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Co-housing as a Sustainable Architecture to Support the City's Particular Community

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Abstract. This paper discusses co-housing and its role as sustainable architecture to support various aspects of the life of communities and the environment. This research is important because the potential of co-housing settlements to improve the social and mental well-being of their residents has not been widely discussed. In addition, housing that uses sustainable technology tends to be very expensive, which, in the end, makes it more difficult for cultural communities to access settlements. For this reason, this study aims to demonstrate how the co-housing concept can address the issues mentioned earlier. To achieve this, a qualitative approach is employed, with the Miss Tjitjih (MT) community selected as the case study. The MT community was chosen because it has been living in co-housing concept housing for more than four decades. Open-ended questions were given to reveal opinions from the participant's side. The answers from the participants are then analyzed with the help of Nvivo. The results of the analysis are then grouped to obtain a code that explains the role of co-housing for this community. The resulting diagram reveals the role of co-housing as a settlement model that can answer various problems of cultural communities in the city.

Keywords: Co-housing; Cultural community; Sustainable architecture

1. Introduction

The challenges that cultural communities have while trying to find accommodation in big cities are complex and intricately linked to political, socioeconomic, and cultural elements (Hunter *et al*., 2022). These difficulties are made worse by the dynamics of immigration, housing market circumstances, and urban planning regulations (Ahrens and Lyons, 2021). The growing cost of housing in urban regions, which disproportionately impacts minority groups, is one of the main obstacles (Lichter, Parisi, and Taquino, 2015). Furthermore, the issue of job-housing separation makes cultural communities' housing problems worse (Lu and Peng, 2020). Their study highlights how the spatial dynamics of cities can create a disconnect between affordable housing availability and job opportunities (Lu and Peng, 2020). Moreover, urban planning regulations in many cities often fail to address the specific needs of cultural communities, such as their subjectivity and values

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(Alfian, Setyabudi, and Santoso, 2022). According to Stepanova and Romanov (2021), social inclusion and a decrease in housing segregation are crucial elements of successful urban development (Stepanova and Romanov, 2021). Furthermore, social networks and community relationships frequently influence how cultural communities navigate the property market (Painter and Yu, 2010).

Meanwhile, housing acquisition concerns are complex and frequently overlap with social, cultural, and environmental issues (Ruíz and Mack-Vergara, 2023). This is especially true when it comes to sustainability. The study emphasizes that both the short-term demands of occupants and the long-term sustainability of the environment must be taken into consideration when designing sufficient housing, and it suggests that many existing housing models fall short in these respects (Ruíz and Mack-Vergara, 2023). Those who have a misconception that sustainable housing is more expensive may be discouraged from choosing environmentally friendly solutions (Miller and Buys, 2013). Because many prospective homeowners emphasize price over sustainability, this view makes the shift to sustainable living more difficult (Miller and Buys, 2013). This highlights the challenges of integrating sustainability into housing construction while addressing the diverse needs of local communities (Gkartzios and Scott, 2014).

1.1. Co-housing as a dwelling paradigm

In contrast, co-housing is a new housing concept that combines individual homes with shared amenities and common areas to promote a feeling of community among the occupants (Hammond, 2018). This concept has been popular because of the growing individuality and isolation that characterize modern metropolitan living in Europe, North America, and Australia, among other places (Riccò, Anleu-Hernández, and de-Stefani 2024; Czischke, Carriou, and Lang, 2020). Co-housing is a concept that emphasizes sustainable living practices, collaborative design, and group living, all of which work together to create an environment that is more socially cohesive (Riccò, Anleu-Hernández, and de-Stefani 2024; Czischke, Carriou, and Lang, 2020).

The participatory development process of co-housing, which incorporates inhabitants into the planning and design of their communities, is one of its fundamental features (Hammond, 2018). In addition to empowering locals, this participatory strategy ensures that the community represents their common needs and beliefs (Hubeladze, 2023). A non-hierarchical structure, common amenities, resident management, a shared economy, a neighborhood design that promotes interaction, and a participatory planning process are the six characteristics that define co-housing (Sanguinetti, 2014). Shared spaces like common eating rooms, gardens, and workshops are frequently incorporated into the design of co-housing communities as a means of fostering social interaction (Yahia *et al.,* 2023). These common areas are essential for building interactions among residents, which strengthens their feeling of community and belonging. According to research, having shared amenities may greatly enhance social integration and community involvement (Yahia et al., 2023). Additionally, sustainability is frequently given top priority in the construction of these communities; to reduce their negative environmental effects, many co-housing projects use eco-friendly methods and materials (Omole and Olatunde, 2024).

