

Affordability of Houses for Middle-Income People (MBM) in Greater Bandung Through Price to Income Ratio (PIR) Analysis

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KEYWORDS	ABSTRACT
affordability of houses; Bandung Metropolitan Area; middle class; PIR	Housing affordability is an important issue in the national and global development agenda, especially for middle-income people in metropolitan areas such as Greater Bandung. This study aims to evaluate the affordability of subsidized and non-subsidized housing in 2024 and project it until 2045, using a quantitative approach through Price to Income Ratio (PIR) analysis. The results showed that households with double income had a better level of affordability than households with single income. However, even dual-income households in the BMA still have difficulty reaching non-subsidized type 36 houses, and subsidized houses are not affordable for single-income households. Projections through 2045 show that the minimum wage increase is not enough to keep pace with the pace of house price increases, so affordability is likely to deteriorate. These findings indicate the need for more effective attention and policy interventions to ensure access to decent and affordable housing, particularly for MBM groups in metropolitan areas.

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INTRODUCTION

According to Quigley & Raphael (2004), people's concerns about housing affordability arise for two main reasons. First, housing is the biggest expense in the budgets of most families and individuals. Second, many major cities in the world have experienced a fairly high increase in house prices and rents in recent years, including Indonesia. On the other hand, meeting housing needs is fundamental for every populated area in every country. Indonesia, with a population of 282.4 million people (BPS, 2024), must pay attention to the need for decent housing for its citizens. This commitment is contained in Article 28 (h) of the 1945 Constitution, which states that every citizen has the right to live a prosperous life, have a place to live, and enjoy a good and healthy living environment (Leung E. C., 2021; Norazmawati, 2015; Prabowo J., 2022). This article demonstrates the government's recognition of everyone's right to residence. For this reason, the government is developing the housing sector. In Law 1/2011 on Housing and Residential Areas, it is explained that housing and residential areas are a system that includes the development, implementation, maintenance, repair, prevention, and improvement of the quality of slum housing, land provision, funding, and the role of the community.

Internationally, Indonesia follows the direction of global development through SDGs Target 11.1, which is committed until 2030 to ensure access to decent, safe, affordable housing, and basic services for all, as well as to manage slums (Boyack, 2018; Chen H.-L., 2017; Gnagey

R., 2018; Iben E., 2015). Indonesia is also committed to the New Urban Agenda (NUA) with the vision of providing cities for all, with equal rights and opportunities, as well as sustainable cities and settlements. The points in NUA are in line with the SDGs, aiming to create an inclusive, equitable, livable, and sustainable city (Housing, 2023; Lestari A. A., 2022; Nations, 2016; Statistik, 2024; Yuzainee, 2011).

The global development direction for housing is reflected in national development plans such as the Long-Term Development Plan (RPJP) and the Medium-Term Development Plan (RPJMN). Presidential Decree No. 18 of 2020 states that the provision of access to housing and settlements is decent, safe, and affordable, with a strategy focusing on three aspects: the demand side, the supply side, and a supportive environment. Sustainable housing, according to the direction of SDGs Point 11, places affordability for all levels of society as one of the requirements of the economic dimension (Battisti, 2023; Habitat, 2018; Ojoko et al., 2016; Vaidya & Chatterji, 2019). In this case, Indonesia indirectly refers to the goal of achieving sustainable housing, including meeting the needs of affordable, decent housing for various groups, including middle-income people (MBM) (Adabrey A. P., 2019; Andre, 2014; Baker, 2015; Frost, 2017).

The concept of housing affordability generally refers to a person's financial ability to pay for housing costs, such as monthly installments or rent, and becomes an issue when income is insufficient to cover other basic household needs (Norazmawati, 2015; Maclellan & Williams, 1990). The affordability of housing for lower-middle-income people has a high urgency for several important reasons:

