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## Abstract

Mixed-income developments enable the cross subsidization of affordable housing without the need for direct subsidies, therefore it could encourage housing developers to involve in public-private partnerships. This study elucidated the partnership challenges associated with mixed-income housing development schemes and proposed strategies that could assist in promoting mixed-income low-cost apartment developments in Indonesia. Six Indonesia government representatives and six semi-private housing developers were interviewed, from which it was found that one of the greatest challenges was selecting the land for suitable mixed-income housing schemes. This study adds to the field by identifying the critical points for mixed-income housing developments. Some changes in financial and asset regulations are needed if mixed-income housing were the project design choice. To lower housing prices, land prices could be minimized by leasing state-owned company land asset, implementing mixed income and mixed-use and reforming the current land use policy to support mixed-income housing developments. In addition, to increase project viability, the proportion of subsidized and non-subsidized units should be calculated thoroughly.

**Key words:** mixed-income housing, affordable housing, land use policy

## 1. Introduction

Urbanisation and population growth, especially in developing countries has generated the need of housing. The urbanization is triggered by various facilities in urban, such as infrastructure, education, and economic activity. One of the prominent impacts of urbanization is the growth of squatter settlements (Jones, 2017). In general, squatter settlement is defined as informal residential in an urban area, which is occupied by poor communities who do not have access to tenured land of their own (Srinivas, 2015). Squatter settlements are illegal and do not comply with urban spatial planning, which triggers various problems in the context of urban economic development and public infrastructure provision (Zubair et al., 2015). Squatter settlement was also triggered by the inability low-income community to own or to rent the affordable housing. These circumstances have motivated the government to provide public housing. The high land prices in city centers worsen these conditions but living far from their employment centres means that these low-income workers would face high transportation costs. Therefore, government built low-cost high-rise apartments, which commonly provided in major cities for rental or for ownership.

Since these low-cost apartments are for people on low incomes, the rents or sales prices are generally lower than market prices, which has been a barrier to housing quality (Onatu 2010) as these rents they are often unable to cover operating and maintenance costs. However, if some apartments are offered at a lower rent or a lower sales price in a building that also has regular tenants, the consequent rent or sales price often becomes adjusted toward the lower prices, which has made it difficult for landlords to charge the proper rental prices when two tenant types live in one building. Further, if the price is only slightly below market price, the affordability problem is not resolved (Branco & Alves, 2020). Therefore, mixed-income developments, which involve cross subsidizing affordable housing without providing a direct subsidy (Austin, Gurran, and Whitehead 2014), have been suggested as a viable method to revitalize urban areas and transform public housing (Vale and Shamsuddin 2017).

Mixed-income housing policies can also encourage real estate developers to participate in public-private partnerships (PPPs) (Read and Sanderford, 2017). Theoretically, policymakers and public officials put in place the needed zoning and approval processes, after which political incentives that leverage market forces are offered to attract capital to the mixed-income housing development projects and encourage real estate developers to risk their social, political, and financial capital to earn risk-appropriate returns.

Previous research on mixed-income housing has either focused on the benefits (Joseph and Chaskin 2010) or discussed the problems, such as the social gaps in socially-mixed housing developments (Chaskin and Joseph 2011; Joseph et al. 2019; McCormick, Joseph, and Chaskin 2012). However, these studies did not specifically discuss low-cost or low rent apartments, each of which have particular conditions, such as tenure and tenant segmentation. Also, no previous studies have clearly distinguished the characteristics of the different mixed housing types. Therefore, this paper seeks to fill a gap in the existing mixed housing literature by examining the critical points associated with mixed-income housing partnership development schemes and suggesting strategies that could be employed to promote mixed-income low-cost apartment developments in Indonesia.

The remainder of this paper is organized as follows. Section 2 reviews previous studies on mixed-income housing, Section 3 details the research methods, Section 4 provides the interview results with participants from the government and semi-private housing developer, followed by discussions based on the theory and data analysis results, and Section 5 concludes the paper and provides implications for future research.