Co-housing also tackles a range of social concerns, with a focus on the difficulties encountered by disadvantaged groups such as elderly people, low-income households, and single-parent families (Bigonnesse *et al.,* 2023). According to studies, co-housing may give these groups a supportive environment by giving them access to inexpensive housing alternatives as well as a social support system that can lessen feelings of loneliness and

isolation (Choi, 2013). The multigenerational nature of many co-housing communities enriches the social fabric by fostering relationships across generations, benefiting individuals of all age group (Bigonnesse *et al.,* 2023). Apart from its advantages for society, co-housing has been acknowledged for its capacity to encourage eco-friendly lifestyle choices (Wang and Hadjri, 2017). Residents can lessen their own consumption and environmental impact by pooling resources and facilities (Wang and Hadjri, 2017). Studies have demonstrated that, in comparison to conventional housing arrangements, co-housing communities frequently display better levels of environmental awareness and pro-environmental actions (Wang and Hadjri, 2017).

To sum up, co-housing is a viable substitute for traditional housing models as it provides a mix of private and communal living that encourages sustainability, community resilience, and social engagement (Tummers, 2016). Its emphasis on shared resources and participatory character makes it a desirable choice for anyone looking for a more supportive and connected living environment (Tummers, 2016). Co-housing participants are often actively involved in decision-making processes, which has been associated with increased civic engagement and political participation (Berggren, 2017).

However, there is a big amount of unknown on how co-housing may affect inhabitants' mental health and general well-being in the long run. Co-housing can reduce loneliness and promote social ties, according to research that has been done; nevertheless, it is unclear how these relationships work in detail and how they change over time. Regarding the long-term effects of co-housing on residents' mental health and well-being, this is one major area of doubt (Rusinovic, van-Bochove, and van-de-Sande, 2019).

How co-housing addresses the issues of sustainability for both the environment and the people is another crucial component that is still little understood (Ruiu, 2016; Jarvis, 2011). This gap in knowledge also extends to the physical layout of co-housing communities. While the social aspects of co-housing are well-documented in the literature, the impact of specific architectural features on residents' interactions and behaviors remains insufficiently studied. Although the physical arrangement is frequently considered in terms of striking a balance between privacy and community, little research has been done on the specific impact of different architectural features on social cohesiveness and individual well-being (Beck, 2020).

Furthermore, there is much more to learn about the economic viability of co-housing models (Tummers, 2016). Although co-housing is frequently promoted as a cheap housing option, little is known about these communities' long-term financial sustainability. Although many co-housing projects highlight vibrant, varied communities, there isn't enough data to support assertions about their affordability and long-term viability (Tummers, 2016). Another area of great ignorance is the function of governance and decision-making procedures in co-housing communities. While self-governance and democratic decision-making are emphasized in many co-housing schemes, there is a lack of comprehensive documentation of the problems and efficacy of these procedures. Boonstra (2016) talks about the self-management and autonomy components of co-housing, but there isn't much empirical data on how these dynamics work in real-world situations (Boonstra, 2016).

In summary, while co-housing provides a promising alternative to traditional housing models, many questions remain unanswered. These include the impact of design on community dynamics, the long-term effects on mental health, and environmental sustainability.

1.2. Sustainable Architecture for Community and Environment

Meanwhile, sustainable architecture is a developing discipline that aims to reduce a building's negative environmental effects while advancing social justice and financial sustainability (Ceylan and Soygeniş, 2019). Making effective use of resources and energy is one of the core tenets of sustainable architecture (Ceylan and Soygeniş, 2019). For example, using high-performance insulation, natural ventilation, and passive solar design can result in significant energy savings during a building's life cycle (Umar *et al.,* 2020). Additionally, using sustainable resources is in line with the ideas of reducing waste production and resource depletion. Examples of these materials are bamboo, reused wood, and recycled metals (Umar *et al.,* 2020). The social and cultural aspects of design are also taken into account in sustainable architecture. As previously said, to ensure that buildings are not only environmentally friendly but also socially and culturally appropriate, sustainable design must take into account local demographic characteristics and cultural settings (Umar *et al.,* 2020). For instance, including communal areas in residential complexes can promote social contact and togetherness, enhancing inhabitants' general well-being (Masoyi, Babayo, and Jalam, 2023).