1. *Basic Needs*: Housing is one of the basic human needs. Ensuring that lower-middle-income communities have access to decent housing is an important step to ensure human rights and community well-being.
2. *Social and Economic Stability*: A decent and affordable home provides stability for families. This helps reduce poverty rates and increase economic productivity because people who have a stable place to live are better able to work well and make a positive contribution to the economy.
3. *Health and Education*: Home affordability is also closely related to health and education. A decent and healthy home reduces the risk of disease, while a stable and safe environment supports children's educational development, thus creating a better and more productive generation.
4. *Reducing Slums*: By providing affordable housing, the government can reduce the number of slums. Slums often lack access to basic amenities such as clean water, sanitation, and electricity, which negatively impacts the quality of life of their residents.
5. *Poverty Alleviation*: Housing affordability can be an effective tool for poverty alleviation. Subsidized housing programs or special assistance for lower-middle-income communities can help them break out of the poverty cycle and improve their overall well-being.
6. *Sustainable Development*: Access to affordable housing is in line with the Sustainable Development Goals (SDGs), specifically the goal of ensuring access to decent, safe, and affordable housing for all and improving the quality of the residential environment.
7. *Social Justice*: The provision of affordable housing for lower-middle-income people is a form of social justice. This ensures that all levels of society get equal opportunities to have a decent and prosperous place to live.

However, in reality, the existence of decent houses in Indonesia is still difficult to reach for *MBR* and even *MBM*, especially in metropolitan areas that cover 1 to 5 million people and, of

course, have their own challenges in meeting the housing needs of their residents. In Indonesia, the government has responded to housing needs that reach *MBR* through a subsidy policy on the selling price and commercial housing financing assistance regulated in the Decree of the Minister of Public Works and Public Housing Number 689/KPTS/M/2023 concerning Land Area Limits, Floor Area, and Selling Price Limits for Landed Public Houses in the Implementation of Housing Loans/Financing Housing Liquidity Facilities, as well as the amount of housing down payment assistance subsidies. As for the regulation, the Government of Indonesia has provided subsidies by limiting the maximum selling price for houses and type 36 flats specifically for *MBR*, including housing financing assistance. Unfortunately, *MBM* tends to be squeezed because existing policies are not in favor of *MBM*.

Affordability is often measured based on the proportion of household or individual income used for housing costs. Generally, if a household spends more than 30% of its total income on rent, utilities, mortgages, insurance, and housing-related taxes, this is considered unaffordable (Ibem & Aduwo, 2015; Yates, 2007; Baker et al., 2015). Sustainable affordability requires a housing supply system that is flexible and responsive to demand to keep housing costs (purchase price or rental rates) stable and reasonable (Boyack, 2018). In essence, affordable housing must ensure that housing costs do not put undue pressure on household income, so that families can still meet other basic needs (Borrowman et al., 2017). Households burdened by housing costs will reduce spending on other essential needs, such as health care and healthy food. In addition, they may be forced to buy low-quality homes with small sizes, be in slums, or lack good access to other educational and social facilities. This condition can lead to residential segregation. On the other hand, easy access to decent and affordable housing can prevent poverty, increase labor inclusion, and avoid social segregation (Adabrey & Chan, 2019).

Research related to housing affordability measurement has been widely conducted for a variety of reasons, such as explaining the types of household spending, analyzing trends by comparing different types of households, determining who is eligible for housing subsidies, defining housing needs for public policy, predicting households that can afford rent or housing loans, and selecting housing units before deciding to buy or rent a house (Hulchanski, 1995; Stone, 2006; New, 2008). This research will enrich the findings related to housing affordability in metropolitan areas of developing countries. With this background, the purpose of this study is to determine the affordability of houses for *MSEs* in Greater Bandung in 2024, including subsidized and non-subsidized houses, and to review their affordability until the next 20 years (2045). *MSE* income communities were chosen because *MSEs* show the average income of middle-income people and the upper limit for low-income people, so that it can illustrate the affordability of houses for two income groups at once. This research was conducted with a quantitative approach through the calculation of the affordability of houses using the Price to Income Ratio (PIR) analysis, which is a method used to measure the affordability of house prices in an area.