## **2. Literature Review**

Housing represents a basic need for every individual or family. Everyone wants to live in a good housing environment at an affordable price; yet these aspirations are difficult to be achieved by people with low incomes. Major cities offer a lot of important and attractive facilities, and land downtown close to workplaces is very expensive and becoming increasingly scarce (Susilawati & Yakobus, 2010). In general terms, housing problems are related to issues of demand and supply. Housing supply is essentially subject to limitations of land, state regulation, and territories, which should be in accordance with local planning and approval processes. The issues are extent to lack of coordination between infrastructure planning initiated by the government and housing supply from institutional (Morrison et al., 2012). The housing problem is particularly acute for poor or low-income communities, with a combination of low incomes and high housing costs creating affordability issues, such as lack of effective

housing finance systems and difficulty accessing land with secure tenure (Mukhtar et al., 2016).

Alaghbari et al. (2009) identified additional factors that influence housing supply, including economic conditions and administrative and legal factors. Their study revealed that economic conditions such as lack of capital, housing costs, household incomes, projects' feasibility, and land availability all contribute to the shortage of housing supply. There are some legal issues associated with building regulations that directly influence the construction cost and the amount of land allocated to housing, that in turn, hinder the housing provision (Patel et al., 2018). Government capped selling prices, which poses challenges for the development of low-cost apartments, construction costs of a unit apartment being more expensive than landed low-cost housing (Susilawati & Yakobus, 2010), land prices being high and the requirement to follow building regulations.

Land is a major component of the housing development process. However, government and housing developer often meet the problem related land provision. Accessibility and security of land tenure that is well-located, suitable for development, and affordable remaining a key obstacle to housing delivery (Gopalan & Venkataraman, 2015). A study conducted by Firman (2004) also discussed that urban land development problem has extended to management issue including poorly coordinated among stakeholders who have responsibility for land management, an inflexible land regulatory framework, inappropriate land taxation, lack of secure land tenure, and lack of the data and information related urban land (Firman, 2004). Assistance and action are required in relation to these issues if private sector participation is to be facilitated.

Housing policies and housing financing are generally the domain of national governments. Housing finance policy issued by the governments in some countries are varied. Majority governments in Europe facilitated the citizen to stay in decent house through four ways, although not necessarily sequential stages. One of them is wide-range of government direct involvement in order to intensify the housing supply, especially after world war (Stephens & Whitehead, 2014). While in term of poor-quality housing, the housing finance policy emphasized on renovation and improvement in the existing housing.

One of housing finance strategies proposed Feather (2019) is the involvement of the private sector in housing provision and development if local governments do not have the ability to finance, deliver, or manage comprehensive housing projects, a collaboration known as PPPs. PPPs enable risk sharing with the private sector on housing projects, which allows for the engagement of a diverse range of housing actors and the leveraging of capital and expertise; however, PPPs have been found to require significant effort to ensure financial project viability. The partnership could be delivered through mixed-income housing development as this project needs cross-sector collaboration to support the effectiveness and accountability (Joseph, Chaskin, Khare & Kim, 2017). The term mixed-income housing can refer to mixed-building, mixed-building forms, size, or designated uses. It is also known as mixed-tenure, and market and segmentation of rent levels (Tunstall & Fenton, 2006). This model is best applied to high-density areas. It provides an opportunity to increase affordability and it increases in value when a public private partnership is adopted. For example, using public land for a mixed income development can be views as subsidy, as it reduces the land cost of affordable unit, which will lowering the lower-income households' burden.

As mixed-income housing involves mixed-building, mixed-building forms, size, and designated use, it is also known as mixed-tenure or rent level market segmentation (Tunstall and Fenton 2006). This policy provides accommodation benefits for low-income and lower-middle-income households, boosts the supply of affordable housing (both for purchase and rental), and mobilizes the private sector to provide affordable housing in the same building as their commercial housing developments, which gives them the opportunity to be socially responsible. Read and Sanderford (2017) claimed that mixed-income housing was structured to combine market rates and affordable housing rates and involved various housing types.