Sustainable architecture incorporates ecological design ideas that are derived from both conventional and vernacular construction techniques. Often, ecological solutions that have been improved over centuries are embodied in traditional buildings (Gündoğdu and Birer, 2021). Sustainable design is becoming increasingly popular, but there are still several barriers preventing it from being widely used. For example, developers and clients may be discouraged from adopting sustainable construction materials and technology due to their initial price (Marques and Loureiro, 2013). Furthermore, a lack of agreed-upon criteria and indicators for sustainability in design can cause misunderstandings and inconsistent application (Bozkurt, 2016).

Lastly, designers and architects face a problem due to sustainability's dynamic nature. Shifting societal values and emerging environmental concerns can reshape the concept of sustainable design. Guy (2001) talks about the conflicting ideas around ecological design and the need for a more sophisticated definition of sustainability in the built environment (Guy, 2001). This implies that to modify architectural techniques to address new sustainability issues, continuous discussion and introspection are required. Sustainability itself is understood as the ability to meet present needs without compromising the ability of future generations to meet their own needs, as stated by The Brundtland Report in 1987 (Arifin *et al.,* 2024).

In conclusion, there are still a lot of unanswered questions on the subject of sustainable architecture despite its established status. These uncertainties include those about tenant behavior, cultural surroundings, and the dynamic nature of sustainability itself. For sustainable design to advance and be relevant in tackling today's environmental and social concerns, filling up these gaps will require focused study and multidisciplinary collaboration.

The need for this research is critical as urban communities struggle to locate housing that will preserve their way of life and the sustainability of culture. The development of a settlement design that can help the community survive while promoting environmental sustainability is not fully supported by the government. The purpose of this study is to investigate co-housing and its role in supporting various aspects of the life of communities and the environment.

2. Methods

This study employs a qualitative paradigm and a case study methodology (Figure 1) (Creswell, 2007). The Miss Tjitjih (MT) cultural group has been selected as the case study. Miss Tjitjih is the name of a community and, at the same time, a cultural group that has been living in Jakarta for four decades. The qualitative strategy was adopted to highlight the thoughts and feelings of MT members on the settlements that the government had made available to them (Agustini *et al.,* 2023). Nothing at the research location is changed or interfered with by this method (Ndwandwe, 2024). This attempts to obtain the actual information at the site free from outside influence or encroachment (Ndwandwe, 2024). There is no inter-variable testing done because this is qualitative research (Creswell, 2007). According to Grundstrom's research, participants in this study were questioned about their life histories, issues, and challenges, as well as the advantages they enjoyed every day at the site (Grundström, 2022).