One of the largest metropolitan areas in Indonesia is Greater Bandung, which includes the city of Bandung, Cimahi City, Bandung Regency, West Bandung Regency, and Sumedang Regency. This metropolitan area is one of the urban areas in West Java, which is regulated by the Governor of West Java Regulation Number 86 of 2020 concerning the Greater Bandung Basin Urban Area Management Agency. This area is considered a national strategic area from the point of view of economic importance, consisting of the Core Urban Area and the Surrounding Urban Area that form the Metropolitan Area. As one of the largest metropolises in Indonesia, Bandung *RRaya* must provide housing for all its residents despite the challenges of land limitations that are not proportional to the number of residents. At the beginning of the seventeenth century, the city

of Bandung was designed to accommodate 300,000 residents, but by 2024, the population will grow rapidly to around 2.58 million people (BPS, 2024). Therefore, in its history, house prices in Greater Bandung have continued to soar from year to year, and it is predicted that in the future, *MBR* and *MBM* will find it increasingly difficult to reach the price of a decent house.



Source: Indriasari et. al., 2023

Figure 1. Map of Study Areas

METHOD

The method used to calculate affordability is the *Price to Income Ratio* (PIR) which is the ratio between the average house price in the free market compared to the average household income per year (Leung & Tang, 2021). PIR is calculated by dividing the median price of a house by the median annual income of households in the area. The results of the PIR analysis will provide an overview of the affordability of houses based on the income owned by the community (Yang & Shen, 2008). Therefore, PIR is often used as a basis for providing housing loans (Norazmawati, 2015). The following is the formula from PIR.

$$\text{PIR} = \frac{\text{Median Home Price}}{\text{Median Annual Household Income}}$$

If house prices rise faster than the increase in people's income, then in the end, many people cannot afford to buy a house, so demand will fall and prices will also fall (Andre et al., 2014). This helps to show the difference in affordability between different income groups. *PIR* is also useful for providing an overview of the general housing market conditions, such as the number of demand and supply of housing in an area, as well as showing the sustainability of human settlements related to housing affordability, including the impact of housing policies (Chen & Cheng, 2017; Mak et al., 2007).

The higher the *PIR*, the more unaffordable the price of the house will be for the community, so a high *PIR* can indicate the need for better housing policies (Suhaida et al., 2011; Buckley & Kalarickal, 2005; William & Pannell, 2004). In general, *PIRs* are categorized as follows:

- $PIR < 3$: High affordability (houses are considered affordable)
- $PIR 3-4$: Moderate affordability (houses considered somewhat affordable)
- $PIR > 4$: Low affordability (houses considered unaffordable)

In this study, various assumptions will be used to carry out the analysis so that the assumptions used will be quite diverse, adjusting the needs of each analysis carried out to obtain uniform results and describe the needs of the community. A sample of houses is used to identify house prices in the field. For non-subsidized house prices, a sample was taken with 50 samples for each city/regency, so a total of 250 house samples were used from the house buying and selling site. Meanwhile, for subsidized house prices, reference will be made to the Ministry of Public Works Number 689/KPTS/M/2023.

The following are the sample criteria used to determine the price of a house:

- Non-subsidized houses with type 36 (the smallest size allowed by the government)
- Building area 36 m² (assuming 1 house is inhabited by 1 family consisting of 4 people)
- Land area of no more than 200 m²
- It is a 1-storey house with specifications of at least 1 kitchen, 1 bathroom, and 2 bedrooms
- Still in the form of a new house

For the assumption of income per year, *MSEs* (City/Regency Minimum Wage) will be used based on the Decree of the Governor of West Java Number 561.7/Kep.804-Kesra/2023 concerning the Regency/City Minimum Wage because it can be considered as the lower limit of the income of the middle-income class population (representing the average *MBR* income and the lower limit of *MBM* income). Meanwhile, the assumption of income per household, which will be based on a lower dependency ratio of the productive-age population (every 100 productive populations only bear 44 non-productive populations, i.e., not all productive populations bear non-productive populations), can be the basis for the assumption of conditions:

- Single-income households → with the condition of many housing seekers who do not have dependents (living alone) and many easy households with only 1 person working.
- Double-income household → ideal household (4 people) with 2 people working (father and mother working).