In addition, since mixed housing integrates two or more income levels, there may also be interactional constraints on mixed housing developments in many neighborhoods. Joseph and Chaskin (2010) found in their study on two mixed-income developments in Chicago that there were both positive and negative interactions between the residents of differing income groups; however, in general, the cross-income interactions were minimal. Some higher-income residents reported that they had given up on their efforts to interact with the lower income residents because they had felt unwelcome and marginalized. As it was found that the social distance was a disappointment for some of the higher-income residents, it was concluded that if the income and disparity gaps between residents are too great, it is unlikely that the residents can bridge these differences, especially if there were language diversity and possible racial tensions (McCormick et al, 2012). Therefore, good communication and local networking skills are needed between developers, stakeholders and also between the tenants. It could be summarized that in some countries, benefits related to economic desegregation and poverty alleviation have not been achieved (Levy, Mcdade & Bertumen, 2013).

### **3. Research Methods**

This paper was aimed to draw some critical points facing the implementation of mixed-income housing in Indonesia. Government of Indonesia has developed public housing programs for community relocations and regular tenants, in the form of public rental housing and high-rise low-cost apartment (ownership). Due to massive urbanization programs in major cities in the past few decades and the lack of housing investment, the Indonesian Ministry of Public Works and Public Housing estimates that the housing backlog in Indonesia will reach 800,000 units per year. The current backlog is 7.64 million units, as of the beginning of 2020. This study will focus on the low-cost apartment.

Since the study focused on government policy related to mixed-housing development, which have been just launched, this study involved primary players in housing development program. Semi-structured interview was conducted to twelve experts on public housing sector both from government and semi-private housing developers (Table 1). Semi-private housing developers involved in this survey were participants from state-owned company in housing sector. The data collection used purposive sampling and snowball sampling as the initial participants recommended other participants. This method is considered useful for building research networks of specific populations.

Table 1. Semi-structured interview participants

ID	Government		Semi-Private	Role
	Ministry	Local		
R1	√			Top Management
R2	√			Top Management
R3	√			Top Management
R4	√			Middle management
R5		√		Middle management
R6		√		Top Management
R7			√	Top Management
R8			√	Top Management
R9			√	Top Management
R10			√	Top Management
R11			√	Middle management
R12			√	Middle management

Indonesia has three tiers of government, which has different authority to manage public housing. In this study, there were four participants from the ministry (central) government. The participants were top management, which have authority related to housing policy. The survey also involved one participant from local (province) government and one participant from local (municipal) government as most public rental housing are operated by province and municipal government. They were interviewed and asked for their opinion related to housing finance policy related to low-cost apartments. Six semi-structured interview participants also came from the semi-private housing developer or non-government sector as representative of private sector, such as officer from National Housing Company (Perumnas) as major player in low-cost apartment development.

The semi-structured interview was aimed to obtain the participants, both from public and private sector's opinion regarding financing scheme possibilities, housing finance policy and factors influencing mixed-income housing development and implementation. The semi-structured interview was conducted face-to-face in each participant's office. It took around 2 hours interview for each participant. Participants from ministry government conducted focus group discussion to obtain interaction data resulting from a discussion of a group of participants in terms of increasing the depth of information revealing various aspects of a life phenomenon, so that these phenomena can be defined and explained.

The semi-structured interview comprised open-ended questions on current housing policies and the strategies used to plan and implement mixed-income developments. The interviewing of the two groups (public and private sector) allowed for the gathering of different perspectives on housing policies, planning goals, and possible actions. Thematic analysis was employed in this research for the analysis as it can be flexibly adjusted to suit a wide range of data types and research aims (Braun & Clarke, 2006) and allows the researcher to take an active part in the identification and interpretation of themes as guided by the research questions. Data from the interviews were transcribed and then analysed.

#### 4. Results

Thematic analysis using initial coding yielded approximately 100 codes, which were then reviewed by merging several codes as themes which emerged during the analysis process.

Finally, clusters were formed by organising themes empirically into larger categories. The analysis obtained four emerging themes: land, design and construction, mixed-income housing schemes and financial.

