 and 2012 E.C. a total of 1993 plots were allocated for residential housing. The size of the plot changes from year to year. Due to land shortages, both developed and undeveloped, plot sizes have been shrinking in recent years.

According to figures received from the municipality regarding the town's housing crisis, there is a lack of housing in the city. Low-income populations are disproportionately affected by the inability to develop housing on their own. It is impossible to build a house nowadays, and the poorest of the poor spend the majority of their little salaries on rent.

3.5. Housing Related Problems in Debre Markos

According to the information collected from the City Administration of Debre Markos, key housing related problems of the city are:

- Shortage of all types of housing
- Low supply and shortage of rental houses, particularly for the low-income groups
- Low attention given for the expansion and consolidation of housing cooperatives
- Expansion of slum areas in the city center.
- Lack of timely maintenance, particularly for the kebele houses.
- Overcrowding and congestion of the houses in the inner city
- Low affordability of the residents to build and own better houses

Summary of contextual review

The background of the research area, as well as the details of city formation, City housing development over time and housing demand and supply, are examined in the contextual review section. The contextual review assistances comprehension of the subject area and program. It also helps to contextualize how the housing shortage is a burden for the poorest of the poor, with these households facing significant barriers to housing construction as the city's housing supply is distributed slowly.

On the other hand, the study has also tried to see the housing condition of the town through the field survey and from secondary sources. As a result, there is overcrowding in the city's core, and the majority of the homes are old and decaying. The kebele dwellings, in particular, have reached the end of their useful lives, and the urban poor live in them with no maintenance.

CHAPTER FOUR

RESEARCH METHODOLOGY

INTRODUCTION

This chapter gives a brief overview of the research methods employed in the study. It explains the research topic, research design, data type and source, sample method, data gathering methods, and data analysis methodologies. The data presentation, validation, and reliability of the research are all described in detail, which helps in the research's success. The members of the poorest of the poor houses are the focus of the study. The study focuses on collecting information from residents' reactions as well as professionals from the municipality and kebeles in order properly grasp and comprehend the research question. Because the researcher believes that the economic sustainability of affordable housing development programs issues cannot be fully characterized by utilizing only one type of research method, a hybrid research approach employs both qualitative and quantitative research methodologies. Its goal is to learn more about the background information and determine the economic sustainability of the poorest of the poor affordable housing development schemes.

4.1. Study area

The research take place in Debre Markos City. The Debre Markos kebele 07-research area was chosen for a variety of criteria, including the site's location, residents' stay length, current job status, the number of households in the area, the site's location in terms of economic conditions, and infrastructure availability. The poorest of the poor affordable housing is one of the low-cost home building options available in Debre Markos, notably in the Amhara region. Debre Markos city sees the construction of houses for the poorest of the poor as a critical chance to include economic sustainability into its construction efforts.

4.2. Research Design

A process of getting a deeper grasp of a subject under inquiry is known as research. Conducting research necessitates the development of a study plan and strategy to generate data, as well as a methodology to collect, analyze, and interpret data. In this chapter, the method used for this thesis, as well as the reasons behind it, were discussed by the researchers. To gain a better understanding of the economic sustainability of the poorest of the poor affordable house development programs for the poorest of the poor, a case study method was used. The data collection in this thesis

consisted of primary data from interviews, direct observation, secondary data from literature such as earlier work by other researchers in the field, and data from the city municipality and information center.



Figure 2: Research design

4.3. Data type

Primary Data

The primary data acquired through the household survey includes information on house rents and other regular housing and non-housing costs, such as transportation, overall house affordability, and the costs of existing utilities and services. Organizational coordination, access for designing this housing program, and practice of land preparation, among other things, were discovered through organizational interviews.

All of this firsthand information lays the framework for displaying the level of affordability of the poorest of the poor in terms of economic sustainability. The questionnaire survey could be followed by interviews to provide a more complete viewpoint on the topics mentioned. As a result, two methods (a questionnaire survey and an organizational interview) are employed to get firsthand information and a camera is utilized during the observation to keep a visual record of the situations in the research area.

Direct observation is very significant since it allows the researcher to see items that may disclose important characteristics of the subject under investigation. During my repeated visits to the research area, the researcher saw that the residents had a strong sense of community, as seen by their mutual assistance.

Secondary Data

Secondary data sources were used to complement the primary data and to triangulate the findings. Secondary data refers to papers that have been obtained from a variety of public and private organizations and are either directly or indirectly relevant to the issues at hand. Different demographic, socioeconomic, housing, and other organizational sources of secondary data are the most notable organizational sources of secondary data. The decadal census reports of the Ethiopian and D/Markos of Statistic, as well as annual reports on the poorest of the poor in the city dweller, are used to compile reports for the D/Markos city jurisdiction.

4.4. Sources of Data

Primary and secondary data sources used in the investigation. Primary data sources included the Debre Markos municipal administration, kebele administrations, and on-site observation. Secondary data sources, literature, relevant statistical records published by various public and private organizations, past housing studies, maps/images from Google Maps and Earth, research reports by numerous national and international organizations, and various other relevant materials

4.5. Sampling design

4.5.1 Sampling techniques

The researcher is interested in working in Debre Markos, particularly in specific subject areas. To carry out this research, the most appropriate technique used to improve the accuracy of the research findings. Probability sampling were used to accomplish this, using clustered sampling from probability sampling.

Individuals are not utilized as the sampling unit in a clustered sample; instead, subgroups of the population are used. Clusters of households are chosen at random to participate in the study and are separated into subgroups termed clusters. For example, my case study location could be considered as one cluster of projects from the poorest of the poor housing schemes. All members of the identified clusters are then included in the research in single-stage cluster sampling after that, a random sample of participants from each cluster is chosen to participate. During the analysis, clustering should be taken into account. The survey is open to all members of the households that have been chosen (clusters). When a study spans a vast geographic area, cluster sampling can be more efficient than random sampling. It is easier to contact a high number of

people in a few practices than it is to reach a small number of people in many distinct practices, for example. If the selected clusters are not representative of the population, bias is more likely, leading to increased sample error. In my case, the respondents' living and economic situation are similar to those of other people who live in the same kind of the poorest of the poor housing projects. As previously stated, the study area chosen from a single location. There are other locations throughout the city, and the researcher chose one near the university treatment plant. The location has 30 dwelling units, all of which chosen for data collection. The researcher noticed that cluster sampling is more accurate for this type of study from all of the sites in the city.

4.6 Method of data collection

In order to analyze data and information related to affordable housing construction initiatives for the poorest of the poor in more depth, the study used primary data collected through questionnaires, interviews, physical surveys, and observation. In order to acquire secondary data, the researcher first determine where the data came from. Visits the municipality and kebele that are recognized to have soft copy and hard copy data available via electronic media can then request and collect the data.

4.7. Method of data analysis

4.7.1. Data gathering tools

The majority of the data acquired through interviews and outdoor observations. Data gathered through key person interviews, questionnaires, and physical observations. In addition, the study included some additional questionnaires. To begin, each targeted workplace and each resident given thorough open-ended and closed qualitative and quantitative interview questions to complete. Finally, using checklists and physical maps, the researcher conducts field observations to assess the present state of the study areas.

4.7.2. Data analysis tools

This study used numerous methods and data sources, necessitating a mixed data analysis strategy. The researcher try to attempt to grasp and appropriately interpret the contents of the data when doing quantitative and qualitative analysis based on empirical data. SPSS software used to perform some basic statistical analysis, such as producing frequencies and other statistical summaries, Pearson correlation as well as statistical tables of the data collected from the questionnaire survey. To create the maps needed for discussion and analysis, various internet data sources were used.

4.8. Data presentation

As predefined, study objectives, the interview results, field observation data, photos, operational maps, and related papers present in logical sequences in the form of tables, figures, and analyses.

4.9. Validation and Reliability

The total quality of research is determined by its validity and reliability. In data gathering and analysis, validity is a crucial test. The data for this study was gathered using operational surveys, interviews, and direct site observation. For example, the economic state of inhabitants is investigated using questionnaires derived from a literature research and observations of the residents' current situation. During data collection, the researcher obtained information regarding similar concerns from a variety of sources.

- The economic state of the poorest of the poor affordable housing tenants is investigated through resident interviews, as well as interviews with staff from the housing transfer and management team, as well as the infrastructure development team, and a report by the municipality.
- The researcher examined the resident and kebele lists of residents, as well as interviews with management staffs, to determine who the residents are.
- Using records and interviews with municipality staff, the development process of the poorest of the poor affordable housing was investigated.

The purpose of reliability is to keep a study's errors and biases to a minimum. Documenting every step of the procedure using the case study protocol or preserving a case study data base is the most important concern for creating reliability. In this study, all relevant data was collected and their sources documented in an annex; the annex includes a list of interviews, analysis of important data collected, questionnaires, and interviews.

4.10. Criteria for choosing a research area

Debre Markos City is the research area. The rationale for the study area being kebele 07-university treatment plant site is because of: Residents' stay length, present employment status, number of households in the location, the site's location in terms of economic conditions, and the conditions of infrastructure in the site are the primary criteria for choosing the site.

Summary of methodology

Research objectives	Research question	Data type	Data source	Data gathering tools	Data analysis tools	Data presentation
To investigate the current economic situation of the tenants living in the poorest of the poor affordable housing.	How is the economic status of the tenants who are currently residing in the poorest of the poor affordable housing development program affected?	primary data	tenants	Interviews and field observation questionnaires	For data analysis, MS Excel, SPSS, and other related tools were used	Tables and analyses were used to present the paper in a logical arrangement.
To investigate the prospects and challenges faced by the residents of the poorest of the poor affordable housing.	What are the prospects and challenges of the poorest of the poor people living in the poorest of the poor affordable housing development program in terms of economic sustainability?	Primary and secondary data types.	Tenants and an online search.	Interviews and field observations surveys, and an internet search for various literatures,	For data analysis, MS Excel, SPSS, and other related tools were used.	Tables and analyses were used to present the paper in a logical arrangement.
To assess economic sustainability performance indicators for the poorest of the poor affordable housing in order to ensure long-term economic sustainability.	What are the economic sustainability performance indicators for the poorest of the poor affordable housing?	Primary and secondary data types.	Tenants, Literature and journals	Interviews and field observations surveys, and an internet search for various literatures,	Analyze Literature Critically, and tenants, were used for data analysis	Tables and analyses were used to present the papers in a logical order.
To develop indicators for incorporating economic sustainability into the poorest of the poor affordable housing development programs.	What should be the indicators to incorporate economic sustainability into the poorest of the poor affordable housing development program?	primary and secondary data types	Tenants, Literature and journals	Through online searches, key person interviews, questionnaires, and physical observations.	Analyze Literature Critically and MS Excel, SPSS, and other similar applications were used for data analysis.	Structure, figurative language, tone, and analyses were used to display the papers in a logical arrangement.

Table 7: Summary of methodology

CHAPTER FIVE

RESULTS AND DISCUSSION

INTRODUCTION

This chapter offers an introduction to the study area, as well as a summary of data acquired from the study area and government offices via questionnaires, interviews, and researcher observation. The information gathered is summarized in a variety of ways. Texts, figures, and tables, the residents' replies are used to categorize the summary. As previously stated, the research approach used in this study is hybrid. Both qualitative and quantitative data are used to create the summary. The researchers examined the total number of responses to try to figure out how residents' socioeconomic conditions and the impact of location on the poorest of the poor affordable housing development programs in terms of economic sustainability, as well as the development process. The research also produced basic ESPI, which have been analyzed and ranked by a variety of literatures and stakeholders. Were summed up.

5.1. The poorest of the poor affordable house program in Debre Markos city

The World Bank's Urban Institutional and Infrastructure Development Program and the Debre Markos city administration built and handed over to users the poorest of the poor housing projects in 13 locations over several years, mostly before eight years ago; a total of projects were built and handed over to users by the city municipality at various times.

These 13 sites projects comprise 56 blocks. Many of these projects are located in the city's outskirts and unoccupied spots within various kebeles. According to key insiders, the construction of houses began eight years ago. The goal of these initiatives was to offer cheap housing for the city's poorest residents by establishing various criteria to allow for housing supply. The majority of these housing initiatives are spread out around the city, in all directions.

Basic resources (land and finance)

The city municipality constructs these kind of residences for the poorest of the poor households based on kebeles needs each year. Land is a basic resource for this development; the municipality utilizes unoccupied lands and kebele rents are maintained at current levels. Because the majority of vacant land is located on the city's outskirts and in mountainous areas, it is positioned outside of the city core. The financial resource support comes from the non-governmental organization,

Urban Institutional and Infrastructure Development Program (UIIDP), which helps cities construct their infrastructure.

Criteria for choosing a tenant

Currently, the municipality only provides homes to the poorest of the poor, and beneficiaries of the housing programs include those who are sick and live in lowest-income households, Females are the beneficiaries of this program, which is another selection criterion. Females, the poorest of the poor, who have lost their spouses to death and have poor children, are the beneficiaries of these types of projects. The kebele administration selects the residents based on their income the households checked by the kebele administrator the level of poverty and their conditions.

Location of the houses

Based on land that is free of any property and is used as open public spaces in different parts of the city with varying levels of suitability, the majority of the locations are on the outskirts and mountains of the city. These places have a big influence on the people who live in these dwellings. (See map below, scale 1:2000).

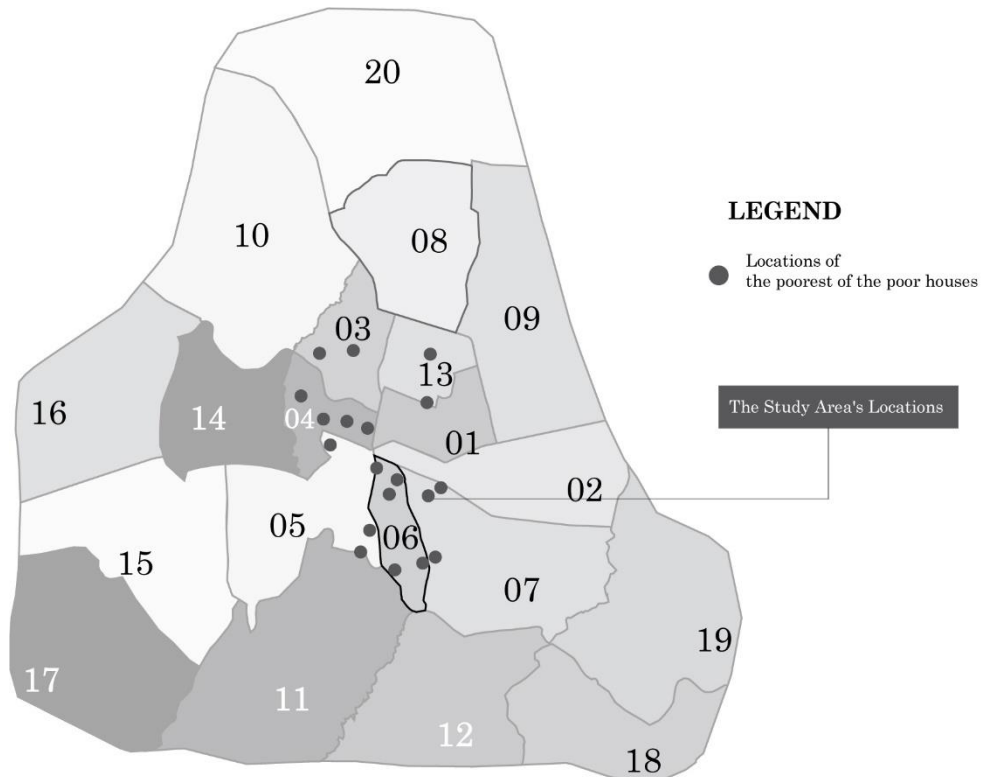


Figure 3: locations of the poorest of the poor houses

5.2. The administration and administrative framework of the housing estates

The most common type of supply-side project is the construction and provision of public rental houses for the poorest of the poor. The government provides the poorest of the poor with rental dwellings at below-market prices, making rental housing one of the most effective ways to support them. Infrastructure provision, construction cost financing, and charging recipient households below-market rents are only a few of the efforts that have been implemented. The goal of demand-side programs is to reduce the cost of housing for the poorest of the poor.