RESULTS AND DISCUSSION

Greater Bandung has a diverse population density in each location, following the availability of adequate networks and facilities for community activities. This affects the price of the house for sale. In residential locations far from the point of density, house prices tend to be lower than those in densely populated centers. Thus, the *PIR* value in this analysis also shows the response of housing affordability to the center of activity and population density. The property market in Indonesia, both in cities and villages, shows that structural factors, location, and land legality play a significant role in determining house prices, including the certainty of land rights and supporting regulations, especially in encouraging a healthier and more transparent property market (Gnagey & Tans, 2018). The following is a mapping of the *PIR* value of non-subsidized housing type 36 houses for both *single income* and *double income*.

Table 1. Mapping of *PIR* Results for Type 36 Houses in Greater Bandung in 2024

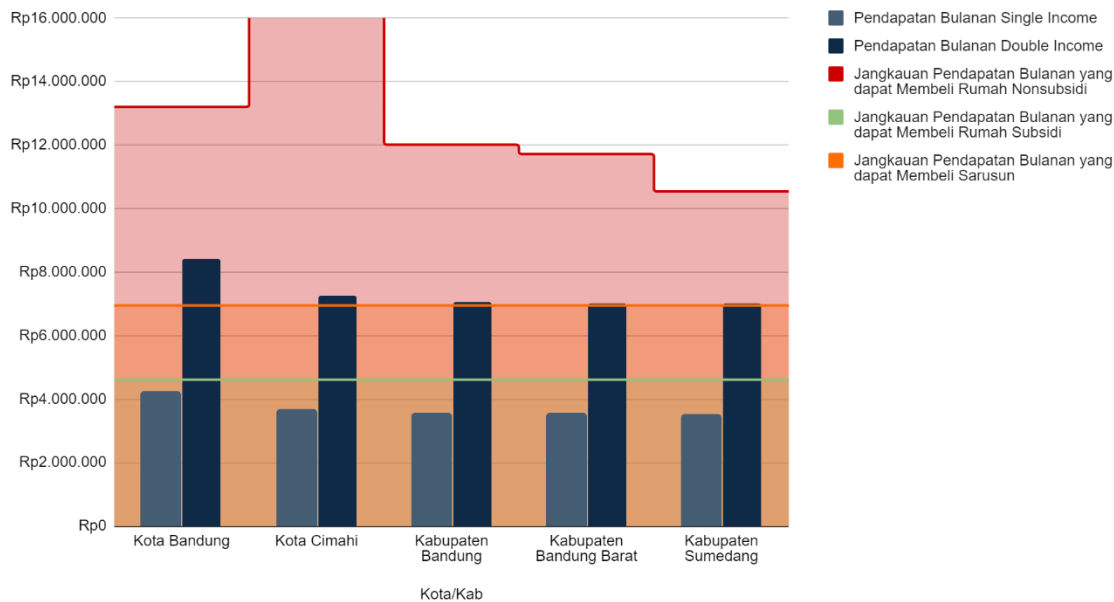
City/Regency	PIR Single Income Landed House type 36 Nonsubsidized	PIR Double Income Landed House type 36 Nonsubsidized	PIR Single Income Landed House Type 36 Subsidy	PIR Double Income Landed House Type 36 Subsidy	PIR Sarusun Single Income Subsidy	PIR Sarusun Double Income Subsidy
Bandung	9,41	4,70	3,29	1,64	4,95	2,47
São Paulo	14,36	7,18	3,81	1,91	5,74	2,87
Bandung Regency	10,21	5,11	3,92	1,96	5,91	2,95
West Bandung Regency	10,02	5,01	3,94	1,97	5,94	2,97
Sumedang District	9,02	4,51	3,95	1,97	5,95	2,97
Average	10,60	5,30	3,78	1,89	5,70	2,85

Source: Analysis Results, 2024

Based on Table 1 above, for *single income* residents in Greater Bandung, the average PIR for non-subsidized type 36 houses reaches 10.6 (very unaffordable) with the highest PIR being in Cimahi City while the lowest PIR is in Sumedang Regency. However, the lowest PIR still shows that type 36 landed houses in all Priority WMs are very unaffordable for *single income* households. Meanwhile, the average PIR from *double income* households is 5.3. In the same order, *even double income* households are still not able to reach type 36 landed houses. With reference that the house is considered affordable if the PIR value is at 3 and below, it can be ensured that for *single income* and *double income* type 36 houses are still unaffordable for people in Greater Bandung.