Participants from government explained that one of the reasons behind the mixed housing program was to increase the supply of low-cost housing in Indonesia. Another purpose was to maximize the private sector's profit to attract them on this investment. Public institutions that cannot supply enough sources for urban renewal projects mostly apply to the revenue sharing model. In this model, they cooperate with domestic or international private housing contractors. The revenue sharing model is known as Public Private Partnership (PPP) model. The private participation is believed to be one of the solutions to reduce poverty through public housing provision. However, as private also consider the profit, the financial feasibility should be taken into account.

In order to maximize the revenue of the low-cost apartment (ownership), it should be managed in mixed housing. Full low-cost unit will not generate enough revenue for return on investment or operation maintenance. Currently, lack of private housing developer engaged in the public housing investment, as the project is not feasible. The project feasibility is indicated by the revenue is greater than the cost. Beyond the various challenges discussed in the previous section, mixed-income housing developments can support housing provision programs and reduce inefficient government subsidies; however, there are some implementation challenges as outlined in the following section.

#### **4.1. Land issue**

The participants claimed that land was an important component of the housing development process. Land price in city centre or close to the workplace are much more expensive. Location has a significant impact on the land price, and in many cases, households makes trade-offs between location and transportation cost (Hartell, 2016; Huang, Dijst and Weesep, 2018; Dewita et al, 2019; Ma, Li, Zhang, 2018). Therefore, in some major cities in Indonesia, the high land prices in prime locations have meant that low-income communities have to live in areas far from the city center, which means they are burdened with high commuter transportation costs or have to live in illegal squatter settlements in the city centres. The government has tried to overcome these problems by providing affordable low-cost apartment or public rental housing in vertical buildings; however, many of the low-income community were reluctant to stay in vertical buildings. In some cases, low-cost apartments are generally built on local government land, the location selection depends on availability, which means that some are located far from the city or employment centres.

Therefore, the challenges are how to develop the mixed-income low-cost apartment at affordable price and to encourage people to live in vertical buildings. One of the attractive factors that encourage people to live in low-cost apartment is the location, which is close to the city center or transportation facilities (transit-oriented development) and enable inhabitants to save their transportation cost. Some participants expressed strong concerns about the land issues, stressing that the locations needed to be in walkable neighborhoods, and that low-cost ownership apartments needed to be near transit-oriented developments such as commuter trains.

According to semi-structured interview, the participants also considered that transit-oriented developments (TOD) could also be a suitable approach to resolving location selection for new

urban designs if these developments provided suitable transport options and if the housing were integrated with transportation planning and transportation features to allow the tenants to easily and cheaply travel to their workplaces. This would require the housing developer to build the low-cost apartments close to rail stations.

“The most possible scheme is long lease (building rights title). Government is now analysing the possibility to introduce transit-oriented development (TOD) as the suitable approach for new urban design with proper accessibility to deal with location selection matter. The housing would have integrated land use with transportation planning and transportation features. The tenants could easily travel to their workplace in a short time and a cheap cost” (R1).

Participants from the semi-private housing developers and the Ministry suggested that the high land price issue could be overcome by using underutilized state-owned company land or land banking. Land could also be rented from private concerns to reduce the sales price, as buying land is more expensive. The best scheme would be to have a long lease, which would provide tenants with the desired walkable neighborhoods and affordable housing. Walkable refers to neighborhoods in which the land use is pedestrian-oriented and there is good access to services and transport (Talen, 2013). As transportation sector land is state-owned, the housing developer would pay an annual land rental fee, which again would be much cheaper than buying the land, which would allow a greater number of subsidized units to be built.

“As the housing price (rent or buy) is very crucial to tenants, especially the low-income community, the housing price could not [be] determined [as] high. If the government intended to reduce low-income community’s transportation costs, government initiated to provide public housing close to their workplace, the government should consider utilising the land banking or government’s asset land” (R8).

The mixed-income housing project is planned to be built over the government or the state-owned company’s land. The land owned by the government or state-owned company, has use rights or management rights. State owned company has management rights, which is legalized into use rights for a period of no longer than 30 years and can be extended by a period not longer than 20 years. (Government of Indonesian regulation no 40/1996). In this scheme, long lease land rental should set out the rule of rights of land.