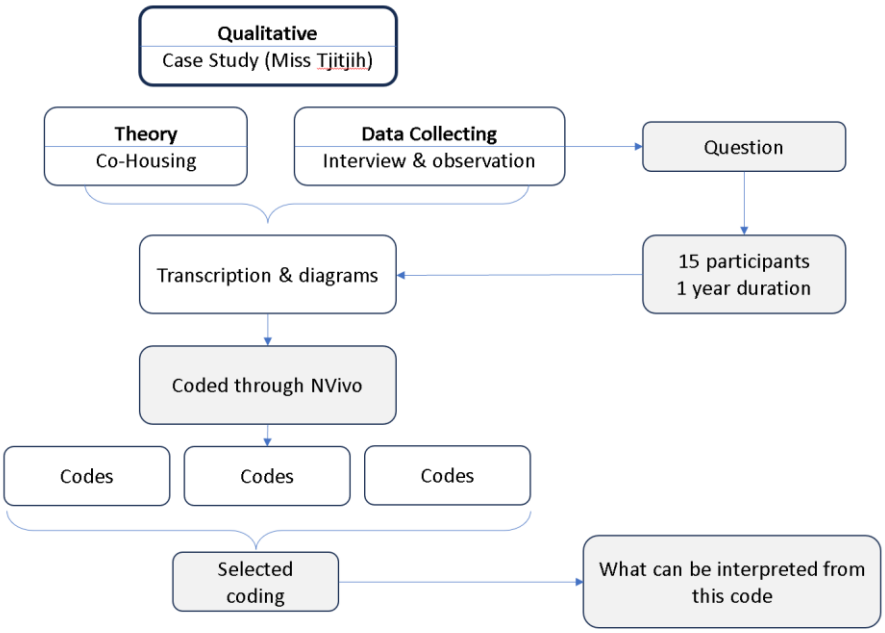

Figure 1 Research Framework

The MT cultural groups that live in cities tend to have difficulty maintaining their lives. Especially because they have to be connected to various life support systems, which are unfortunately difficult to reach without government assistance. The government itself is aware of this, so it provides a co-housing settlement to answer the needs of the community (Figure 2). Unfortunately, the Co-housing settlement model provided does not automatically support the sustainability of the community or the environment. For this reason, this study aims to investigate a kind of sustainable architecture that can support both cultural communities and the environment. The problem is that the right form of sustainable architecture for the community is not yet known. The question is what and how to provide the right sustainable architecture to support the existence of communities and the environment.

According to Wang, Berggren, Tummers, and Choi, the Co-housing model can provide better civic engagement, support system, and environment awareness (Wang and Hadjri, 2017; Berggren, 2017; Tummers, 2016; Choi, 2013). Through this model, they show that patrons have a role in opening MT's access to the support system. Unfortunately, it is not yet

known how this model is manifested architecturally, especially for the MT community.

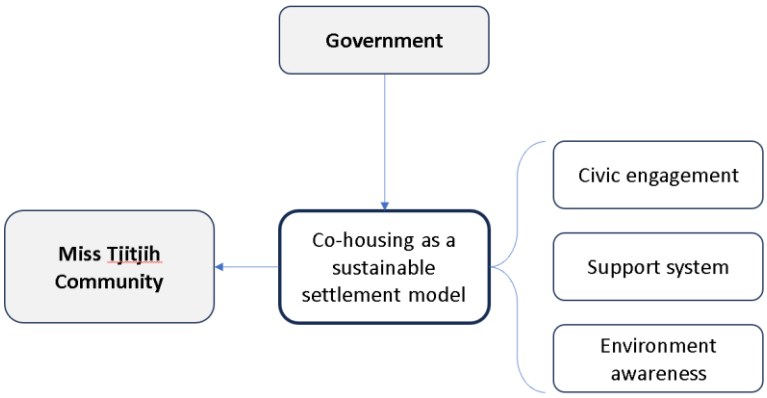

Figure 2 Co-housing Settlement Model Provided by Government Referring to Wang *et al.* (2017)

This particular cultural group was selected as a case study because its members have lived there for a long period. In the meantime, a year of observation and data collecting took place at the site. An initial interview with the gatekeeper was done earlier to gain an overview of the site and the participants. Even though each interviewee had previously given their informed consent, all interviews were carried out anonymously to protect their privacy.

Open-ended questions were employed during the interview procedure to collect the data for this investigation (Charmaz, 2006). The question asked was, what and how do you think the housing you live in supports your life? Fifteen participants were chosen to respond to these inquiries. Residents of the MT complex who have lived there for 40 years make up the selected participants. This was done to enable participants to respond in-depth to the questions posed (Charmaz, 2006). To supplement the responses provided by the participants, field conditions were also observed and recorded (Creswell, 2007). Before beginning the interview procedure, each participant in this study gave their informed permission (Creswell, 2007). Additionally, permission to do research was acquired from administrators of the MT community and the government. Nvivo was then used to examine the data that had been gathered. This software provides different codes (particular answers), which are compared to field condition records. The code itself is a word or phrase that represents the opinion or view of each participant (Charmaz, 2006). Each participant's view of their residence is assigned a code that describes the situation, views, habits, actions, and use of space in the residence they occupy (Charmaz, 2006). All the codes produced are then sorted and grouped into several main codes that truly represent the views of the participants and describe the situation in the MT group settlement (Charmaz, 2006). After that, the dataset is sorted to respond to the queries posed (Charmaz, 2006).