With the assistance of UIIDP and the regional government, the poorest of the poor housing development program is create. Apart from the management and administration of the houses, the city government of Debre Marko's was given the responsibility of building houses for rental purposes. The administration and administrative framework of the housing estates.

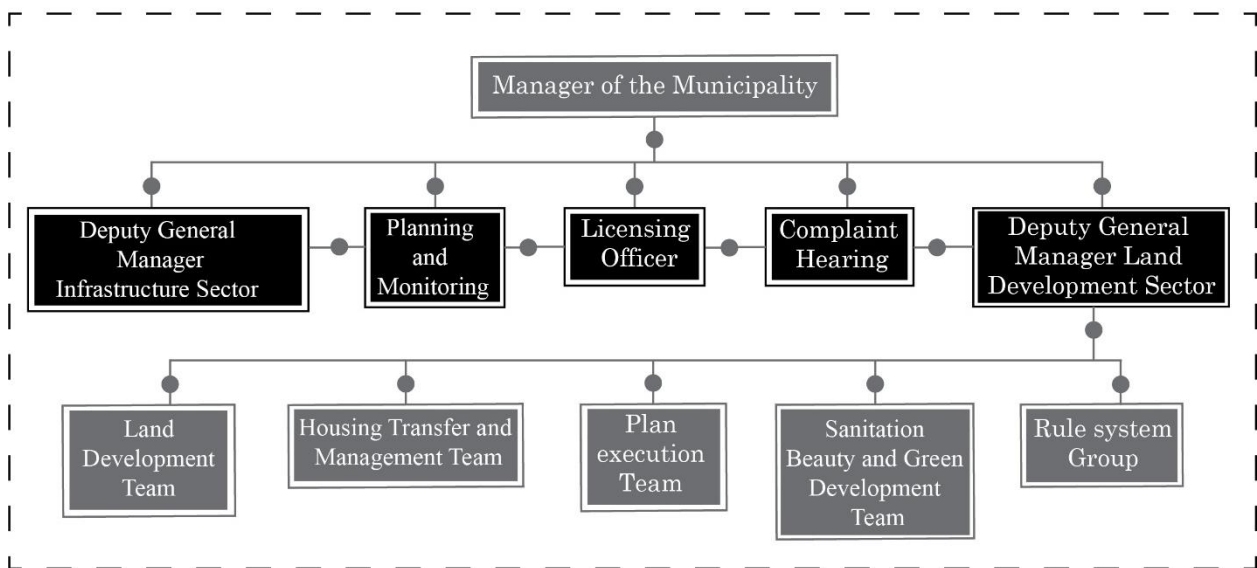


Figure 4: Administrative structure

The housing transfer and management team is in charge of the administration, management, and maintenance of the houses, as illustrated in the structure chart. Rent collection, maintenance, security, management, and administration are all responsibility of these structures at the kebele level.

5.3. Housing conditions for the poorest of the poor

The physical state of homes, the type of dwellings, the tenure of the house, the surrounding environment, and the availability of utilities are all factors to consider when it comes to housing circumstances. Low levels of education, a lack of employment possibilities, a single-parent family, and poor living conditions are typically connected with the poorest of the poor in the city housing program.

Many of the poorest of the poor dwellings are in reasonably moderate condition, although they require extensive repairs and care. The foundation material of the dwellings is masonry stone and timber, while the floor material is earthen material, the wall material is mud and wooden material, and the roof material is corrugated iron sheet. The existing housing condition of the houses is derived from the general conditions of the material of the houses and the physical conditions of the houses after the researcher seen the materials of the houses. The municipality is responsible for the upkeep of these structures.

As a result, Housing conditions were concerned with the current house's physical state as well as the surrounding surroundings. In terms of the study area housing type, 30 respondents were living in attached dwellings. In terms of the physical state of their homes, all respondents cited the following issues: insufficient space for home-based activities, insufficient natural light, leaking windows, and a terrible floor material. The most troublesome scenarios they face in the surrounding environment include homogeneous land use with no activity from the adjacent site.

5.4. Findings and analysis

Housing for the poorest of the poor at University Treatment Plant site (Case area for the study)

The study area, which is located in kebele 07, is a project by UIIDP Construction with the help of the city administration. It is located along old airport and around the Debre Markos university treatment plant area. It has three blocks, and 30 rental units. It is constructed at 2007 E.C. the construction has taken almost one years and the project was finalized in 2007. The government support project and the government constructs only the residential houses the remaining kitchens and toilets are built by the renters of the houses after they enter in to the house after they move in.



A view of the study area from the front.

5.4.1. The development process of the poorest of the poor housing projects

The development process of this housing scheme was investigated utilizing available box files from the city municipality archive and interviews with project participants. As a crucial informant, Mr. Kelemu and Miss. Banchu who worked as supervisors on the project's infrastructure development and house construction were approached.

The proposal to build these kinds of dwellings originates from the regional administration, according to key informants Mr. Kelemu and Miss. Banchu, with the support of the Urban Institutional and Infrastructure Development Program, which is supported by World Bank to help the region's urban development. With the support of the UIIDP, the ministry of urban development

and construction assists cities in developing their infrastructure and housing, (now the ministry of urban and infrastructure development), to complete the project. According to Mr. Klelemu, who is currently the supervisor of infrastructure and was the supervisor on this project, the city municipality, which was in charge of the project's planning, followed up on a specific target group for the development of this program during the project's start.

According to Mr. Kelemu and Miss. Banchu, this site was built for people who cannot afford to pay private rental charges and homes that are the poorest of the poor in the city. The distribution of homes is dependent on a number of parameters established by the kebele administration.

The project's design and construction: The office of infrastructure prepares the design, and the construction work for these sorts of house development programs, as well as many other projects, was directly granted to small micro enterprises. Without a tender or procurement process, the project was awarded to the enterprises.

This housing development program for the poorest of the poor was implemented across several years, depending on when the house designs were transformed into two different designs. The first phase of the housing development program design lacks a corridor between the salon and the bedroom; nevertheless, the second phase differs slightly from the first in that it includes a corridor leading to the backyard entrance. Households are allowed to extend their front fence 4 meters from their house's boundary. Some of them even sell tea and tella in these areas. See typology 1.

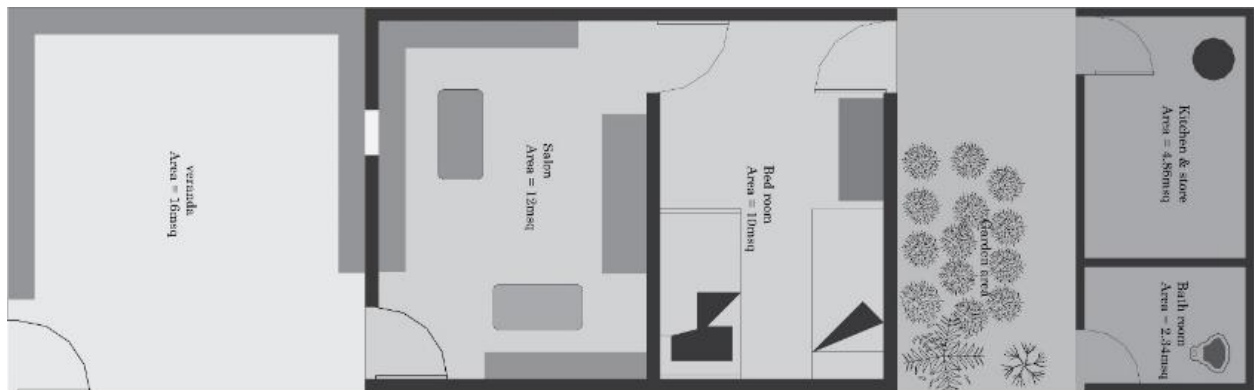


Figure 5: Typology 1



Figure 6: Typology 2

5.4.2. The house and the tenants

Tenants who have been interviewed have been tenant in their current house for 6 years. The houses are occupied with specific group of people for a long period of time.

Housing quality

The 93.3% of renters respond that the housing quality is good, and based on city housing conditions, the houses are in moderate condition as well. The data received from the municipality shows that the housing condition is in moderate condition.

The housing quality provides inhabitants with a good opportunity to live in a good condition, and they live in a low-cost housing with a good living and sleeping space, as well as other amenities such as a private kitchen, private toilet, and a private garden area. These features enable them to dwell in a moderate-quality living environment. For more details, see the table 9 below.

Table 8: Housing quality

	Frequency	Percent
Good	28	93.3
Moderate	2	6.7
Total	30	100.0

The availability of transportation services

Access to good transport services is essential in order to make an area a good place to live and to create a thriving community. Sustainability demands that housing be located close to good public transport (Winston 2010). Additionally research suggests that transportation costs directly impact on housing affordability; in the majority of cases a transit-rich environment can have a positive effect on a household's disposable income.

According to the respondents, due of the lack of a public transportation system, the majority of inhabitants travel by foot. However, 23.3% of respondents occasionally utilize taxis, which is contingent on the availability of money. Because of the distance between their home and their workplace, they must walk large distances on foot, which makes their job more difficult. They must also pay for a taxi to get to their workplace, resulting in a single cost for them. Because of their financial luck, the majority of locals rely on walking as a source of transportation.

Table 9: the availability of transportation services

Transport mode they use		
	Frequency	Percent
On foot	23	76.7
Both taxi and on foot	7	23.3
Total	30	100

Availability of basic infrastructure

While all cities strive to provide better housing and basic infrastructure for their residents, it is unclear why results are still so poor. It may be claimed that because urbanization is so huge and fast-paced, any endeavor to improve housing and infrastructure would fall short of the needs. (Çelik et al., 2018). In the study area, basic infrastructure provision and distribution are areas that deserve special attention. Table 11 shows the status of drinking water, sewerage, and electrical access in the research area.

As can be seen in table 11, the availability of sewerage disposal is nearly non-existent; just four homes supply sewerage disposal on their own. The remaining residents dispose of their trash on

open area in front of their homes, and as indicated in table 11 that practically all renters have access to water by renting from others or having their own private water tap. The half of respondents indicated they drink spring water or fetch water from a long public transportation commute. When it comes to electricity, all of the respondents in their twenties rent electricity from their neighbors, while the tens of households do not have access to electricity due to financial constraints.

Table 10: Availability of basic infrastructure

availability of sewerage		
	Frequency	Percent
Yes	4	13.3
No	26	86.7
Total	30	100
availability of water		
Yes	15	50
No	12	40
Public tub	3	10
Total	30	100
availability of electricity		
Yes	20	66.7
No	10	33.3
Total	30	100

Education status of the residences

The 46% of responders is illiterate due to the literacy situation, and around eight of respondents attend primary schools and only seven households attend secondary school. This educational status tells us their living condition and level of economic condition, as well as the poorest of the poor urban households.

As said previously and as seen in the table 12, the marital status of the respondents in the study region is as follows: 43.3 percent are married, 36.7 percent are divorced from their wives or husbands, and the remaining 20% are widowed. This demonstrates that the majority of homes continue to be headed by women or men, which has a significant impact on their everyday lives.

Table 11: Education status of the residences

Educational level	Frequency	Percent	Status	Frequency	Percent
0	14	46.7	Married	13	43.3
3	1	3.3	Divorce	11	36.7
4	1	3.3	Widowed	6	20.0
6	2	6.7			
7	2	6.7			
8	3	10.0			
9	2	6.7			
10	5	16.7			
Total	30	100.0			

Economic activity of employment and sex

Table 13 shows the results of the petty business sector continues to be the most important, accounting for 70% of all jobs. While 13.3% of respondents work as civil servants and 16.7% are pensioners. In the petty business sector, there were more females than males.

The number of female heads of households is higher than male heads of households, owing to the fact that most respondents state that they do not learn and that they marry at a young age, after which their husbands divorce them and their lives become extremely difficult. This is one of the issues that they face, as they are the poorest of the poor. In addition, they try to start a little business to keep their lives going after everything that has happened, which is why the number of women in such programs is higher than the number of men.

Table 12: Cross tabulation of respondents' employment and sex.

	What do you do for a living				Total
		Civil servant	Petty business	Pension	
Sex of respondent	Male	2	3	3	8
	Female	2	18	2	22
Total		4	21	5	30
Employment status (%)		13.3%	70%	16.7%	100%

Home based activities and employment status

Sixteen households of the respondents do their home-based activities in their houses, as seen in the table 14, with all of these respondents selling tela and tea. Meanwhile, seven households engage in a variety of activities, the majority of which are craftsmen who operate handcrafted goods, small kiosks, selling enjera and. Respondents do not conduct home-based activities in their homes; rather, they operate their businesses from there. If the husbands run other small businesses, his wife may sell tela and tea, or if the husband is on pension, the woman may run various errands, while some of them may be civil servants.

Table 13: Cross tabulation of respondents' employment and home based activities.

	Employment status				Total
		Civil servant	Petty business	Pension	
Doing home based activities	Selling tela & tea	2	12	2	16
	Other petty business	1	5	1	7
	Not doing any activities	1	4	2	7
Total		4	21	5	30

Household income and expenditure

Residents' monthly income and expenditures are included in the table 15, the frequency analysis; per-person incomes and expenditures are better indices of relative and absolute poverty since they net out the number of individuals living in each residence. As a result of their limited monthly income, the household respondents earned significantly less money, and their total monthly household non-housing spending was significantly lower. Based on the aforementioned income data, the residents are classified as the poorest of the poor households. As previously noted, the 70% of the tenants' primary source of income is small business, which they attempt to run from their houses, but they have been unable to locate consumers to provide their products and services owing to the house's inconvenient location.