#### ***4.2. Design and Construction***

Interviewees from the government noted that public rental housing building is typically designed by government, the construction being provided by the Ministry of Public Works and Public Housing, with local government being allowed to propose their particular need for public housing. In order to reduce rent price, the building should be constructed on local government legal asset land. Local government would manage the building after the construction and the handover process, including selection of tenants, operation, and maintenance activities, rent determination and financial management.

Meanwhile, related to design, the building is designed to minimise operation costs, as it is allocated to a low-income community, and the rent price cannot be high. The interviewees explained that the maximum number of floors should be built to minimise operation costs.

“The maximum floor of the building is five floors, as if the building has more than five floors, government should provide lifts, which is very expensive, both in construction and operation stage. Government defines that affordable public rental housing is the building with five floors, dedicated to low-income communities. As defined as affordable housing, this building with a maximum provision of five floors is eligible to achieve government subsidy in the form of infrastructure, facilities, and public utilities” (R4).

### ***4.3. Housing financing***

As public housing is dedicated to low-income communities, participants in the semi-structured interviews claimed that housing financing is the key factor in public housing development and that due to home buyers’ limited affordability, subsidies and housing prices are two crucial factors. According to public housing provider’s survey, as public rental housing tenants’ affordability was limited, the government needed to provide subsidies in different ways to low-income tenants who earn less than the regional minimum wage. The local government subsidised building operations and maintenance costs, and public ownership housing was allocated to moderate-income buyers. Interviewees from government ministries highlighted the two issues of government subsidy and targeted public housing buyers or tenants.

“The target market for this project is private employees, government officers, and young executives, which are first homebuyers (have never owned a house before). Employees with an income [of] less than seven million Rupiah per month can afford to buy two-bedroom units for 250 million Rupiah per unit. Low-cost apartments are often called subsidised apartments” (R12).

In response of the government policy, respondents in the semi-private sector commented on price capping by government:

“The proportion of subsidised and non-subsidised units should be determined proportionally and enable the semi-private developer to make a profit” (R11).

This is because the government should ensure the project viability. Mixed-income housing developments rely on project viability; either the rent or the sales price should be affordable for low-income communities. However, the project needs to be attractive to the private sector to encourage them to invest in housing development (Rachmawati, Susilawati and Goonetilleke, 2018). As the price should not exceed affordability, that is, 30% of household income, the number of and price of subsidised units and market-rate units need to be proportionally estimated.

### ***4.4. Mixed-income housing scheme***

Government of Indonesian Regulation no 20/2011 regulated mixed housing projects by requiring developers to set aside 20% of all land for low-cost housing. However, many government agencies have adopted mixed-income housing as a planning strategy without

carefully examining or even defining what mixed-income housing was, its characteristics or the ways in which mixed-income projects can differ from one another.

#### 4. 4. 1. Mixed-income housing

Mixed-income housing is a planned program to construct and/or own a multifamily development that has a mix of income groups as the fundamental part of its financial and operational plans. Mixed-income housing typically brings low-income families and higher-income households together within the same site, with the primary intention being to encourage resident social interactions through spatial proximity.

In Indonesia, mixed-income housing is occupied by both lower and middle-income communities, with subsidised prices being available for the lower income groups and market-rate prices for middle income groups. Mixed-income housing is also classified by the different subsidies available to reduce the rent/sales price for the low- and moderate-income families. The revenue from the sales price and monthly service charges should cover the operating costs, therefore, in order to provide financial assistance to the low-income owners, the government needs to offer subsidies, such as lower unit prices, a down payment subsidy, or lower mortgage interest rates. As the price should not exceed affordability, that is, 30% of household income, the number and price for the subsidized units and market-rate units need to be proportionally estimated.

“If all units are set as subsidised units, the project will not be feasible, it must be mixed use, subsidised and non-subsidised” (R12).

#### 4. 4. 2. Mixed-use: low-cost rental apartment and commercial unit (retail).

The mixed-use building refers to a building that has more than one function, that is, it could be utilized as rental and ownership residential units as well as commercial units such as kiosks, retail stores, or stalls, which could support and increase the tenants' incomes. This scheme is suitable for low-cost apartments for low-income or relocated communities and also provides opportunities for the tenant to be involved. The commercial units rented by commercial individuals or ventures enable cross subsidy programs and increase the revenue of the low-cost apartment operator.