Different results are shown by the PIR for type 36 houses subsidized by the government where the government also sets the maximum price of the house sold and gets subsidized. According to Adabret & Chan (2019), one of the important determinants for sustainable affordable housing is the provision of housing subsidies by the government to households. However, based on the results of the PIR analysis for subsidized housing, the average PIR value by *single income* in Greater Bandung has reached 3.78 (somewhat affordable with moderate affordability). Meanwhile, for *double income* households, the average PIR from subsidized type 36 landed houses shows high affordability with a figure of 1.89. Thus, subsidized type 36 houses are still quite affordable for *single income* households but very affordable for *double income households*.

The PIR value for type 36 flats subsidy shows lower affordability than for type 36 landed houses. Based on the results of the PIR analysis for subsidized type 36 residential housing, the average PIR value by *single income* in Greater Bandung reached 5.7 (no longer affordable) with the highest PIR of 5.95 in Sumedang Regency and the lowest PIR of 4.95 in the city of Bandung. Unfortunately, this figure still shows the unaffordability of the type 36 subsidy for *single income* households. Meanwhile, for *double income* households, the average PIR actually shows higher affordability for *double income* households with an average that remains higher than subsidized landed houses, which is 2.85. Thus, the subsidy type 36 household in 2024 will be more unaffordable for people with UMR income for *single income*, but it is still affordable for *double income* households.

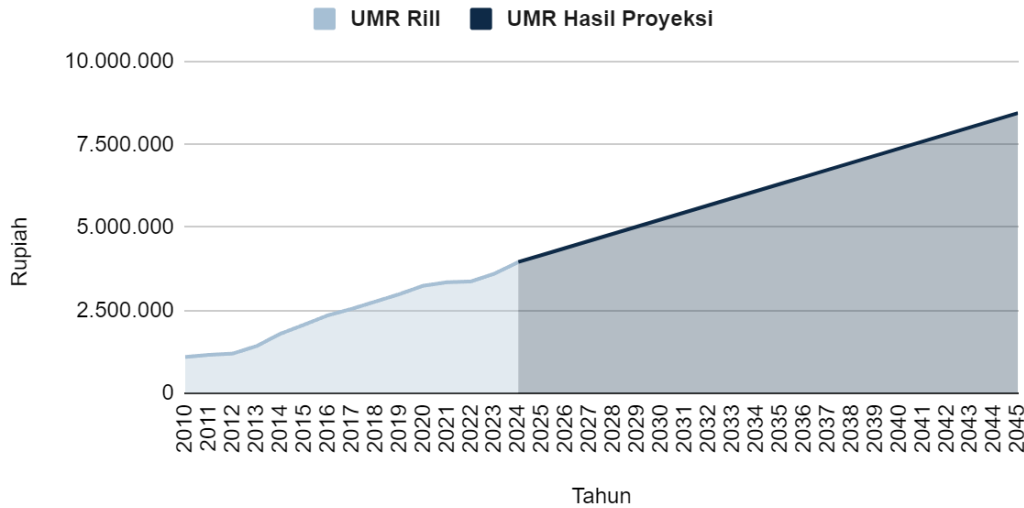


Source: Analysis Results, 2024

Figure 2. Graph of the Difference in the Range of Income That Can Buy a House with MSE Income in 2024

Figure 2 shows the value of income range determined using the PIR formula by pegging the affordability index at number 3. Based on the calculation results, households in Greater Bandung who are able to access subsidy type 36 landed houses are only households with an income above 4 million. Meanwhile, households that are able to access type 36 flats are only households with an income above 7 million, and those who are able to access non-subsidized type 36 landed houses are only households with an income above 10 million. Both type 36 site subsidized houses, type 36 sarusu, and type 36 non-subsidized houses are no longer affordable for *single income* households. Meanwhile, *double income households* in Greater Bandung can still reach landed houses and type 36 flats that have been subsidized by the government.