Table 14: Cross tabulation of respondents' income and expenditure.

	Average monthly expenditure			Total	Percent	
	<500	500-1000	1001-2000			
Monthly income	<1000	5	6	0	11	36.7
	1001-3000	2	6	8	16	53.3
	3001-5000	0	0	1	1	3.3
	They have no idea how much it costs.	1	1	0	2	6.7
	Total HH	8	13	9	30	100
	Percent	26.7	43.3	30	100	

Early Household Income vs. Current Household Income

As shown in the table 16, cross-tabulations were used to examine the proportion of households' early income and present household. According to the residents' responses, their average monthly income has declined after moving to this house and neighborhood. The location and recent work places have had a significant impact on their revenue generation. Because the site of these housing programs does not address the economic impact on the tenants of the houses, their income was good when compared to after they came to this new house.

Table 15: Cross tabulation of respondents' early income and current income.

	Current monthly income				Total	
	<1000	1001-3000	3001-5000	They do not know how much is it		
Early monthly income	1501-2500	11	2	0	2	15
	2501-3500	0	11	0	0	11
	3501-4000	0	3	1	0	4
Total	11	16	1	2	30	

Early monthly rent price vs. Current monthly rent price

As indicated in the table 17, the rent price of the previous properties of respondents is high due to the location of the houses and the fact that they rent from private house renters. After they relocated to the poorest of the poor housing program and their rent is now quite low. Furthermore, because the rent is fixed, all households pay only 10 birr. Because of the constant housing price, this makes their monthly rent price easier.

	Current monthly rent price	
		10 birr
Early monthly rent price	200 birr	2
	300 birr	6
	350 birr	2
	400 birr	2
	450 birr	2
	500 birr	7
	600 birr	5
	650 birr	1
	700 birr	2
	750 birr	1
	800 birr	1
Total		30

Table 16: Cross tabulation of respondents' early house rent prices and today's rent prices

The Location effect on the residents work environment and their income

When we arrive to the study area, the influence of the housing locations has a significant impact on the residents of these projects. 66.7 percent, of respondents say their home's location has a significant impact on their work environment, 26.7 percent, say, it has a moderate impact, and 6.7 percent say it has no impact. The location of the house has an impact on their ability to generate money. 66.7 percent of respondents say the location has a significant impact on their ability to earn revenue, 26.7 percent, say it has a moderate impact, and 6.7 percent say it has no impact on their ability to generate income.

The Pearson correlation based on respondents of the dwellings the location effect on work and the location effect on income generating direct relationship, as shown in table 18, the impact of location on work and income generation 1, indicating that there is a significant correlation coefficient. Another thing to note is that when significant goes to 0.00, it indicates that there is a substantial difference between the two variables. The location effect and the location effect on income generation have a strong relationship, as shown in the table 18 based on the Pearson correlation test.

5.4.3. The Pearson correlation finding for the entire study area's variables.

At least three pieces of information are always present in SPSS correlation table cells:

1. The amount of the correlation (the "r" statistic), which ranges from -1 (perfect negative correlation) to 1 (perfect positive correlation). If the correlation is "statistically significant," SPSS adds a (*) [significant at least at the .05 level] or (**) [significant at least at the .01 level] to the number. If the correlation statistic does not have a minus in front of it, it is positive, meaning that high scores for both variables go together and low scores for both variables go together. If the correlation statistic had a - in front of it, it meant that as one variable's values increased, the other variable's values decreased (i.e., a negative or inverse correlation).
2. The correlation's level of significance (a level of .05 or smaller is considered "statistically significant). the smaller the number is, the more zeros there are after the decimal point. As a result, the following levels of significance become smaller and hence statistically more significant: .05, .01, .005, and .001.

Because SPSS only displays three numbers after the decimal point, a significance level of .000 does not imply that the level of significance is zero. It simply indicates that the number must be less than .0004. If the value were higher, SPSS would round it up to .001.

r = Value for Pearson correlation.

p = Value of the significance

N = number of respondent (For this study, the researcher selects 30 households)

The distance to work and other variables exhibit a negative correlation as a result of the Pearson correlation analysis. Which means that as the distance increases, so does their monthly income.

The location effect on their work and income generation, the change in their life after they move in, making home-based activities, neighborhood quality, and most other variables are inverse to the variable of distance to work. The Pearson test is more useful in determining the economic viability of such housing initiatives. The correlation value also determines the significance level. It corresponds with the remainder of the distance to work factors.

The relationship between 'distance to work place' and 'monthly income' was significant ($r = -0.218$, $p = 0.246$); this means that as their distance from their workplace increases, their income decreases. To analyze the relationship between different variables in the research area, a Pearson product-moment correlation coefficient was calculated.

The relationship between 'distance to work place' and 'neighborhood quality' was found to have a negative correlation ($r = -0.030$, $p = 0.876$), and the neighborhood quality comprises different factors depending on these criteria's, and the neighborhood quality has an impact on their lives. There was a substantial positive correlation between 'distance to work place' and 'housing quality' ($r = 0.014$, $p = 0.941$); the house quality is good based on the responses of the residents, thus there is a positive correlation between them.

There was a significant association between 'distance to work place' and 'location of the house,' with significant negative correlations with distance to work place ($r = -0.273$, $p = 0.144$); they suffer distance to their employment due to location. There was a significant negative correlation between 'distance to work place' and 'change of their life after they come to this house' ($r = -0.399$, $p = 0.029$); once they relocate to this area, the inhabitants' lives do not change; instead, their income decreases.

There was a significant link between 'distance to work place' and 'performing home based activities' ($r = -0.083$, $p = 0.664$); they do what is mentioned in the preceding variables. In conclusion, all of these factors point to the notion that their location has a significant impact on their income and quality of life.

As we can see from the figure 7, The Pearson result from SPSS tells us that it is not enough to build houses for the urban poorest of the poor households; we need also consider the location of the houses we build. The distance of the house has a direct impact on the occupants from several angles. This study focuses on the economic component of affordable housing sustainability. There are varied implications from the sustainability aspect when the work location is far from their home.

The Pearson correlation findings of the study area

Correlations		Monthly income	Distance to work place	location effect on work	Housing quality	Neighborhood quality	location effect on income generation	how has it changed since you arrived here?	What impact does the design of the house have on your ability to generate income?	Do you make home-based activities in your house
Monthly income	Pearson Co	1	-0.218	0.308	.440*	0.036	0.308	0.038	0.241	-0.131
	Sig. (2-tailed)		0.246	0.097	0.015	0.848	0.097	0.841	0.2	0.491
	N	30	30	30	30	30	30	30	30	30
Distance to work place	Pearson Co	-0.218	1	-0.051	0.014	-0.03	-0.051	-.399*	-0.278	-0.083
	Sig. (2-tailed)	0.246		0.787	0.941	0.876	0.787	0.029	0.137	0.664
	N	30	30	30	30	30	30	30	30	30
location effect on work	Pearson Co	0.308	-0.051	1	.700**	.808**	1.000**	.601**	.586**	0.106
	Sig. (2-tailed)	0.097	0.787		0	0	0	0	0.001	0.577
	N	30	30	30	30	30	30	30	30	30
Housing quality	Pearson Co	.440*	0.014	.700**	1	.531**	.700**	0.187	0.239	0.097
	Sig. (2-tailed)	0.015	0.941	0		0.003	0	0.323	0.203	0.608
	N	30	30	30	30	30	30	30	30	30
Neighborhood quality	Pearson Co	0.036	-0.03	.808**	.531**	1	.808**	.426*	.485**	0.044
	Sig. (2-tailed)	0.848	0.876	0	0.003		0	0.019	0.007	0.818
	N	30	30	30	30	30	30	30	30	30
location effect on income generation	Pearson Co	0.308	-0.051	1.000**	.700**	.808**	1	.601**	.586**	0.106
	Sig. (2-tailed)	0.097	0.787	0	0	0		0	0.001	0.577
	N	30	30	30	30	30	30	30	30	30
how has it changed since you arrived here?	Pearson Co	0.038	-.399*	.601**	0.187	.426*	.601**	1	.664**	0.17
	Sig. (2-tailed)	0.841	0.029	0	0.323	0.019	0		0	0.369
	N	30	30	30	30	30	30	30	30	30
design of the house have on your ability to generate income?	Pearson Co	0.241	-0.278	.586**	0.239	.485**	.586**	.664**	1	-0.272
	Sig. (2-tailed)	0.2	0.137	0.001	0.203	0.007	0.001	0		0.146
	N	30	30	30	30	30	30	30	30	30
Do you make home-based activities in your house	Pearson Co	-0.131	-0.083	0.106	0.097	0.044	0.106	0.17	-0.272	1
	Sig. (2-tailed)	0.491	0.664	0.577	0.608	0.818	0.577	0.369	0.146	
	N	30	30	30	30	30	30	30	30	30

Figure 7: The Pearson correlation findings for the study area

5.4.4. The poorest of the poor housing that found around the mosque

This location is one of the city’s poorest of the poor housing initiatives, located in kebele 06, in the city's intermediate zone. It contains three blocks and 23 rental units and is positioned surrounding the mosque. It was built in 2009 E.C., and the residents of the house benefit from its proximity to the city center since they can do their home-based activities and sell them quickly, and their jobs are close to their homes. Overall, this site is in a good position in relation to the study area.

Table 17: Study area monthly income

	Frequency	Percent
<1000	11	36.7
1001-3000	16	53.3
3001-5000	1	3.3
they do not know how much is	2	6.7
Total	30	100.0

Table 18: Around mosque site monthly income

	Frequency	Percent
<1000	3	13.0
1001-3000	17	73.9
3001-5000	3	13.0
Total	23	100.0

Residents in this neighborhood have a greater monthly income than those in the study area because of the location of the mosque site. The location of the site is in the Debere Markos city's intermediate zone. This allows them to have a job that is close to their house, and they may do home-based activities in their homes, with their products being eaten directly by their customers. In any case, their living situation will improve once they move to this new neighborhood.

Monthly employment and home based activity of the mosque site residences of the poorest of the poor households

As with the study area, as seen in the table 21 below, more than sixteen of the respondents do their home-based activities in their homes, with all of these respondents selling tela and tea. Meanwhile, seven households engage in a variety of activities, and because their home is located in the city's central business district, they have a nice market within their home where they sell their wares. When compared to the study area, it has a substantial impact on income generation and the ability to perform different types of jobs for the poorest of the poor.

Table 19: Home-based activities in your house

	Do you make home-based activities in your house			
		Selling tela & tea	Not work in the house	Total
What do you do for a living	Civil servant	3	4	7
	petty business	11	5	16
Total		14	9	23

Monthly income and expenditure of the households

Residents' monthly income and expenditures are listed in the table 22, The frequency analysis reveals this. They are the poorest of the poor households, according to the data, but their income increased after they moved to this house because they no longer have to pay an exorbitant rental fee, they work close to their jobs, and they engage in home-based activities, all of which contribute to their increased income.

Table 20: Cross tabulation of respondents' monthly income and average expenditure

	Average monthly expenditure				Total
		500-1000	1001-2000	2001-3000	
Monthly income	<1000	3	0	0	3
	1001-3000	0	15	2	17
	3001-5000	0	2	3	3
		3	17	3	23

Their current and earlier monthly income of the mosque site residences of the poorest of the poor households

Cross-tabulations were used to investigate the proportion of households' early income and current household, as shown in Table 23. Residents at the mosque site have reported that their monthly income has improved since coming to this house and area. Their revenue generating has been significantly influenced by location and previous job locations. Because the site is close to the city center, e.g. the number of homes receiving increased 1001-3000 birr has grown by ten households, as shown in the table 23.

There is a noticeable difference between the two sites when comparing them. The residents at Debere Markos' mosque site had a higher monthly income than those in the study region. This is because they work from home and engage in activities such as selling tea and tela. Residents' income has grown since relocating to this residence because they are no longer need to pay an exorbitant rental cost. After relocating to this house and neighborhood, their monthly income has increased. This is due to the fact that they do not have to pay exorbitant rental rates, work near to home, and participate in home-based activities, all of which contribute to their higher income. Geographical and prior job locations have had a substantial impact on their revenue generation.

Table 21: Cross tabulation of respondents' monthly income and early monthly income

	Monthly income			Total	
		<1000	1001-3000		3001-5000
Early monthly income	<1500	3	10	2	15
	1501-2500	0	7	1	8
Total		0	17	3	23

The Pearson correlation findings for the Mosque site variables.

The residents of Debre Markos' mosque site had a greater monthly income than those in the studied area, according to the Pearson result from SPSS. The distance between the residence and this site helps them increase their revenue, and there is a difference once they arrive. The layout of the house also helps them in performing activities at home.

The relationship between 'distance to work location' and 'monthly income' was significant that have a positive correlation ($r = 0.085$, $p = 0.701$), showing that as people's distance from their jobs shrinks, their income rises. This is due to the house's location in the city's intermediate zone, where it is simple to carry out any job in the vicinity of their dwelling quarters.

The relationship between 'distance to work place' and 'location effect on income generation' was found to have a positive correlation ($r = 0.355$, $p = 0.097$), the location has a significant impact on their ability to create income by participating in various activities close to their homes. Because of the increased wealth, there was a significant positive association between 'distance to work place' and 'how has it changed since they arrived at their houses' ($r = 0.131$, $p = 0.551$); their lives have altered since they relocated to these houses.

There was a significant relationship between 'distance to work place' and 'making home based activities,' with significant positive correlations with distance to work place ($r = 0.404$, $p = 0.056$); as described above, the location has a vital role in the preparation of different goods from their houses and selling them to get better income for their families and lives.

There was a significant positive link between 'monthly income' and 'location effect on income generation' ($r = .417$, $p = 0.048$); these factors suggest that their location has a significant impact on their income and quality of life, which is why their monthly income increased after they moved into this house. The entire table is shown in the annex section.

When we compare the study area to the mosque site, which is located in the intermediate zone of Debre Markos City, the study region has many problems, and the residents are unable to continue their lives since they do not have enough monthly revenue. In the poorest of the poor housing development schemes, it is critical to address economic sustainability and housing affordability.