3. Results and Discussion

Before beginning the discussion, it is important to first understand the parameters of sustainability, the environment, and the community. Sustainability encompasses several key aspects, including the environmental, social, and economic dimensions (Goyal anad Dangwal, 2022; Sulewski and Kłoczko-Gajewska, 2018). Meanwhile, environmental parameters can be categorized into several fields, such as ecological integrity, Resource management, Pollution control, and social dimensions (Junita *et al.*, 2023; Mourad *et al.*, 2023; Wu, Font, and Liu, 2020). Next are the parameters related to the community which

include: Social Cohesion and Community Engagement, Access to Basic Services, Economic Sustainability, Cultural Competence and Diversity, Health and Well-being (Nesterova, Portera, and Milani, 2022; Voznyak, Стасишин, and Коваль, 2022; Simangolwa, 2019). By understanding and addressing these parameters, stakeholders can work towards fostering sustainable communities that promote sustainable development across various contexts.

Table 1 Parameters of Sustainable, Environment, and Community Refering to (Junita *et al*, 2023; Goyal and Dangwal, 2022; Nesterova *et al.*, 2022)

No	Sustainable parameters	Environment parameters	Community parameters
1	Environment	Ecological integrity	Social cohesion & community engagement
2	Social	Resource management	Access to basic services
3	Economic	Pollution control	Economic sustainability
4		Social dimensions	Cultural Competence & Diversity
5			Healt & well-being

3.1. Co-housing Settlement Model: The value of togetherness

A few of the codes the participants disclosed talked about how much they enjoyed living in government care. These selected codes are: Glad to be a part of the community, Content to be a member of the community, Thankful for my home, I feel valued, and Life is simple (Figure 3). Figure 3 is a cohousing diagram as a settlement model that can support various aspects of community life and, at the same time, the environment. The model is equipped with various architectural features as an embodiment of the various codes expressed by the participants. Government support in the form of a support system for the community translates into various architectural features that support community life in the location. This model is expected to be an example for various other communities that also live in the city.

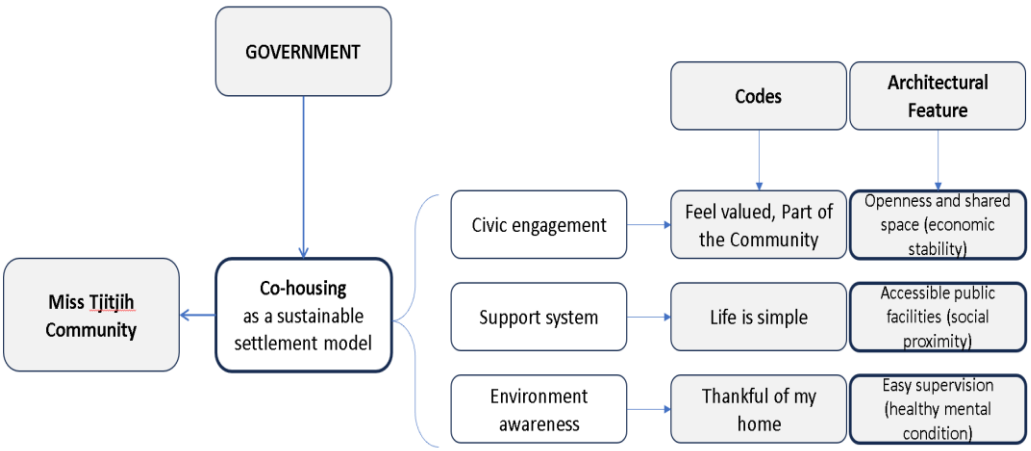

Figure 3 Codes and Architectural Features of Co-housing Settlement Model

All of these selected codes are then compared with various mapping diagrams of activities at the site. It was found that the various codes that the participants expressed manifested into various architectural features. However, it can be seen that these various features are in accordance with the various co-housing settlement supports that the government originally intended. Through this Co-housing concept settlement, the participants demonstrated their ability to maintain their community. Not only the continuity of their existence but also the continuity of the environment.

In general, co-housing concept housing—which proves to be able to offer welfare for the community as a whole—is provided by the government, acting as the community's defender. In addition to offering a place to live, this housing design also helps inhabitants' mental health in several ways. This concept prioritizes social proximity, healthy mental conditions, economic stability, and clean water resources (a fundamental right that every person has) (Whulanza *et al.,* 2024). This is in accordance with the community parameter as mentioned earlier. In certain respects, the MT community's access to different municipal facilities has been facilitated by government care. Because of this residential idea, the MT community is now one that not only endures as a community but also makes a larger contribution to a sustainable environment. It is evident that sustainable practices need to be considered at both the individual and institutional levels (Hossain *et al.,* 2022).