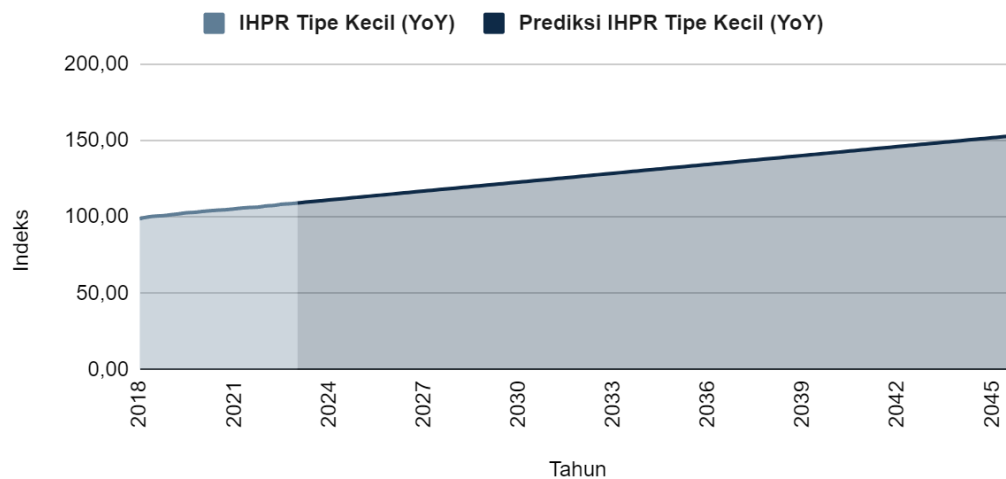
To find out the affordability of non-subsidized and subsidized type 36 housing in 2045, it is necessary to make a projection of the UMR of each city/district in Greater Bandung and a projection of a small type of IHPR (Residential Property House Price Index).



Source: Analysis Results, 2024

Figure 3. Projection of UMR Bandung Raya 2024-2045

From Figure 3 above, it is predicted that in 2045 MSEs in Greater Bandung will increase by 178% from MSEs in 2024 with an average minimum income of 2045 at a nominal value of Rp.8,466,160. The highest income is found in the city of Bandung with the number of MSEs 2045 at Rp.9,663,672 followed by Sumedang Regency (Rp.8,252,587), Bandung Regency (Rp.8,129,910), Cimahi City (Rp.8,106,795) and West Bandung Regency (Rp.8,077,838). With a MAPE value of 4.8% where the standard error is below 10%, it can be said that the results of this forecast have meaning.

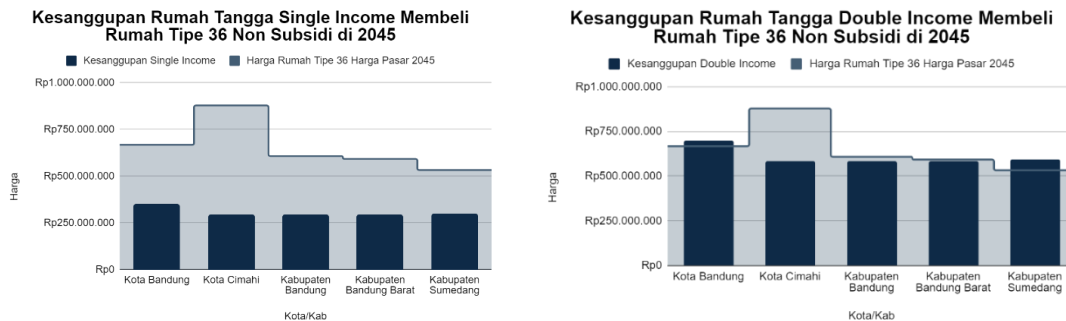


Source: Analysis Results, 2024

Figure 4. Projection of Small Type CPI 2024-2045

In addition, from Figure 4, it is predicted that the Residential Property Price Index (CPI) for small type buildings in 2045 will reach 153.21. This represents an increase of 53.21% from the price of small type houses in 2018 or an increase of 40.5% from 2023. With a Mean Absolute

Percentage Error (MAPE) of 1.4%, this projection is considered accurate because the value is well below 10%, indicating that the forecasting results have significance. Projections suggest that the rate of increase in average income will be higher than the increase in property prices.