The Pearson correlation findings for the Mosque site variables

		Monthly income	Distance to work place	location effect on work	location effect on income generation	how has it changed since you arrived here?	What impact do you think the location of this house in this neighborhood had on you	What impact does the design of the house have on your ability to generate income?	Do you make home-based activities in your house
Monthly income	Pearson Correlation	1	0.085	.417*	.417*	0.253	.417*	0.302	0.174
	Sig. (2-tailed)		0.701	0.048	0.048	0.245	0.048	0.161	0.426
	N	23	23	23	23	23	23	23	23
Distance to work place	Pearson Correlation	0.085	1	0.355	0.355	0.131	0.175	0.130	0.404
	Sig. (2-tailed)	0.701		0.097	0.097	0.551	0.425	0.554	0.056
	N	23	23	23	23	23	23	23	23
location effect on work	Pearson Correlation	.417*	0.355	1	1.000**	0.083	0.045	0.066	0.266
	Sig. (2-tailed)	0.048	0.097		0.000	0.708	0.837	0.765	0.220
	N	23	23	23	23	23	23	23	23
location effect on income generation	Pearson Correlation	.417*	0.355	1.000**	1	0.083	0.045	0.066	0.266
	Sig. (2-tailed)	0.048	0.097	0.000		0.708	0.837	0.765	0.220
	N	23	23	23	23	23	23	23	23
how has it changed since you arrived here?	Pearson Correlation	0.253	0.131	0.083	0.083	1	.550**	.797**	0.219
	Sig. (2-tailed)	0.245	0.551	0.708	0.708		0.006	0.000	0.316
	N	23	23	23	23	23	23	23	23
What impact do you think the location of this house in this neighborhood had on you	Pearson Correlation	.417*	0.175	0.045	-0.045	.550**	1	.691**	0.266
	Sig. (2-tailed)	0.048	0.425	0.837	0.837	0.006		0.000	0.220
	N	23	23	23	23	23	23	23	23
What impact does the design of the house have on your ability to generate income?	Pearson Correlation	0.302	0.130	0.066	0.066	.797**	.691**	1	0.385
	Sig. (2-tailed)	0.161	0.554	0.765	0.765	0.000	0.000		0.070
	N	23	23	23	23	23	23	23	23
Do you make home-based activities in your house	Pearson Correlation	0.174	0.404	0.266	0.266	0.219	0.266	0.385	1
	Sig. (2-tailed)	0.426	0.056	0.220	0.220	0.316	0.220	0.070	
	N	23	23	23	23	23	23	23	23

Figure 8: The Pearson correlation findings for the Mosque site variables.

5.4.5. Actors and their roles

The design and construction of the poorest of the poor housing programs were also handled by the city municipality's urban development housing construction administration office and infrastructure development directorate, with the support of urban institutional and infrastructure development, which is funded by the World Bank. Because all of the relevant actors were public entities, the involvement of multiple stakeholders aided the development process by facilitating communication among them.

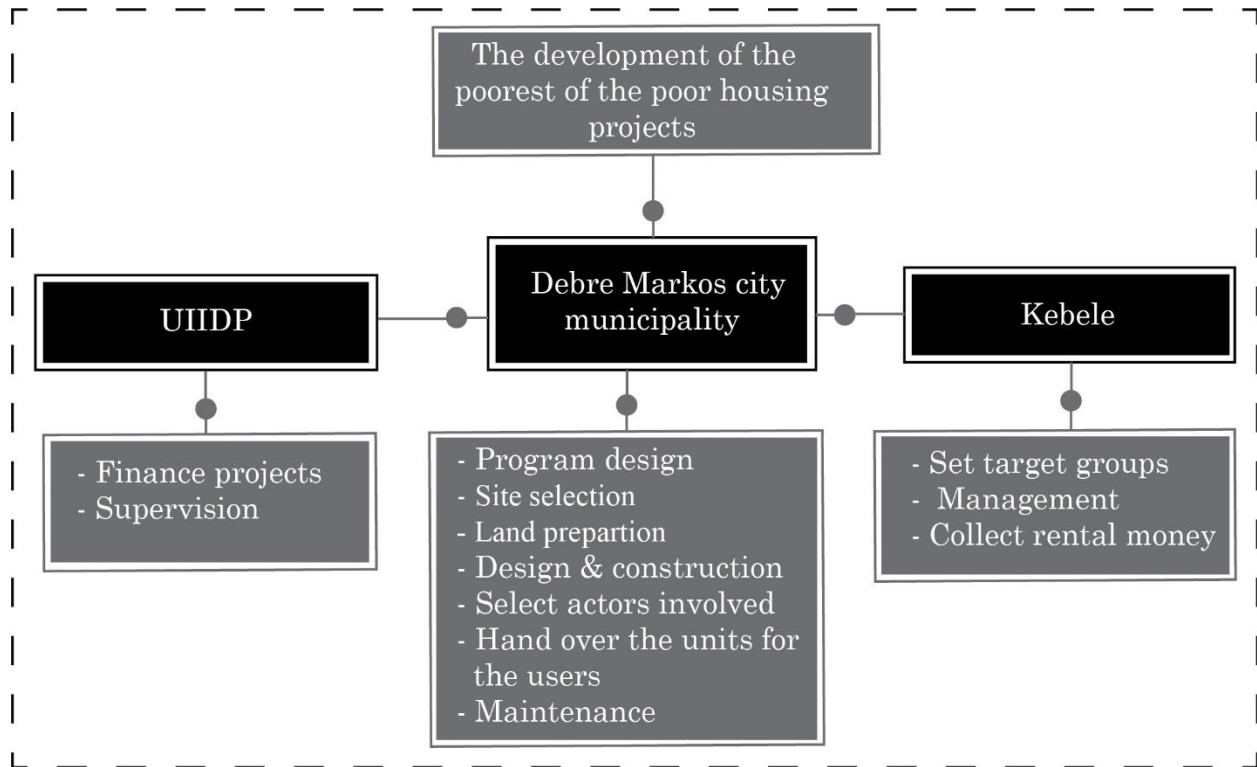


Figure 9: The involvement of actors in the development of the housing program

5.4.6. The program and the intended group

During the construction of this housing development program, a formal program was created that addressed problems such as who will be the renters and how long they will rent. As a result, it is much easier to define the program, which was created for the poorest of the poor (social housing). There are civil servants, petty business sellers, and private workers, and it is easy to categorize tenants into the poorest of the poor.

From top to bottom, these housing projects are being designed in a collaborative manner. The regional administration began this type of housing project in collaboration with the World Bank's urban institutional and infrastructural development program. In addition, the city municipality creates the program, selects the site, and prepares the land for these types of projects; after the land is prepared, the city municipality implements the design and construction of the houses through an office called the urban development housing construction administration office and the infrastructure development directorate.

The kebeles then send a list of the poorest of the poor who require such housing. The kebele administrations select the target groups based on a variety of criteria, the first of which is that the target groups must be the poorest of the poor from the rest of the community, and the second of which is that a household must be in poor health, particularly if it is infected with HIV and Female-headed people are also given priority in the kebele. Using these criteria, the kebele selects the households and sends the lists to the municipality for crosschecking, after which the municipality approves and distributes the houses.

Provision of land

The city administration is in charge of securing land for these kind of initiatives. Most of the locations for such construction were chosen and approved by the city administration, which also held decision-making power in the city administration of Debre Markos. The city administration was not compensated for these lands.

According to informants, the availability of land allows for the development of new locations, and the lands that are free of any ownership and are not used for agriculture are designated as free public open spaces. The majority of the sites are in the city's periphery zone. This is due to the city's good fortune with free open land

5.4.7. Tenants in the poorest of the poor housing

Tenants and the poorest of the poor housing target group

Currently, the housing units are rented out for residential use to a variety of tenants, including government employees, the poorest of the poor households who work minor business, pensioners, and all types of the aforementioned tenants can be found. In many other nations, such government-

funded housing units are occupied by a specific set of individuals, primarily the poor who cannot afford market-rate housing.

Many tenants have become permanent residents of the units they occupy, as evidenced by the study's findings. Because the municipality's contract does not include a duration of tenancy, once renters occupy a unit, they are obligated to stay there until they request for and are accepted for an exchange. In the case of the respondents in my study, 100% of the renters interviewed had been in their units for at least 6 years.

Current tenants' socioeconomic profile

The tenants, according to the findings, are mostly from the poorest of the poor in society. In the research area, 36.7 % of interviewed families earn less than 1000 birr per month, 53.3 % earn 1000-3000 birr per month, only 3.3 % say they make 3001-5000 birr per month, and 6.7 % have no idea what their monthly income is.

The research area's tenants' additional characteristic 70% of respondents say they run petty business at home and outside the home, whereas 13.3% of respondents work for the government as a guard, cleaner, and 16.7% of respondents are government retirees. And the literacy status of the residents is that the majority of them can read and write, which indicates that most of them have had a problem with access to education from the start, which has caused them to be poor from the start. Education can change their lives by allowing them to obtain jobs. Another factor is marital status, as the majority of respondents live alone due to divorce or widowhood.

This demonstrates that the tenants are poor families. In many countries, such publicly sponsored public homes are primarily offered for low-income households. In the case of this program, other characteristics were also examined in order to determine the households' income.

Tenants are the poorest of the poor, according to the report. Young, female-headed families, and persons with different priorities than housing are among those that are affected. According to the literature, many renters, even those renting private dwellings, are low-income people who can't afford to buy a house at market value. Tenants of the poorest of the poor dwellings are those who cannot afford to rent a quality home on the open market, making them the poorest of the poor.

5.4.8. Management of the poorest of the poor houses

Housing and services provided by the municipality

The results of the study show that the management body's service to renters is deficient in a number of areas. Many renters consider their residences' quality and condition, the security of their area and units, and the municipal kitchen and toilet facilities to be inadequate. Many physical aspects of the dwellings, such as fences, construction quality, environmental, and garbage management, have also been shown to be inadequately handled. Waste collection and disposal are the responsibility of tenants on open land. The most important problem has been recognized as garbage collection and disposal. The residents' fundamental infrastructures are not provided for them; these elements are essential needs for the residents, and it is difficult for them to make a living.

Repair and Maintenance

In the case study, interviewed renters stated that they had requested repairs and upkeep in the previous two years, but that the municipality had not responded to any of their requests. Repair and maintenance of some sections of their units that require attention; they did not request it because they knew their request would be denied. According to Ato Klelemu, the municipality's head of maintenance and repair, a major issue in repair and maintenance is a mismatch between the large number of requests and the limited maintenance and repair budget. Some repairs, such as kitchen, toilet and sanitary work, and small electrical work, are allowed to be undertaken by the renter.

5.4.9. The challenges faced by inhabitants in the case study

Employment and income

Many poor people in cities are unable to locate occupations that are officially recognized by the government. Unemployment is not an option because there is no functional social security system, thus people must seek unregistered employment that is not counted in statistics. To achieve even basic necessities, most homes require all members to work. Although many of the city's urban poor earn their living from unregistered businesses in what is known as the 'informal sector,' in which the majority of residents engage in petty business and home-based activities.

The 73.3% of the households in the case study were headed by women due to divorce or the death of their husbands. Households meet their fundamental requirements through social entitlements to

products and services as well as self-employment. The majority of residents of the poorest of the poor households work as construction laborers, daily laborers in various sectors, washing clothes, domestic workers, employees of unregistered tiny traders, and child laborers, all of whom are vulnerable to exploitation. They may have little or no job security and few other work possibilities in highly competitive labor markets, or they may be financially 'tied' to their employers. They frequently have little possibility of obtaining acceptable, much less legal, working conditions or wages.

In general, after moving to this housing program, families find it difficult to work because of the long commute, so they try to do some home-based activities but lack the necessary insurance to be profitable. For example, if they sell tella and arekie (traditional alcohols), if they may not sell all of them in one day, in which case they lose the profit and the main cost of preparing for the next day's selling. All of this makes residents scarce, and they may not be able to continue.

The disconnection between jobs, transportation, and affordable housing

Jobs, transportation, and housing all have a substantial impact on one other, and understanding and tackling affordability issues requires an awareness of these interrelationships. In practice, however, not only in the study area, but also in the city of Debre Markos, most of the poorest of the poor housing schemes are often poorly connected. This divergence has huge economic, social, environmental, and health implications for tenants of the housing units, affecting their well-being and quality of life. For the poorest of the poor, the mismatch between jobs and housing makes life difficult.

The study area, as shown on the map, is located on the outskirts of the city. Most of the residents of the site, as described above, work as construction laborers, daily laborers in various sectors, washing clothes, domestic workers, employees of unregistered tiny traders, and child laborers; all of these jobs are located in the city center, so it disconnects their jobs due to the lack of affordable transportation and the location of the housing program.



Figure 10: The research area's location in relation to transportation

Neighborhood quality

The poorest of the poor households in the study area live in a neighborhood on the outskirts of town, which makes life difficult for the residents because they cannot do well with their income-generating activities, and when they try to sell and make homemade activities. They do not have a market to sell to, and working in the city center is difficult because it is so far away.

The land use pattern or arrangement is the one that affects the urban poor's; the study area is located in a pure residential area with services surrounding it on all sides, making the site quiet. In addition, implying that there are no dynamics within the neighborhood; as a result, the renters live in a poor condition because there is no job around their houses and no active movement through them.

Infrastructure deficiency

Infrastructural provision in the studied area is inadequate. The majority of households rent basic utilities such as power and water, and they lack sewer pipes and ditches. This problem adds to their everyday challenges; it affects not only the structure of the houses for the urban poor, but also the additional expense of rent for these facilities, as well as their access to local streets with poor pavement conditions.

5.4.10. The prospects of the case study

Housing

The low quality of people's homes and neighborhoods is the most evident evidence of poverty in the city. The majority of the people in the case study lived in shantytowns, slums, and were overcrowded; they rented from private house renters at a high rent price. However, the fact that many respondents were living in substandard housing. After all, the respondents are delighted to have these residences since they have private toilets and kitchens, as well as a garden area, and the housing condition is relatively good. Tenants' housing tenure is secure, and as a result, they invest little in house improvement. Maintenance of the houses is the responsibility of the municipality, although renters try to maintain and build additions through their parcels; when they have money, they try to add additional rooms and build tiny kiosks to supplement their income.

The housing rental price

The poorest of the poor housing program is supported by the city administration and a non-governmental organization known as UIIDP, making the rental rates of the houses affordable to the poorest of the households. In addition, when compared to the previous rental price for the house, this rental price is reasonable. As stated by the respondents, previous rental companies were tough to pay and they did not have the freedom to use various services such as the kitchen and bathroom; however, now they may utilize their own amenities at a reasonable rental charge. The rental fee has not been renewed for six years, despite the fact that their contract stipulates that they pay only ten birr per month. This represents a significant savings for the residents.

The house quality

According to the city asset management report that the researcher obtained from the municipality's experts, the housing condition of the study area is classified as moderate based on several criteria, including foundation material, floor material, wall material, roof material, and roof structure.

As respondents convey their feelings, the individual dwellings provide enough space for living. The housing program has two designs. The first typology, which means the case study, has a total built-up area of 34 m², with a salon of 12 m², a bedroom of 10 m², a garden area of 8.5 m², a kitchen of 4.8 m², and a toilet of 2.3 m². The second typology, which has a total built-up area of 34 m², differs from the first in that the bedroom is 7.4 m². They can also build a five-meter fence on the front side, with a total lot area of roughly 60 m². They have ample room in front to sell their tela and arekie as well as perform various tasks. They have a garden area in the back where they put various vegetables to assist them feed themselves from their garden.

According to the responses, the home quality is good for them in comparison to the previous living circumstances of the rental house price. It has sufficient space for their home-based activities; their main issue is with the location and infrastructure.