3.2. Discussion

Living in co-housing has several benefits, one of which is the upkeep of inhabitants' mental health. According to some of the participant codes or explanations, there is a strong sense of camaraderie among the residents. Any problem an individual encounters is often resolved collectively. While not all challenges can be solved, members' camaraderie and support can help those who are struggling to feel less alone. The common room in the center of the house is where the problems are frequently discussed. Many people congregate here each night to share ideas or discuss issues. Here are the conversations and ideas that can lead to solutions for the issues raised. In this instance, the co-housing model has provided a community area that may strengthen bonds among all residents (Figure 4). The common space positioned in the middle of the residential unit has open parts at both ends. This causes the space to remain cool and bright so that it does not require any additions or modifications. Architecturally, the available features can support the mental well-being of these community members. The open space design provides an opportunity for its users to feel free and think freely. This openness feature provides an opportunity for residents to share with each other, get closer, and support each other.

"I am happy to live in this complex because there is closeness between the members. I don't feel alone when I have a problem because other members can give advice or help."
"I just told the neighbor about my problem, and then he immediately helped."
"I'm happy to stay here because it's like a big family."
"We've been together for a long time, so it's like family. We help each other if anyone is in trouble."
"I love living in this community because I feel cared for by the government."

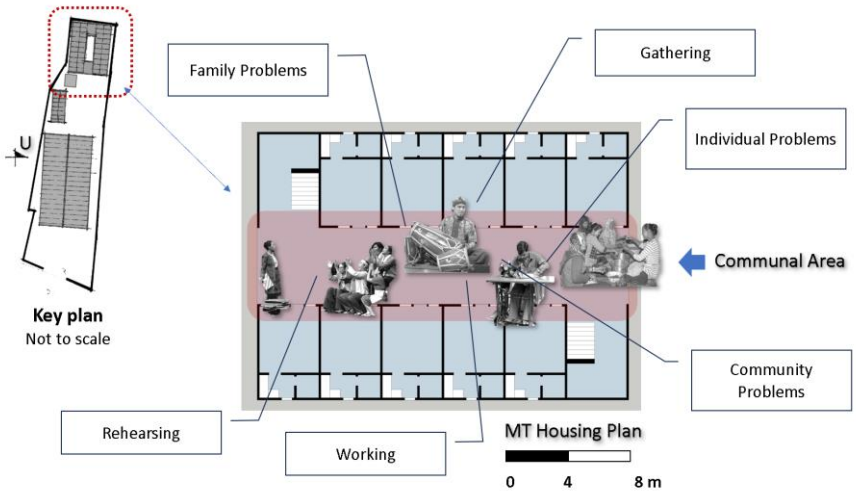

Figure 4 Communal Area in Co-housing Settlement

Not only does the community still exist today, but the closeness among its members dates back to the 1960s when it first settled in Kramat. Due to their strong connection, the group's members consistently share a variety of personal interests and challenges. Every member typically has knowledge of and empathy for the struggles faced by other members. Every member typically has a willingness to assist and resolve other members' issues. Because they know they will receive assistance from other members, the feeling of togetherness has allowed community members to live in better mental health. Because co-housing has been practiced for decades, the description above demonstrates how much it helps the sustainability of communities and groups.

Residing in a co-housing concept has several benefits, one of which is that all issues are shared. The issue at hand affects not just each member personally but also the community as a whole. Using electricity or meeting the demand for clean water are two examples. This community has its own house of worship (musholla) since it is in a compound that is often walled off from the outside world. Of course, this house of worship needs power and clean water, and those things must be provided simultaneously. Thus, the community makes monthly payments for power collectively. This makes it easy for someone struggling to access clean water in their apartment building to use the clean water provided by the shared musholla. One instance is when members of the organization bathe or do another activity using the clean water provided in this musholla. Furthermore, because it sits next to the communal home, everyone in the neighborhood can readily watch over this musholla (Figure 5).