Source: Analysis Results, 2024

Figure 5. Households' Ability to Buy Type 36 Non-Subsidized Houses in 2045

However, it turns out that from Figure 4.4 in line with the results of the PIR *analysis of single income*, type 36 landed houses with market prices for 2045 are still unaffordable for *single income* households with MSE income. Different things are produced by *double income* households where type 36 landed houses with market prices in 2045 are only affordable for the city of Bandung, West Bandung Regency, and Sumedang Regency while Cimahi City and Bandung Regency are still not able to reach. Thus, the effect of a higher increase in MSEs from the increase in fixed house prices in 2045 is not able to increase the ability of single-income households to buy type 36 landed houses, but is able to increase the ability of double-income households to buy type 36 landed houses.

Many studies in economics have shown that housing affordability problems experienced by middle-income people in developing countries are often caused by market distortions, even though these policies were initially well-intentioned (Buckley & Kalarickal, 2005). For this reason, it is basically necessary to understand the compatibility of the characteristics of the public sector and the private sector when carrying out certain functions in the provision of housing. The public sector is considered less effective as a producer, owner, or provider of housing financing, and also less successful in designing residential areas or land development (Mehta, Meera, & Mehta, 1989). However, this does not mean that all housing problems in developing metropolitan areas can be solved by relying solely on market policies. In fact, government intervention is needed in providing the right policies so as not to worsen the situation (Glaester, Edward, & Gyourko, 2003).

The government's intervention in this research case can be seen from the provision of subsidies to the needy class. Market-oriented subsidies such as those carried out in Indonesia have basically been widely used as the main tool to provide housing subsidies in almost all developed countries since the late 90s (Boelhouwer, 1997). This shows the widespread recognition of the advantages of transfer mechanisms that use incentives to complement the market, as opposed to the ownership and construction of social housing by governments that seek to replace those market functions. However, in reality, Indonesia has not been able to succeed in the housing subsidy program given to the middle and lower classes. The results of the 2010-2019 evaluation show that the contribution of one of the subsidy programs, namely the FLPP (Housing Financing Liquidity Facility), is still too low in reducing the backlog and increasing affordability for the target group even though it has been running for ten years (Prabowo & Adianto, 2022). This is due to rising

house prices and construction costs causing increased monthly installments and higher income needs for homeowners. As a result, the ability to pay the target group decreased, and the homeownership rate from this program also decreased.

However, it should be understood that the provision of subsidized assistance by the government tends to be targeted at MBR. An example is the FLPP program which in the Decree of the Minister of PUPR Number 242/KPTS/M/2020, the income or income of FLPP mortgage recipients does not exceed IDR 8 million per month for prosperous housing facilities, sites and layouts. Meanwhile, for MBM, the requirements of the subsidy program are not in favor of them, especially for those with double income. On the other hand, MBM is also difficult to reach non-subsidized houses even after having a double income (above Rp 8 million). Here, it can be seen that the existing subsidies have not been able to take sides with MBM.

CONCLUSION

MSE households with double income provide higher housing affordability for *MBM* and *MBR*. Unfortunately, the double income scheme is quite utopian to be used as a reference because, in reality, only a handful of households have double income. The limitation on *MSEs*, which in this study is considered representative of income, also shows that non-subsidized houses are very unaffordable for *MBRs* who have household income below *MSEs*, as indicated by the value of *PIR* for single income. Even for households with double income, which means they have an income 2 times that of *MSEs*, they are still unable to afford non-subsidized houses. In addition, non-subsidized houses in Greater Bandung actually have a selling price that reaches 3 to 8 times the price of subsidized houses.

On the other hand, subsidized houses are also for *MSE* households whose single income has moderate affordability; even *sarusun* is no longer affordable for them, which means the same applies to households with income below *MSEs*. Until 2045, the effect of increasing *MSEs* higher than the increase in the price of type 36 landed houses will not be able to increase the ability of households to own a house. The provision of subsidies in 2024 is still not enough to ensure the affordability of households with *MSE* income (especially for type 36 houses). With conditions like this, Greater Bandung needs special attention in meeting the affordability of houses for *MBM* and *MBR* to be able to achieve sustainable housing, in accordance with national and global achievement targets. The government must be observant in taking steps and roles to overcome the problem of difficult housing affordability, including in metropolitan areas, one of which is Greater Bandung.

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