Housing tenure security

This type of rental occupation of a publicly owned dwelling program provides a high level of security by ensuring that the terms and conditions of occupation are met for the poorest of the poor. Furthermore, this type of initiative creates opportunities for poor women confront significant challenges in obtaining homes because patriarchal tenure arrangements and societal practices hinder them from owning property. Despite current laws prohibiting discrimination, women's property rights are frequently overlooked when purchasing, selling, inheriting, leasing, or allotting land and homes, leaving them reliant on their fathers, husbands, or sons for tenure security. This type of discrimination goes against sound urban management and makes little economic sense, in addition to violating women's basic human rights.

When this project first began, women were the primary users of these types of housing because the majority of women in the study area were heads of households, which means they divorced their husbands or lost their husbands to death, all of which made it difficult for them to own a home. As a result, the project provided a solution for women. Women are always thought to be at

a lower risk of defaulting on loans than men, and female-headed households account for a large part of a city's low-income population.

5.4.11. ESPI for the poorest of the poor affordable housing

In order to define and analyze house affordability in an economically sustainable manner, the study gave basic indicators that have been validated and ranked by various literatures and stakeholders. The outcomes of this study represent the local setting of Debre Markos city, particularly the University Treatment Plant site, which was the subject of the study. The economic state of renters already dwelling in the poorest of the poor affordable housing development program, on the other hand, collects data that is relevant to the local circumstances. The combined data would aid in providing an overall weighting for each economic sustainable housing affordability for the poorest of the poor, as well as integrated development for economic sustainability and affordable housing.

a systematic integration of economic sustainability into affordable housing initiatives can be achieved by incorporating these ESPIs into the poorest of the poor's affordable housing feasibility study, project design, and project post-evaluation. It is worth mentioning that developers overlooked all ESPIs, whereas government authorities and academics underlined them. As a result, it can be stated that developers have paid little attention to implementing economic sustainability into affordable housing schemes.

UIIDP, the city municipality, and kebele who were involved in the decision-making process or were offering support in financing housing projects in Debre Markos city. were the target group for this study. Future research could look into the other pillars of affordability housing for the poorest of the poor and compare the findings to those of this study. In the poorest of the poor's affordable housing schemes, through a literature review and investigation into the study area, 15 Economic Sustainability Performance Indicators for the poorest of the poor affordable housing were developed. Shown in Table 25.

Table 22: For the poorest of the poor affordable housing schemes, a set of economic sustainable performance indicators has been compiled.

ESPI code	Economic Sustainability performance indicators	References
ESPI 1	House price in relation to income	(Mulliner & Maliene, 2011); Interviews with local government officials; Household Opinions;
ESPI 2	Rental cost in relation to income	Interviews with local government officials; Household Opinions (Mulliner et al., 2016)
ESPI 3	Housing location	Household Opinions; Andersen (2011)
ESPI 4	Cost effectiveness	(Gan et al. 2017)
ESPI 5	Desirability	(Gan et al. 2017)
ESPI 6	Cost of commuting from a dwelling site to a public facility	Household Opinions; (Olanrewaju et al. 2017).
ESPI 7	Accessibility to the work place	Household Opinions; Andersen (2011)
ESPI 8	Generate job opportunity	Household Opinions; (Golubchikov and Badyina 2012)
ESPI 9	Mixed-use zone with a mix of residential	Household Opinions; (Hutagalung., 1967)
ESPI 10	Reduced transportation cost	Household Opinions; (Isalou et al., 2014)
ESPI 11	Infrastructure	Household Opinions; (Golubchikov & Badyina, 2012)

ESPI 12	Reduce the cost of a housing facility's life cycle.	(Adabre et al., 2020)
ESPI 13	Housing facility maintainability	Interviews with local government officials; Household Opinions;
ESPI 14	Tenure security	Interviews with local government officials; the researcher's concept
ESPI 15	For start-ups, a community-based loan.	Household Opinions; (Golubchikov and Badyina 2012)

CHAPTER SIX

Conclusion and recommendation

6.1. Conclusions

Many countries around the world are currently confronting huge issues in terms of affordable housing and sustainable development. This study focused on making houses more economically sustainable in order to address housing affordability for the poorest of the poor. Other important issues, such as housing location, infrastructure, and quality of life, are sometimes overlooked in the poorest of the poor affordable housing programs, making it difficult for the households residing in these houses to continue their lives in these housing programs.

According to the findings of this study, many of the poorest of the poor houses are in reasonably moderate condition, despite the fact that they require considerable repairs and upkeep. The municipality is in charge of maintaining these structures. Furthermore, because of the lack of basic infrastructure and transportation, residents of the poorest of the poor affordable housing programs are subject to additional charges from their limited income. As a result, the distance between their house and their place of business has grown, complicating their duty.

The residents do their home-based activities in their homes, but lack the essential insurance to be profitable, due to the disparity between jobs, transportation. The site is in a quiet residential area with open space, implying that the neighborhood has no dynamics; as a result, the renters live in poor conditions because there is no job around their houses and no active movement through them, resulting in low neighborhood quality; as a result, their income was higher before they moved into this new house.

As the Pearson SPSS result demonstrates, it is not enough to create houses for the poorest of the poor in the city; from numerous perspectives, the house's distance has a direct impact on the inhabitants. The economic aspect of affordable housing sustainability is the subject of this research. The Pearson result show that a variety of factors, not just housing costs and rental costs, have a role in establishing economically sustainable housing affordability.

After all, the respondents are glad to have these homes because they have private toilets and kitchens, as well as a garden area, and the housing is in relatively moderate condition. Because tenants' housing tenure is secure, they invest little in home improvements. Furthermore, the rental price has decreased, and they may now use their own amenities for a reasonable rental fee. The

home quality is good for them when compared to previous living circumstances of the rental house pricing. According to the research's findings, Poor women have a tough time getting housing due to patriarchal tenure laws and social attitudes that hinder them from owning property. Furthermore, this type of initiative offers possibilities for poor women who face significant barriers to property ownership that prevent them from doing so.

The study compares the economic situation of the two sites using a different case study area. The researcher chooses the city's intermediate area, which is located to the mosque poorest of the poor affordable housing sites. Residents in this neighborhood have a greater monthly income than those in the study area due to the site's location. This allows people to work from home and undertake home-based activities in their homes, with their products being directly consumed by their customers. In any case, their living status improves after they transfer to this new neighborhood. Because they live in the city's intermediate zone, they have a great market within their home where they sell their goods. When compared to the study area, it has a major impact on revenue generation and the ability to perform various forms of employment for the poorest of the poor. However, after shifting to this house, their income increased because they no longer had to pay an exorbitant rental expense, they work close to their job, and they engage in home-based activities, all of which contributed to their increased income.

Fifteen ESPIs for the poorest of the poor affordable housing were discovered with considerable differences, indicating that no consensus has been established on these ESPIs, as determined by a literature analysis and investigation into the subject area. It's worth mentioning that developers disregarded all 15 ESPI, As a result, it may be inferred that developers have paid little attention to implementing economic sustainability into affordable housing schemes for the poorest of the poor.

6.2. Recommendation

Housing affordability must be defined and integrated with economically sustainable outcomes from the poorest of the poor's affordable housing projects. according to this research. In order to provide households with a high quality of life and to assist in the creation of sustainable communities, it is critical that housing affordability and economic sustainability issues be closely linked. This research has some strategies. To begin, economic sustainability should be incorporated into affordable housing initiatives for the poorest of the poor, taking into account the local context as well as the economic circumstances.

Second, as well as participation of the local community in program management and upkeep. Multiple stakeholders' perceptions of criticality on various economic sustainability performance indicators are found from the government, the poorest of the poor's households, and academics. Prior to beginning the creation of affordable housing programs for the poorest of the poor, a consensus on the crucial extent of these economic sustainability challenges must be reached. As a result, utilizing the technique of multi-objective group decision making, an effective communication channel should be built among diverse stakeholders.

Third, when developing affordable housing for the poorest of the poor, the government should take into account their needs. Mixed land use, housing location, infrastructure, management and maintenance of the houses, and incentives for women to own these houses. As a result, housing program developers will be compelled to include economic sustainability in affordable housing constructions. This can serve as a model for incorporating economic sustainability into the creation of affordable housing for the poorest of the poor. Given the foregoing, the researcher would like to provide some suggestions in detail that, if implemented, could result in some positive changes to the current approach. Experts and city officials should:

Neighborhoods with mixed land use

Mixed land use refers to a combination of commercial, residential, and industrial land within a given location (Aurang, 2010). Mixed land use in attractive urban areas means that each neighborhood has a varied enough range of functions to allow residents to complete all of their daily tasks without having to go to other parts of the city.

Obviously, this is only possible for the poorest of the poor's households if each area has a varied choice of jobs, which is why the researcher place such a high value on work. One of the most significant components of low-cost housing for the poorest of the poor to be more economically sustainable is blending employment and residential usage, while the other is mixing various types of housing in residential areas is overlooked in the current study. The poorest of the poor affordable houses are separated from other types of housing and should be blended together with them.

The key hypothesis to be studied is that, due to the mixed land use, the mosque site has a better employment situation than the study area, and the site is more active and has a strong work potential, as can be seen from the case area. It encourages communities to maintain a healthy balance between living and working. As a result, we should assess the land use type of the site before creating affordable house for the poorest of the poor.

Housing Location

For the poorest of the poor urban households, the location of their residence is crucial. They usually try to settle in parts of the city that are as close to income-generating opportunities as feasible. This frequently entails being close to commercial city cores, industrial zones, markets, and transportation hubs. However, because land and home rent in these areas is in high demand and exceedingly expensive, if the poor cannot find land to squat on in these areas, they will be compelled to occupy land that no one else wants for very good reasons, such as flood-prone areas, landslides, and rivers.

The most impoverished of the poor dwellings built by municipalities the majority of the houses are on the outskirts of the city and in mountainous locations, making them flood-prone. The poorest of the poor households may have no other option but to live on land in the urban periphery, beyond infrastructure networks and far from employment hubs, where housing may be available but jobs and survival are more challenging. They could not afford the house price because of the high rent price in the city's core districts; therefore, they prefer to reside in the housing programs, which makes the housing programs unsustainable economically.

When a municipality plans to create these types of housing programs, they should first consider the placement of the sites; they should not be in a mountainous area, they should be close to the

households' job locations, and infrastructure should be available nearby. Housing schemes, particularly for the poorest of the poor, are heavily influenced by location.

Encourage women to live in their own homes

Women's full participation is the best assurance of a successful housing project. Whether the project involves resettlement to new house or not, women are always vital players in any community housing process. As a result, it is critical to make room for women to participate fully in all stages of planning and implementation. Despite the city municipality and kebele's efforts to include women in the housing program, they should continue to strengthen their efforts. They are the ones who have the most personal understanding of their community and its challenges, as well as strong social networks inside that group. Women's headed households should be included to gain access to the poorest of the poor affordable housing programs.

They are the ones who have the most to gain from a good community housing project, and the most to lose if their housing conditions are bad or unstable. They are often the primary caretakers of the community's homes and households. As a result, their full participation is critical to the success of any initiative. Women's participation in a process that improves the quality of everyone's life can help strengthen capacities and confidence, as well as elevate their status and assist break down established patterns of inequality.

As we can observe from the research area, Women who are alone or who are the sole breadwinners of their households are particularly vulnerable in these situations. Because women's access to the house is frequently through their husbands, fathers, or brothers, they may lose it if they are widowed, divorced, deserted, or left alone when their spouses relocate.

Therefore, it is excellent that the municipality is trying to ensure that women who are the sole breadwinners of their households have access to housing programs, which makes the project worthwhile. In these poorest of the poor housing programs, the municipality should expand its assistance for women-headed households.

Management and Maintenance of the houses

The findings demonstrate that the municipality and kebele have done poorly in many elements of housing management and maintenance, and that the municipality and kebele's management

expertise has been ineffective in dealing with management and maintenance inefficiencies. When the number of units exceeds a certain threshold, they become difficult to manage and maintain, prompting the privatization of management.

The city should also begin conducting monthly tenant satisfaction surveys in order to identify problems, respond to them, and boost tenant participation. Where the municipality and kebeles did poorly in terms of repair and maintenance, they should be in charge of routine maintenance and repairs. There must also be clear maintenance and repair rules that tenants can follow. Tenants should form associations that can handle various responsibilities to enhance tenant participation.

Infrastructure

In many city areas, infrastructure has been employed to stimulate the rise of human settlements. The current infrastructure planning system lacks efficient procedures for regulating the timing, location, and intensity of affordable house development programs for the poorest of the poor. In terms of transportation infrastructure connecting households to the city core, however, there is no requirement for infrastructure concurrency. It is difficult to build infrastructure throughout the poorest of the poor affordable housing projects due to the location of the houses. Because they require a new infrastructure development expansion. It is difficult for the poorest of the poor to get infrastructure installed in their homes. Before embarking on such a project, the municipality should think about it. As previously stated, the site has a significant impact on infrastructure development, which is costly due to new infrastructure plugin. As a result, the municipality should connect the infrastructure to the residence because it is difficult to strengthen their lives without it.

Toward the Participation of Local Communities in the Processes of Decision-Making

In order to build urban resettlement programs that respect inhabitants and social capital, it is necessary to encourage local community engagement in decision-making processes. The lack of socioeconomic surveys prior to not only the selection of the sites on which the affordable houses are built. In addition, their design and the design of the outdoor spaces that surround them, is a major issue that characterizes the current situation during decision-making processes involving the poorest of the poor housing units built in the framework of the UIIDP and the municipality of Debere Markos.

The municipality Authority's strategies should be adjusted to achieve these goals, and land selection for these types of initiatives should take into account local community participation, which involves communicating with the poorest of the poor. One of the most important aspects of these plans should be the use of local resources and building technology in the establishment of housing projects for the poorest of the poor. Respect for the linkages between their living habits and the most common dwelling typologies is another component that is critical for the design of houses settlements that aim to respect residents' economies; inhabitancy patterns in relation to economic sustainability.

Indicators for the economic sustainability of affordable housing development programs for the poorest of the poor

There is a lack of a long-term economic framework to guide the development of affordable housing for the poorest of the poor. As a result, this article proposes indicators for economically sustainable affordable housing for the poorest of the poor, based on the integration of a set of economic sustainability performance indicators for decision-making in affordable housing programs for the poorest of the poor.

Although current Debre Markos city affordable housing strategies focus on addressing housing difficulties of the poorest of the poor households by building housing subsidies or accommodations, this study looked into the importance of non-housing costs in affordable housing for the poorest of the poor. For example, according to the government office's Opinion on accelerating the production of new affordable housing for the poorest of the poor, the development of affordable housing for the poorest of the poor should consider location, employment, infrastructure, land use, transportation, supporting facilities, and public services. Similarly, in these types of projects, economic performance indicators for affordable housing for the poorest of the poor should be considered.