Placing shared facilities in an area that is easily accessible and supervised by all residential units, is an important architectural feature of Co-housing. Togetherness is something that the MT community always emphasizes in every aspect of their lives. In addition, the maintenance and use of resources can be controlled. In the end, savings are the result of this. The MT group, which in their daily lives often use shared facilities, in many ways also contributes to spending funds and energy to maintain these facilities. With this togetherness, community life becomes easier and cheaper.

"I always take clean water from the Musholla when the clean water in my unit is in trouble."
"I use the bathroom in the Musholla if the one in my house is broken."
"We are happy that there is a Musholla in our complex. If there is anything with the bathroom, we just take clean water there."
"We bear the electricity needs for the musholla together. There is a contribution that we deposit to the Community Head."

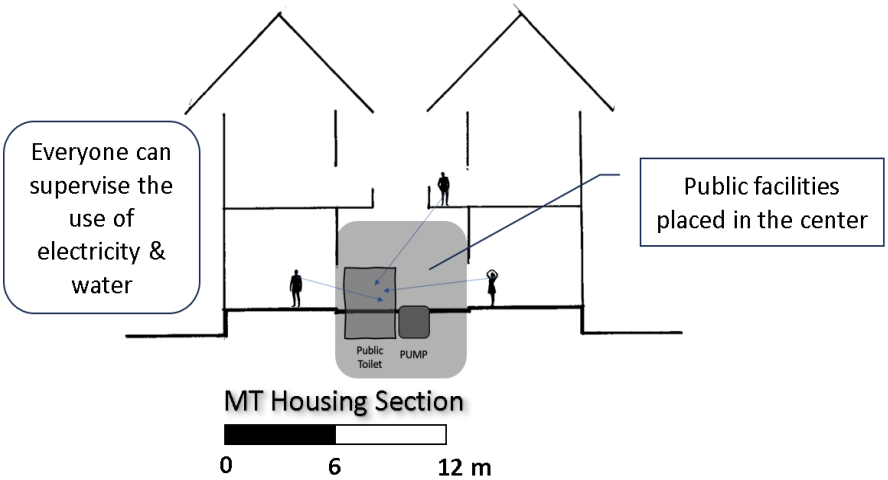

Figure 5 Supervision and maintenance of shared facilities

The aforementioned illustrates how co-housing homes may strengthen ties between residents by encouraging them to collaborate to satisfy one another's needs. It also describes how, by solving the issues together, this residential design stresses environmental sustainability and the community. It is not necessary to fix each issue separately, as this may contribute to environmental degradation. Naturally, the community's shared amenities may be used to restrain and regulate energy use. To ensure the continuity of the shared facility, each member is responsible for maintaining its excellent shape.

The shared common area is one of the key features of co-housing architecture. Anyone is welcome to utilize this multipurpose common area. The fact that locals commonly gather and socialize here is a benefit. Being a local traditional theater community, the MT Community is required to practice presenting shows daily. Group members may readily get together because they are living together in this co-housing dwelling. Every member uses the common space for practice sessions and rehearsals. Since this common area is visible from every residential unit door, no member may avoid this duty. There is no excuse for members to neglect their duties.

Additionally, this common area is used by the community members as a workspace for their individual projects. This represents yet another benefit of co-housing. The fact that the inhabitants interact with one another frequently fosters kinship and closeness. As a result, neighbors' personal space borders grow hazier, making it simple for neighbors to visit one another's homes without reluctance (Figure 6). However, this appears to run a little counter to the findings of Octavia *et al.* (2024), who claimed that the surroundings and the inhabitant's everyday routines promote personal space (Octavia *et al.*, 2024).

> *"If I need something, I just go to my colleague's house in front or on the side."*
> *"We trust each other because we already consider ourselves as a big family living in one house."*
> *"If any colleague asks for something, we immediately welcome him/her to take it by him/herself."*