Another mixed-use development is known as a TOD, where the residential units, which are most suitable for low-income communities, are integrated with public facilities such as train stations and other support facilities such as shops. In these cases, the developer or low-cost apartment operator manages both the residential and commercial buildings. The concern is how to create convenient neighborhood, as the building integrates residential unit and retail. Participants from both sectors argued that there would be a potential problem related to noise and gentrification. In order to reduce gentrification problem between upscale and lower class, it needs to create and protect public spaces, which can create public spaces interact socially and accommodate the needs of the informal sector.

#### 4. 4. 3. Mixed tenure

Mixed tenure means that the project has a mix of rental and owned apartments. Previous studies have found that tenure mixes had little any effect on the problems and/or benefits and had only

a slight impact on resident neighborhood satisfaction. The different tenures can be in the same building or in different buildings in the same area (neighborhood). Similar to the other schemes, it also involves a cross subsidy program to reduce the government subsidies.

However, none of those schemes apply if the low-cost apartment is constructed by the government on government land as it is then classified as a government asset that cannot be owned by individuals. The Indonesian Minister of Home Affairs Regulation no 19/2016 stated that these types of low-cost apartments were classified as government assets; therefore, while these apartments can be rented, the rent determination needs to consider the renter's ability and willingness to pay (ATP/WTP). Regulation 19/2016 also stated that the land and building values should be a factor in the rent determination, which is why mixed-tenure housing is difficult.

“Mixed housing, which is rental and ownership, is impossible. However, if it is required, land could be rented privately to reduce the selling price because land acquisition is more expensive. The most possible scheme would be a long lease (building rights title)” (R3).

#### **4. Discussion**

The recommendations arising from the survey were often focused on changing and/or updating the mixed-income housing procedures and especially on land provision as this affected all other factors from the proportion of subsidized and market-rate units, the suitable construction scheme to be used and overall project viability.

The investigation highlighted two critical reform points. First, there needs to be a greater focus on the provision of land for these types of projects. As government land is only suitable for rental housing, private sector or state-owned company's land under mixed tenure would be the most suitable. However, as the land is included in the housing costs, a land banking mechanism, which is provided by state-owned companies, could reduce the housing prices and increase the proportion of subsidized units. As leasing land is cheaper than land acquisition, long land leases could be arranged and partnerships between governments and state-owned transportation sector companies strengthened to develop walkable mixed-income housing neighborhoods.

Building and land use regulation reforms are needed for mixed-use housing projects that allow for mixed-use building developments that include commercial spaces to support cross subsidies where the tenants or others could run businesses. Therefore, the revenue and profits from the commercial spaces would *cross-subsidize* the costs of the subsidized units. While some government subsidies would be made available for the operation and maintenance expenses for the low-cost rental apartments (Rachmawati et al, 2018), as these would not cover all operating costs (Bratt, 2019), the cross subsidy is needed.

Second, as mentioned, land costs influence project viability, which depends on tenure and location. Mixed-income and mixed-use could be applied by determining the subsidized unit and market-rate unit proportions, which means that the revenue needs to be able to cover the operating costs. The lower the land costs, the greater the number of subsidized units that could be provided. Government land banking strategy is needed and land use policy in the form of TOD could be applied using land rental mechanism. Policies could be developed to regulate the proportion of commercial spaces and subsidized units as well as the building layout to maintain resident privacy from the commercial spaces.

## 5. Conclusion

This study examined the development of mixed-income housing in Indonesia to ensure the availability of low-cost apartment low- and middle-income community. It was found that some changes in financial and asset regulations are needed if mixed-income housing were the project design choice. To lower housing prices, land prices could be minimized by leasing state-owned company land, implementing mixed tenures, and reforming the current reforms to support mixed-use housing developments. The findings in this study could be adapted and applied to public low-cost rental and ownership apartment developments in developing countries in which has problem related to land provision for housing.

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