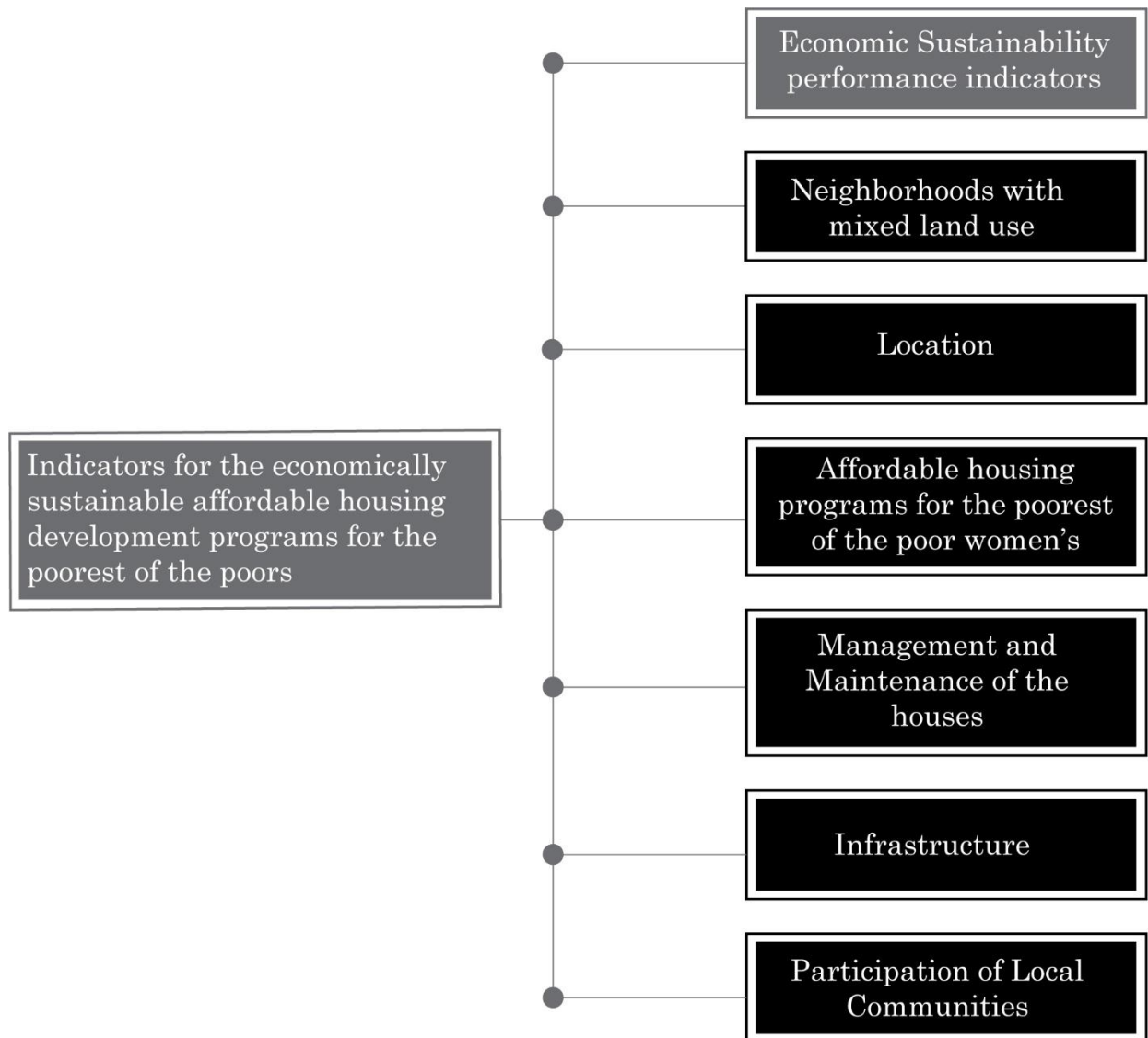


Figure 11: Indicators for the economically sustainable affordable housing for the poorest of the poor's.

Issues for Further Research

The topic of sustainability is multifaceted and difficult to tackle in a single research. Through a strategy suggestion on the research's issues, this study addressed issues of the economic sustainability of affordable housing for the poorest of the poor in Debre Markos. Obviously, they are not the only important aspects of long-term sustainability. As a result, the following are some recommendations for additional research into the concerns raised by this study, which are primarily connected to the economic sustainability of affordable housing for the poorest of the poor households. (From the author)

Environmental sustainability of affordable housing for the poorest of the poor's

It would be beneficial to explore these sectors in terms of environmental sustainability, with a focus on climate change and greenhouse gas emission reduction. For these affordable housing initiatives, the macro objectives can be met by incorporating numerous green technology, sustainable materials, as well as renewable energy and resources. This emphasizes environmental sustainability metrics such energy efficiency, water efficiency, effective resource utilization, reliability and durability, efficient waste management, a comfortable and healthy indoor environment, and footprint reduction to reduce biodiversity loss.

Environmental sustainability is vital for the poorest of the poor households because their budgets are restricted, and the detrimental impact on their physical and mental health is unlikely to improve without financial assistance. Furthermore, research into the disaster resistance of affordable housing in the poorest of the poor housing projects, which are more exposed to natural catastrophes, would be beneficial. (From the author)

Social sustainability of affordable housing for the poorest of the poor's

It might be worthwhile to look into social sustainability in affordable housing programs for the poorest of the poor, which focuses on the equal distribution and consumption of housing resources, with a focus on horizontal and vertical equity. Horizontal equity refers to equal treatment of people in equal positions, whereas vertical equity refers to uneven treatment of those in unequal positions. Furthermore, there should be no constraints on the distribution procedure, and all qualified tenants of affordable housing should be able to participate. (From the author)

It would be beneficial to look at the rising demand for environmentally friendly housing. It can be accomplished by expanding public knowledge of the benefits of living in sustainable housing for the poorest of the poor, as well as governmental policy assistance Affordable housing projects for the poorest of the poor are wonderful opportunities to illustrate the benefits of living and building in a sustainable way as a public-funded enterprise. (From the author)

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Appendices

Appendix A: Questionnaire for Residents' Interviews

Section 1. The applicant's name and identification number

- Questioner Name _____
- Information taken that day (day / month / year) _____

Section 2. Respondent description

- Respondent Name: _____
- Interview questionnaire by the map, according to the domestic house number: _____

1. How many members of your family live together? _____

Name	sex	Age	Status	Education level	Employment status
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

2. What is the status of your housing ownership?

- A. rent from another rental household on the poorest of the poor's house
- B. Rental on the poorest of the poor's house

3. When you come to this residence?

- A. Less than one year
- B. two to five years
- C. Over the Age of Five

4. How many rooms does the house have?

- A. a single
- B. has two rooms
- C. Three and upwards

5. What is the house's construction material?

- A. brick & stone
- B. mud & wood
- C. iron sheet
- D. other material

6. Is the residence equipped with housing amenities such as a separate kitchen and toilet?

- A. Kitchen only
- B. Toilet only
- C. Both
- D. None of the above

7. Is there running water in the house?
 A. Yes B. No
8. Is there electricity available in the house?
 A. Yes B. No
9. Is there a sewage system in the house?
 A. Yes B. No
10. When traveling to work, which of the following modes of transportation do you like to use?
 A. On foot B. In car C. In a taxi D. Bus E. Bicycle F. Motorized bicycle
11. How long does it take you to go to work?
 A. over 10 minutes under B. From 10 to 30 minutes C. From 30 to 60 min
 D. one hour more
12. How much does it cost you to get from your home to your workplace?
 A. < 5 birr B. 5 – 10 birr C. 10 – 15 birr D. > 15 birr
13. How much money do you make on a monthly basis?
 A. < 1000 birr B. 1000 – 3000 birr C. 3000 – 5000 birr D. > 5000 birr
14. What do you do for a living?
 A. Agriculture B. Civil servant C. Petty business D. Self-employed E. Other
15. Do you have any other sources of income? If so, what should you do?
 A. Part time job B. Pension C. Remittance D. Others
16. How much money do you spend for rent?
 A. < 300 B. 300 – 500 C. 500 – 1000 D. > 1000
17. What is your average monthly expenditure for non-housing costs?
 A. < 500 B. 500 – 1000 C. 1000 – 2000 D. 2000 – 5000 E. > 5000
18. Do you have any saving habits? If so, what kind?

- A. Ikub B. Bank C. Others

19. How much money do you save per month?

- A. < 500 B. 500 – 1000 C. 1000 – 2000 D. > 2000

20. Parcel area in m² _____

21. Main house area in m² _____

22. Housing access from street?

- A. Main Street B. Collector Street C. Local Street

23. How affordable is the accessibility of basic infrastructures? What are the issues if not?

24. Is there any kind of health center in the area? If you say yes, how long does it take you to travel to the health center and how much does it cost?

25. Is there access to a school in the area? If you do, how long does it take you to travel to school and how much does it cost?

26. Where did you reside before migrating to this village, and how has it changed since you arrived?

27. What impact do you think the location of this house in this neighborhood had on you?

28. What impact does the location and design of the house have on your ability to generate income?

29. Is there anything bothering you about your financial situation? If that's the case, what are the issues?

30. If yes, what do you think needs to be done to minimize the occurrence of the problems mentioned above?

31. Is there anything you would like to say about your financial situation in life that you would like to discuss with us?

Appendix B: Questionnaire for municipal interviews

Section 1. The applicant's name and identification number

- Questioner Name _____
- Information taken that day (day / month / year) _____

Section 2. Respondent description

- Respondent Name: _____
- Interview questionnaire number: _____

1. Who initiate this kind of programs?

2. How effective are the poorest of the poor's housing projects in terms of cost?

3. What factors do they consider when deciding where these housing initiatives will be located?

2. Is the municipality involving numerous stakeholders and the community in the development of these types of projects? If so, how and who are involved?

4. What criteria are utilized to select the poorest of the poor's household inhabitants, and how equitable is the allocation of housing?

6. Who maintain and manage of properties of these the poorest of the poor housing programs?

7. How may these the poorest of the poor houses improve the house's life cycle cost and performance?

8. How do you explain the poorest of the poor's housing programs' reliability and durability?

9. Did you make any attempt to include economic sustainability in these the poorest of the poor's housing programs? If so, how do you go about doing it?

10. Is the program attempting to take into account the local setting as well as the economic realities of the poorest of the poor people? If so, how do you go about doing it?

Appendix C: Interview with key informants

PRIMARY INFORMANTS' PERSONAL INFORMATION

1. Name _____
2. Current position in the municipality _____
3. How long have you worked here? _____
4. What was your position during the development process of the case (the poorest of the poor housing projects) _____

ABOUT THE DEVELOPMENT PROCESS

what are the key elements and processes in the development process? (Financial mobilization, design, and construction, followed by occupancy and upkeep.)

1. PREDEVELOPMENT PROCESS

1.1. Who defines the project? What is the purpose of the housing, what types of housing are possible, what is the project's estimated scale, and who is the target population?

1.2. What was the end result?

1.3. What were the results? Who were the people chosen?

1.4. Who chooses and evaluates the site's location? What was the final outcome?

2. FINANCING

2.1. Who is responsible for locating and obtaining funding?

3. LAND ACQUISITION

3.1. Who was the authority in charge to provide land?

3.2. What obstacles did you have to overcome in order to obtain land?

4. DESIGN

4.1. Who is in charge of the housing plans?

4.2. Did the municipality consult with stakeholders about how the houses should look before they were built? For instance, what about a housing program, a house plan, and materials?

5. CONSTRUCTION

5.1. Who is in charge of the housing project?

5.2. How long does the construction process take?

5.3. What were the major criteria for an applicant to get the units? In addition, who decides on that?

Appendix D: Debre Markos city's housing conditions for the poorest of the poor

No.	Name of the site	Locati on	Foundati on material	Foundati on conditio n	Floor materi al	Floor conditio n	Wall materi al	Wall condit ion	Roof material	Roof _ cond	Roof structur e	Con_ year	Overall condition
1.	The poorest of the Poor Housing Around St. Michel Church	05	Stone masonry	Moderate / good	Earthen	moderat e	Wood + chika	good	Corrugat ed iron	good	Wooden truss	2009 and 2013	Good
2.	The poorest of the Poor Housing around Abema Tsebele	13	Stone masonry	Moderate	Earthen	poor	Wood + chika	Moder ate	Corrugat ed iron	good	Wooden truss	2008	moderate
3.	The poorest of the Poor Housing Around Ede Tibebe School	06	Stone masonry	Very poor	Earthen	moderat e	Wood + chika	Moder ate	Corrugat ed iron	good	Wooden truss	2008	moderate
4.	The poorest of the Poor Housing Around Kidane Mihret Church	05	Stone masonry	good	Earthen	moderat e	Wood + chika	Moder ate	Corrugat ed iron	good	Wooden truss	2008, 2012	good
5.	The poorest of the Poor Housing around Kebele 07 Market Area	06	Stone masonry	Moderate	Earthen	poor	Wood + chika	Moder ate	Corrugat ed iron	good	Wooden truss	2006	moderate

6.	The poorest of the Poor Housing around Kebele 07 office	07	Stone masonry	Moderate	Earthen	poor	Wood + chika	Moderate	Corrugated iron	good	Wooden truss	2006	moderate
7.	The poorest of the Poor Housing around T/Haimanot School	04	Stone masonry	Moderate	Earthen	moderate	Wood + chika	good	Corrugated iron	good	Wooden truss	2008, 2012	moderate
8.	The poorest of the Poor Housing Around Bolo Stamp	03	Timber	Moderate	Earthen	poor	Wood + chika	moderate	Corrugated iron	good	Wooden truss	2008	moderate
9.	The poorest of the Poor Housing Around Medhanialem Church	04	Timber	Moderate	Earthen	moderate	Wood + chika	good	Corrugated iron	good	Wooden truss	2009	moderate
10.	The poorest of the Poor Housing Around Stadium	03	Timber	good	Earthen	good	Wood + chika	Very good	Corrugated iron	Very good	Wooden truss	2013	Very good
11.	The poorest of the Poor Housing Around Wuseta Market	13	Timber	good	Earthen	good	Wood + chika	good	Corrugated iron	Very good	Wooden truss	2011, 2012, 2013	good
12.	The poorest of the Poor Housing Around Mesgid	06	Stone masonry	Moderate	Earthen	moderate	Wood + chika	good	Corrugated iron	good	Wooden truss	2009	moderate

13.	The poorest of the Poor Housing University Treatment Plant Area	07	Stone masonry	Moderate	Earthen	moderat e	Wood + chika	good	Corrugat ed iron	good	Wooden truss	2007, 2009,	moderate
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Affordable housing and economic sustainability: The case of the poorest of the poor housing in Debre Markos city

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Keywords

Affordable housing, Sustainable housing, economic sustainability.

ABSTRACT

The affordability of housing is an essential policy goal. Incorporating economic sustainability in affordable housing in the development of the poorest of the poor's housing programs has become a major concern. This paper examines the affordability and economic sustainability of the poorest of the poor affordable housing in Debre Markos city. To address this, this study uses both quantitative and qualitative methods, using questionnaire surveys, interviews, field observation, and household surveys. Households in the expanding area have lower monthly salaries than in the past, but they are satisfied with the housing quality, rental pricing, and tenure security of their dwellings, according to the data analyzed by Pearson correlation analysis. Households in the intermediate zone had significantly higher incomes after moving into their new homes. Housing is not truly affordable if it is in an inaccessible place with a long commute to work, high transportation costs, and homogeneous land use.

Introduction

In many other countries around the world, affordable housing and economically sustainable development are currently major challenges. Concerns of sustainability and affordability are now frequently discussed and recognized as relevant to one another (Mulliner, Smallbone, and Maliene 2013). Specifically, affordable housing should be found in mixed-use sustainable communities, and sustainable communities must provide cheap housing goods.

As a result, it's critical to address both affordability and economic sustainability concerns at the same time. Housing affordability, on the other hand, is typically defined and evaluated only in terms of economic viability. Other crucial

considerations, such as sustainability, housing location, and quality, are sometimes disregarded. The most popular technique to define and measure housing affordability internationally is to compare the connection between housing spending and household income (Mulliner, Smallbone, and Maliene 2013).

To address this issue, many governments have made affordable housing a priority in their efforts to improve the living conditions of low-income households. Affordable housing is commonly defined as housing that is affordable to certain eligible households whose income is insufficient to allow them to access market-rate housing (Winston and Pareja Eastaway 2008).

The major goal of affordable housing programs, which are based on government initiatives, is to enhance housing affordability, particularly for low-income households (Azevedo et al., 2010). Despite the fact that numerous affordable housing programs have been established, there is a controversy about whether they are effective. The affordability of housing for low-income families has improved. For example, living in affordable housing might increase the spending on health care, energy bill, transportation and so on (Isalou, Litman, and Shahmoradi 2014).

According to (Charoenkit and Kumar 2014), increased spending on non-housing concerns has harmed housing affordability. This results in poor demand and abandonment, resulting in a massive waste of resources. (Mulliner, Smallbone, and Maliene 2013), for example, argue that economic viability is not the sole way to enhance housing affordability. Other sustainability considerations, such as house design, neighborhood environment, location, transportation routes, and job prospects, should be considered instead (Isalou, Litman, and Shahmoradi 2014).

When it comes to tackling the housing deficit, especially in developing nations, sustainability considerations are frequently disregarded. Affordable housing schemes have drawn a lot of attention because of their economic viability (Winston and Pareja Eastaway 2008). In order to create effective housing, both affordability and sustainability challenges must be addressed concurrently. Households require decent quality cheap housing that is well located inside good quality settings that are clean, safe, and have adequate access to jobs, important services, and cohesion.

Resources available to the general population. As a result, a number of studies have attempted to address noneconomic issues related to affordable housing. Better public facilities and amenities can also help to foster a strong sense of belonging. As a result, in this study it is critical to incorporate economic sustainability into affordable housing in order to increase housing affordability in the long run.

Debre Markos is a city in northwestern Ethiopia that serves as the capital of the east Gojjam zone political administration. It is 300 kilometers from Addis Ababa and provides low-income earners with affordable housing. The purpose of this the poorest of the poor housing project was to ameliorate the housing situation of the poorest of the poor households.

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This kind of project is one of the affordable house development options for the poorest of the poor residents in Debre Markos, particularly in the Amhara region. The construction of low-cost housing for the poorest of the poor housing provides a key opportunity to include economic sustainability into Debre Markos city housing initiatives. Incorporating affordable housing not only improves housing affordability for the poorest of the poor's households, but it also indicates the program's long-term economic sustainability.

Despite great efforts by the Debre Markos city administration to ensure the success of affordable housing programs, the economic sustainability of affordable housing has received very little attention. Making housing more affordable for the urban poor is one of the key goals of affordable housing. The existing affordable houses for low incomes earners are not consider the economic sustainability of affordable housing increases spending on health care, energy bill, transportation cost and a long commute to work. The poorest of the poor householders are allowed to spend more of their limited income on non-housing needs because of the location of the houses.

It is not enough to just build additional houses; a major focus on developing sustainable communities is also required (Mulliner and Maliene 2011). "Places where people desire to live and work, now and in the future" is how sustainable communities are characterized. They should be active, inclusive, and safe, as well as well run, environmentally conscious, well designed and constructed, well connected, prospering, well served, and equitable to everyone. Infrastructure can and has contributed to poor demand and abandonment in places.

These the poorest of the poor housing schemes should meet the needs of the customers. Location, income, and employment status of residents are not considered in the housing strategy. The housing types do not allow residents to work efficiently and earn money from their homes. Community participation is not emphasized in affordable housing programs as it is not only effectively improves social relationship but also doesn't satisfies the residents' needs of the current and the future. It does not pay attention to effective property maintenance and administration, which is critical for fostering a sense of belonging and community stability.

Residents reside in the poorest of the poor affordable housing that lack durability, enough space, good water and sanitation and infrastructure. While central and intermediate communities have far better access to utilities like water, sanitation, solid waste, and power, these services are still in short supply. Almost every family has access to drinking water from a public tap and can rent electricity from private individuals. Solid waste management is also a concern, because it is regularly discarded in open areas, endangering public health. The construction material for the walls of all housing units is “wood and mud,” commonly known as chikabet (wood/mud + straw-mortar house). “Soil” is the most widely used flooring materials in housing units, indicating moderate-quality housing.

Given the preceding context, the study's major purpose is to look at the renters' current economic situation, as well as the prospects and challenges that inhabitants of the poorest of the poor affordable housing confront. As a result, the study's second portion offered a full summary of the research methodologies used. Section 3 of the report also includes a statistical analysis of the survey responses as well as a discussion of the results. Finally, some concluding remarks are offered in Section 4.

The investigation is limited to the region surrounding the University Treatment Plant site in Kebele 07, which houses the poorest of the poor households. The study's scope is limited to an examination of the poorest of the poor in terms of affordable housing scheme economic sustainability.

Research methodology

The members of the poorest of the poor houses are the focus of the study. The study focuses on collecting information from residents' reactions as well as professionals from the municipality and kebeles in order properly grasp and comprehend the research question. Because the researcher believes that the economic sustainability of affordable housing development programs issues cannot be fully characterized by utilizing only one type of research method, a hybrid research approach employs both qualitative and quantitative research methodologies.

The research take place in Debre Markos City. The Debre Markos kebele 07-research area was chosen for a variety of criteria, including

the site's location, residents' stay length, current job status, the number of households in the area, the site's location in terms of economic conditions, and infrastructure availability.

Source of data

Primary and secondary data sources used in the investigation. Primary data sources included the Debre Markos municipal administration, kebele administrations, and on-site observation. Secondary data sources, literature, relevant statistical records published by various public and private organizations, past housing studies, maps/images from Google Maps and Earth.

Sampling techniques

To carry out this research, the most appropriate technique used to improve the accuracy of the research findings. Probability sampling were used to accomplish this, using clustered sampling from probability sampling. Individuals are not utilized as the sampling unit in a clustered sample; instead, subgroups of the population are used. Clusters of households are chosen at random to participate in the study and are separated into subgroups termed clusters.

As previously stated, the study area chosen from a single location. There are other locations throughout the city, and the researcher chose one near the university treatment plant. The location has 30 dwelling units, all of which chosen for data collection. The researcher noticed that cluster sampling is more accurate for this type of study from all of the sites in the city.

Method of data analysis

The majority of the data acquired through interviews and outdoor observations. Data gathered through key person interviews, questionnaires, and physical observations. In addition, the study included some additional questionnaires. To begin, each targeted workplace and each resident given thorough open-ended and closed qualitative and quantitative interview questions to complete. Finally, using checklists and physical maps, the researcher conducts field observations to assess the present state of the study areas.

This study used numerous methods and data sources, necessitating a mixed data analysis strategy. The researcher try to attempt to grasp

and appropriately interpret the contents of the data when doing quantitative and qualitative analysis based on empirical data. SPSS software used to perform some basic statistical analysis, such as producing frequencies and other statistical summaries, Pearson correlation as well as statistical tables of the data collected from the questionnaire survey. To create the maps needed for discussion and analysis, various internet data sources were employed.

Results and discussion

The poorest of the poor affordable house program in Debre Markos city

The World Bank's Urban Institutional and Infrastructure Development Program and the Debre Markos city administration built and handed over to users the poorest of the poor housing projects in 13 locations over several years, mostly before eight years ago; a total of projects were built and handed over to users by the city municipality at various times.

These 13 sites projects comprise 56 blocks. Many of these projects are located in the city's outskirts and unoccupied spots within various kebeles. According to key insiders, the construction of houses began eight years ago. The goal of these initiatives was to offer cheap housing for the city's poorest residents by establishing various criteria to allow for housing supply. The majority of these housing initiatives are spread out around the city, in all directions.

Housing conditions for the poorest of the poor

The physical state of homes, the type of dwellings, the tenure of the house, the surrounding environment, and the availability of utilities are all factors to consider when it comes to housing circumstances. Low levels of education, a lack of employment possibilities, a single-parent family, and poor living conditions are typically connected with the poorest of the poor in the city housing program.

Many of the poorest of the poor dwellings are in reasonably moderate condition, although they require extensive repairs and care. The foundation material of the dwellings is masonry stone and timber, while the floor material is earthen material, the wall material is mud and wooden material, and the roof material is corrugated iron sheet. The existing housing condition of the houses is derived

from the general conditions of the material of the houses and the physical conditions of the houses after the researcher seen the materials of the houses. The municipality is responsible for the upkeep of these structures.

As a result, Housing conditions were concerned with the current house's physical state as well as the surrounding surroundings. In terms of the study area housing type, 30 respondents were living in attached dwellings. In terms of the physical state of their homes, all respondents cited the following issues: insufficient space for home-based activities, insufficient natural light, leaking windows, and a terrible floor material. The most troublesome scenarios they face in the surrounding environment include homogeneous land use with no activity from the adjacent site.

Housing quality

The 93.3% of renters respond that the housing quality is good, and based on city housing conditions, the houses are in moderate condition as well. The data received from the municipality shows that the housing condition is in moderate condition.

The housing quality provides inhabitants with a good opportunity to live in a good condition, and they live in a low-cost housing with a good living and sleeping space, as well as other amenities such as a private kitchen, private toilet, and a private garden area. These features enable them to dwell in a moderate-quality living environment.

Table 1: Housing quality

	Frequency	Percent
Good	28	93.3
Moderate	2	6.7
Total	30	100.0

The availability of transportation services

According to the respondents, due of the lack of a public transportation system, the majority of inhabitants travel by foot. However, 23.3% of respondents occasionally utilize taxis, which is contingent on the availability of money. Because of the distance between their home and their workplace, they must walk large distances on foot, which makes their job more difficult. They must also pay for a taxi to get to their workplace, resulting in a single cost

for them. Because of their financial luck, the majority of locals rely on walking as a source of transportation.]

Table 2: the availability of transportation services

Transport mode they use		
	Frequency	Percent
On foot	23	76.7
Both taxi and on foot	7	23.3
Total	30	100

Availability of basic infrastructure

As can be seen in table 3, the availability of sewerage disposal is nearly non-existent; just four homes supply sewerage disposal on their own, and as indicated in table 3 that practically all renters have access to water by renting from others or having their own private water tap. The half of respondents indicated they drink spring water or fetch water from a long public transportation commute. When it comes to electricity, all of the respondents in their twenties rent electricity from their neighbors, while the tens of households do not have access to electricity due to financial constraints.

Table 3: Availability of basic infrastructure

availability of sewerage		
	Frequency	Percent
Yes	4	13.3
No	26	86.7
Total	30	100
availability of water		
Yes	15	50
No	12	40
Public tub	3	10
Total	30	100

availability of electricity		
Yes	20	66.7
No	10	33.3
Total	30	100

Education status of the residences

The 46% of responders is illiterate due to the literacy situation, and around eight of respondents attend primary schools and only seven households attend secondary school. This educational status tells us their living condition and level of economic condition, as well as the poorest of the poor urban households.

Table 4: Education status of the residences

Educational level	Frequency	Percent
0	14	46.7
3	1	3.3
4	1	3.3
6	2	6.7
7	2	6.7
8	3	10.0
9	2	6.7
10	5	16.7
Total	30	100

The marital status of the respondents in the study region is as follows: 43.3 percent are married, 36.7 percent are divorced from their wives or husbands, and the remaining 20% are widowed. This demonstrates that the majority of homes continue to be headed by women or men, which has a significant impact on their everyday lives.

Economic activity of employment and sex

Table 5 shows the results of the petty business sector continues to be the most important, accounting for 70% of all jobs. While 13.3% of respondents work as civil servants and 16.7% are pensioners. In the petty business sector, there were more females than males.

The number of female heads of households is higher than male heads of households, owing to the fact that most respondents state that they do not learn and that they marry at a young age, after which their husbands divorce them and their lives become extremely difficult. This is one of the issues that they face, as they are the poorest of the poor. In addition, they try to start a little business to keep their lives going after everything that has happened, which is why the number of women in such programs is higher than the number of men.

Table 5: Cross tabulation of respondents' employment and sex.

	What do you do for a living				Total
	Civil servant	Petty business	Pension		
Sex	Male	2	3	3	8
	Female	2	18	2	22
Total		4	21	5	30
Employment (%)		13.3%	70%	16.7%	100%

Home based activities and employment status

16 households of the respondents do their home-based activities in their houses, with all of these respondents selling tela and tea. Meanwhile, seven households engage in a variety of activities, the majority of which are craftsmen who operate handcrafted goods, small kiosks, selling enjera and. Respondents do not conduct home-based activities in their homes; rather, they operate their businesses from there. If the husbands run other small businesses, his wife may sell tela and tea, or if the husband is on pension, the woman may run various errands, while some of them may be civil servants.

Household income and expenditure

Residents' monthly income and expenditures the frequency analysis; per-person incomes and expenditures are better indices of relative and absolute poverty since they net out the number of individuals living in each residence. As a result of their limited monthly income, the household respondents earned significantly less money, and their total monthly household non-housing spending was significantly lower. Based on the aforementioned income data, the residents are classified as the poorest of the poor households. As previously noted, the 70% of the tenants' primary source of income is small business, which they attempt to run from their houses, but they have been unable to locate consumers to provide their products and services owing to the house's inconvenient location.

Early Household Income vs. Current Household Income

As shown in the table 7, cross-tabulations were used to examine the proportion of households' early income and present household. According to the residents' responses, their average monthly income has declined after moving to this house and neighborhood. The location and recent work places have had a significant impact on their revenue generation. Because the site of these housing programs does not address the economic impact on the tenants of the houses, their income was good when compared to after they came to this new house.

Table 7: Cross tabulation of respondents' early income and current income.

	Current monthly income					Total
		<1000	1001-3000	3001-5000	They do not know how much is it	
Early monthly income	1501-2500	11	2	0	2	15
	2501-3500	0	11	0	0	11
	3501-4000	0	3	1	0	4
Total		11	16	1	2	30

Early monthly rent price vs. Current monthly rent price

As indicated in the table 8, the rent price of the previous properties of respondents is high due to the location of the houses and the fact that they rent from private house renters. After they relocated to the poorest of the poor housing program and their rent is now quite low. Furthermore, because the rent is fixed, all households pay only 10 birr. Because of the constant housing price, this makes their monthly rent price easier.

Table 8: Cross tabulation of respondents' early house rent prices and today's rent prices

	Current monthly rent price	
		10 birr
Early monthly rent price	200 birr	2
	300 birr	6
	350 birr	2
	400 birr	2
	450 birr	2
	500 birr	7
	600 birr	5
	650 birr	1
	700 birr	2
	750 birr	1
Total	800 birr	1
		30

The Location effect on the residents work environment and their income

When we arrive to the study area, the influence of the housing locations has a significant impact on the residents of these projects. 66.7 percent, of respondents say their home's location has a significant impact on their work environment, 26.7 percent, say, it has a moderate impact, and 6.7 percent say it has no impact. The location of the house has an impact on their ability to generate money. 66.7 percent of respondents say the location has a significant impact on their ability to earn revenue, 26.7 percent, say it has a moderate impact, and 6.7 percent say it has no impact on their ability to generate income.

The Pearson correlation finding for the entire study area's variables.

At least three pieces of information are always present in SPSS correlation table cells:

1. The amount of the correlation (the "r" statistic), which ranges from -1 (perfect negative correlation) to 1 (perfect positive correlation). If the correlation is "statistically significant," SPSS adds a (*) [significant at least at the.05 level] or (**) [significant at least at the.01 level] to the number. If the correlation statistic does not have

a minus in front of it, it is positive, meaning that high scores for both variables go together and

low scores for both variables go together. If the correlation statistic had a - in front of it, it meant that as one variable's values increased, the other variable's values decreased (i.e., a negative or inverse correlation).

2. The correlation's level of significance (a level of .05 or smaller is considered "statistically significant). the smaller the number is, the more zeros there are after the decimal point. As a result, the following levels of significance become smaller and hence statistically more significant: .05, .01, .005, and .001.

Because SPSS only displays three numbers after the decimal point, a significance level of .000 does not imply that the level of significance is zero. It simply indicates that the number must be less than .0004. If the value were higher, SPSS would round it up to .001.

The distance to work and other variables exhibit a negative correlation as a result of the Pearson correlation analysis. Which means that as the distance increases, so does their monthly income. The location effect on their work and income generation, the change in their life after they move in, making home-based activities, neighborhood quality, and most other variables are inverse to the variable of distance to work. The Pearson test is more useful in determining the economic viability of such housing initiatives. The correlation value also determines the significance level. It corresponds with the remainder of the distance to work factors. As shown on table 9 the Pearson result from SPSS tells us that it is not enough to build houses for the urban poorest of the poor households; we need also consider the location of the houses we build. The distance of the house has a direct impact on the occupants from several angles. This study focuses on the economic component of affordable housing sustainability. There are varied implications from the sustainability aspect when the work location is far from their home.

Table 9: The Pearson correlation finding for the entire study area's variables

Correlations		Monthly income	Distance to work place	location effect on work	Housing quality	Neighborhood quality	location effect on income generation	how has it changed since you arrived here?	What impact does the design of the house have on your ability to generate income?	Do you make home-based activities in your house
Monthly income	Pearson Cc	1	-0.218	0.308	.440*	0.036	0.308	0.038	0.241	-0.131
	Sig. (2-tailed)		0.246	0.097	0.015	0.848	0.097	0.841	0.2	0.491
	N	30	30	30	30	30	30	30	30	30
Distance to work place	Pearson Cc	-0.218	1	-0.051	0.014	-0.03	-0.051	-.399*	-0.278	-0.083
	Sig. (2-tailed)	0.246		0.787	0.941	0.876	0.787	0.029	0.137	0.664
	N	30	30	30	30	30	30	30	30	30
location effect on work	Pearson Cc	0.308	-0.051	1	.700**	.808**	1.000**	.601**	.586**	0.106
	Sig. (2-tailed)	0.097	0.787		0	0	0	0	0.001	0.577
	N	30	30	30	30	30	30	30	30	30
Housing quality	Pearson Cc	.440*	0.014	.700**	1	.531**	.700**	0.187	0.239	0.097
	Sig. (2-tailed)	0.015	0.941	0		0.003	0	0.323	0.203	0.608
	N	30	30	30	30	30	30	30	30	30
Neighborhood quality	Pearson Cc	0.036	-0.03	.808**	.531**	1	.808**	.426*	.485**	0.044
	Sig. (2-tailed)	0.848	0.876	0	0.003		0	0.019	0.007	0.818
	N	30	30	30	30	30	30	30	30	30
location effect on income generation	Pearson Cc	0.308	-0.051	1.000**	.700**	.808**	1	.601**	.586**	0.106
	Sig. (2-tailed)	0.097	0.787	0	0	0		0	0.001	0.577
	N	30	30	30	30	30	30	30	30	30
how has it changed since you arrived here?	Pearson Cc	0.038	-.399*	.601**	0.187	.426*	.601**	1	.664**	0.17
	Sig. (2-tailed)	0.841	0.029	0	0.323	0.019	0		0	0.369
	N	30	30	30	30	30	30	30	30	30
design of the house have on your ability to generate income?	Pearson Cc	0.241	-0.278	.586**	0.239	.485**	.586**	.664**	1	-0.272
	Sig. (2-tailed)	0.2	0.137	0.001	0.203	0.007	0.001	0		0.146
	N	30	30	30	30	30	30	30	30	30
Do you make home-based activities in your house	Pearson Cc	-0.131	-0.083	0.106	0.097	0.044	0.106	0.17	-0.272	1
	Sig. (2-tailed)	0.491	0.664	0.577	0.608	0.818	0.577	0.369	0.146	
	N	30	30	30	30	30	30	30	30	30

Current tenants' socioeconomic profile

The tenants, according to the findings, are mostly from the poorest of the poor in society. In the research area, 36.7 % of interviewed families earn less than 1000 birr per month, 53.3 % earn 1000-3000 birr per month, only 3.3 % say they make 3001-5000 birr per

month, and 6.7 % have no idea what their monthly income is.

The research area's tenants' additional characteristic 70% of respondents say they run petty business at home and outside the home, whereas 13.3% of respondents work for the government as a guard, cleaner, and 16.7% of respondents are government retirees. And the literacy status of the residents is that the majority of them can read and write, which indicates that most of them have had a problem with access to education from the start, which has caused them to be poor from the start. Education can change their lives by allowing them to obtain jobs. Another factor is marital status, as the

Majority of respondents live alone due to divorce or widowhood.

This demonstrates that the tenants are poor families. In many countries, such publicly sponsored public homes are primarily offered for low-income households. In the case of this program, other characteristics were also examined in order to determine the households' income.

Tenants are the poorest of the poor, according to the report. Young, female-headed families, and persons with different priorities than housing are among those that are affected. According to the literature, many renters, even those renting private dwellings, are low-income people who can't afford to buy a house at market value. Tenants of the poorest of the poor dwellings are those who cannot afford to rent a quality home on the open market, making them the poorest of the poor.

The challenges faced by inhabitants in the case study

Employment and income

Many poor people in cities struggle to find jobs that are officially recognized by the government. Because there is no functioning

social security system, people are forced to seek unregistered employment that is not recorded in statistics. Most households require all members to work in order to meet even basic needs. Many of the city's urban poor make a living from unregistered businesses in the 'informal sector,' where the bulk of citizens participate in petty business and home-based activities.

Due to divorce or the death of their husbands, women headed 73.3 percent of the families in the case study. Social entitlements to items and services, as well as self-employment, help households meet their basic needs. Construction laborers, daily laborers in various sectors, washing clothes, domestic workers, employees of unregistered minor businesses, and child laborers make up the majority of the residents of the poorest of the poor households, all of whom are subject to exploitation. In highly competitive labor markets, they may have little or no job security and few other options, or they may be financially 'tied' to their employers. They often have little chance of securing acceptable, let alone legal, working conditions or pay.

In general, after moving to this housing program, families find it difficult to work because of the long commute, so they try to do some home-based activities but lack the necessary insurance to be profitable. For example, if they sell tella and arekie (traditional alcohols), if they may not sell all of them in one day, in which case they lose the profit and the main cost of preparing for the next day's selling. All of this makes residents scarce, and they may not be able to continue.

The disconnection between jobs, transportation, and affordable housing

Jobs, transportation, and housing all have a substantial impact on one other, and understanding and tackling affordability issues requires an awareness of these interrelationships. In practice, however, not only in the study area, but also in the city of Debre Markos, most of the poorest of the poor housing schemes are often poorly connected. This divergence has huge economic, social, environmental, and health implications for tenants of the housing units, affecting their well-being and quality of life. For the poorest of the poor, the mismatch

between jobs and housing makes life difficult.

The study area is situated on the city's outskirts. As previously stated, the majority of the site's residents work as construction laborers, daily laborers in various sectors, laundry workers, domestic workers, employees of unregistered tiny traders, and child laborers; all of these jobs are located in the city center, so their jobs are disconnected due to the lack of affordable transportation and the site's location.

Neighborhood quality

The poorest of the poor households in the study area live in a neighborhood on the outskirts of town, which makes life difficult for the residents because they cannot do well with their income-generating activities, and when they try to sell and make homemade activities. They do not have a market to sell to, and working in the city center is difficult because it is so far away.

The land use pattern or arrangement has an impact on the urban poor; the research area is in a completely residential area with services on all sides, making the place peaceful. Furthermore, meaning that there are no dynamics within the neighborhood; as a result, the renters live in deplorable conditions because there are no jobs in their immediate vicinity and no active movement through them.

Infrastructure deficiency

Infrastructural provision in the studied area is inadequate. The majority of households rent basic utilities such as power and water, and they lack sewer pipes and ditches. This problem adds to their everyday challenges; it affects not only the structure of the houses for the urban poor, but also the additional expense of rent for these facilities, as well as their access to local streets with poor pavement conditions.

The prospects of the case study Housing

The low quality of people's homes and neighborhoods is the most evident evidence of poverty in the city. The majority of the people in the case study lived in shantytowns, slums, and were overcrowded; they rented from private house renters at a high rent price. However, the fact that many respondents were living in substandard

housing. After all, the respondents are delighted to have these residences since they have private toilets and kitchens, as well as a garden area, and the housing condition is relatively good. Tenants' housing tenure is secure, and as a result, they invest little in house improvement. Maintenance of the houses is the responsibility of the municipality, although renters try to maintain and build additions through their parcels; when they have money, they try to add additional rooms and build tiny kiosks to supplement their income.

The housing rental price

As stated by the respondents, previous rental companies were tough to pay and they did not have the freedom to use various services such as the kitchen and bathroom; however, now they may utilize their own amenities at a reasonable rental charge. The rental fee has not been renewed for six years, despite the fact that their contract stipulates that they pay only ten birr per month. This represents a significant savings for the residents.

The house quality

As respondents convey their feelings, the individual dwellings provide enough space for living. The housing program has two designs. The first typology, which means the case study, has a total built-up area of 34 m², with a salon, bedroom, garden, kitchen, and toilet. The second typology, which has a total built-up area of 34 m². They can also build a five-meter fence on the front side, with a total lot area of roughly 60 m². They have ample room in front to sell their tela and arekie as well as perform various tasks. They have a garden area in the back where they put various vegetables to assist them feed themselves from their garden.

According to the responses, the home quality is good for them in comparison to the previous living circumstances of the rental house price. It has sufficient space for their home-based activities; their main issue is with the location and infrastructure.

Housing tenure security

This type of rental occupation of a publicly owned dwelling program provides a high level of security by ensuring that the terms and conditions of occupation are met for the poorest of the poor. Furthermore, this type of

initiative creates opportunities for poor women confront significant challenges in obtaining homes because patriarchal tenure arrangements and societal practices hinder them from owning property. Despite current laws prohibiting discrimination, women's property rights are frequently overlooked when purchasing, selling, inheriting, leasing, or allotting land and homes, leaving them reliant on their fathers, husbands, or sons for tenure security. This type of discrimination goes against sound urban management and makes little economic sense, in addition to violating women's basic human rights.

When this project first began, women were the primary users of these types of housing because the majority of women in the study area were heads of households, which means they divorced their husbands or lost their husbands to death, all of which made it difficult for them to own a home. As a result, the project provided a solution for women. Women are always thought to be at a lower risk of defaulting on loans than men, and female-headed households account for a large part of a city's low-income population.

Conclusion

According to the findings of this study, many of the poorest of the poor houses are in reasonably moderate condition, despite the fact that they require considerable repairs and upkeep. The municipality is in charge of maintaining these structures. Furthermore, because of the lack of basic infrastructure and transportation, residents of the poorest of the poor affordable housing programs are subject to additional charges from their limited income. As a result, the distance between their house and their place of business has grown, complicating their duty.

The residents do their home-based activities in their homes, but lack the essential insurance to be profitable, due to the disparity between jobs, transportation. The site is in a quiet residential area with open space, implying that the neighborhood has no dynamics; as a result, the renters live in poor conditions because there is no job around their houses and no active movement through them, resulting in low neighborhood quality; as a result, their income was higher before they moved into this new house.

As the Pearson SPSS result demonstrates, it is not enough to create houses for the poorest

of the poor in the city; from numerous perspectives, the house's distance has a direct impact on the inhabitants. The economic aspect of affordable housing sustainability is the subject of this research. The Pearson result show that a variety of factors, not just housing costs and rental costs, have a role in establishing economically sustainable housing affordability.

After all, the respondents are glad to have these homes because they have private toilets and kitchens, as well as a garden area, and the housing is in relatively moderate condition. Because tenants' housing tenure is secure, they invest little in home improvements. Furthermore, the rental price has decreased, and they may now use their own amenities for a reasonable rental fee. The home quality is good for them when compared to previous living circumstances of the rental house pricing. According to the research's findings, Poor women have a tough time getting housing due to patriarchal tenure laws and social attitudes that hinder them from owning property. Furthermore, this type of initiative offers possibilities for poor women who face significant barriers to property ownership that prevent them from doing so.

There are some strategies in this study. To begin, affordable housing efforts for the poorest of the poor should involve economic sustainability, taking into account the local context as well as economic situations. Second, as well as local community participation in program management and upkeep Third, the government should consider the requirements of the poorest of the poor while creating affordable housing. Mixed land use, housing location, infrastructure, house management and maintenance, and incentives for women to own these houses are all factors to consider.

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