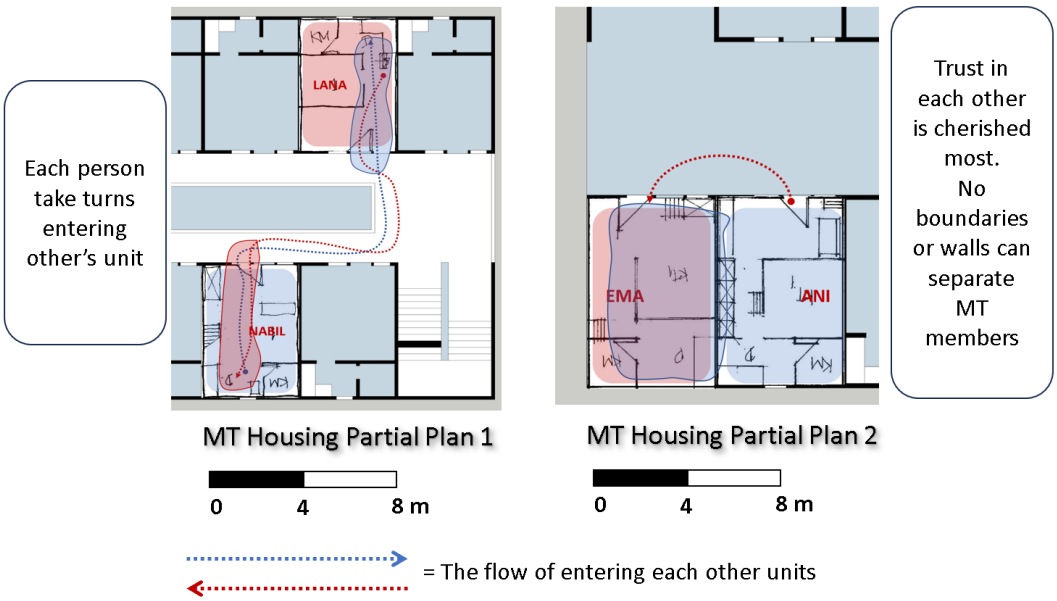

Figure 6 Room occupancy diagram based on the close relationship between neighbors

Kinship and closeness among residents are benefits of co-housing. This sense of community also positively impacts the financial situation of its members. As previously

said, homeowners who are having problems may readily receive assistance from their neighbors and coworkers. Financial hardships are not unique. Because of their closeness, members share duties and tasks. For instance, many people are involved in the work when a community member is hired to work on a project. Naturally, the revenue received will be allocated evenly based on each employee's contribution to the project. This indicates that the dwelling is financially sustainable. The residents are like a large family that supports one another because of their proximity to one another. Not only a little help, but also help finding employment and a source of income.

"I'm happy to stay here because it's more secure."
"I am happy to be under the auspices of the government because it is easier for us to get jobs."
"By living here, I get a lot of opportunities to develop myself and my business."

In a co-housing settlement, there are usually not many units provided. The most typical number of units in co-housing concept housing is twenty. This indicates that inhabitants or other members are close to one another. When it comes to keeping an eye on the surroundings and providing for younger family members, there is no exception. Encouraging one another toward the common area with rows of houses makes oversight simpler. Typically, parents would watch the kids play while doing everyday activities in this common area. Since an older generation is already living in this community, monitoring is given equal attention to both the elderly and the younger generation. It will also be simpler for other members to keep an eye on their kids as well as the kids of their neighbors when the area is set up in the previously mentioned manner. This particular layout of the residential units will also make it easier to supervise the communal area. Every incident will be overseen by other residents who use the common area during shifts, particularly if this apartment building is planned as a multi-story structure, with each level facing the central common area (Figure 7).

"I love living here because I feel cared for by my friends and the environment."
"I feel safe living in this complex because I can easily leave my children to the neighbors, especially if I have needs outside the complex."
"I was born here, grew up here, so I also want to die here. Everything is fun here. I'm proud to be a part of this community."
"It's like people living with the government; everything is guaranteed."
"There is indeed a big limitation of space inside the residential unit, but we can modify it according to needs."
"The point is that we are happy to live here. We don't want to leave this community."

The aforementioned explanation demonstrates how co-housing concept housing may preserve the sustainability of both the environment and the people who live there. Residents have become even closer as a result of this residential design's forced and enabled connection. Though in a very basic sense, resident cooperation has aided in both the sustainability of the environment in which they live and the sustainability of the people themselves.

The government provides for the needs of the MT group. This implies that this group can establish a connection with the government's network of facilities. Although the residential units for this category are relatively tiny, they have easier access to government-owned social and health amenities. Furthermore, this group has easy access to cultural networks that are under government jurisdiction. This implies that this organization has many chances to exhibit their work outside of their local area. As a result, this community has access to a greater variety of networks without having to create them from scratch. This

demonstrates that since the group has joined the government-owned network, sustainability is more assured.

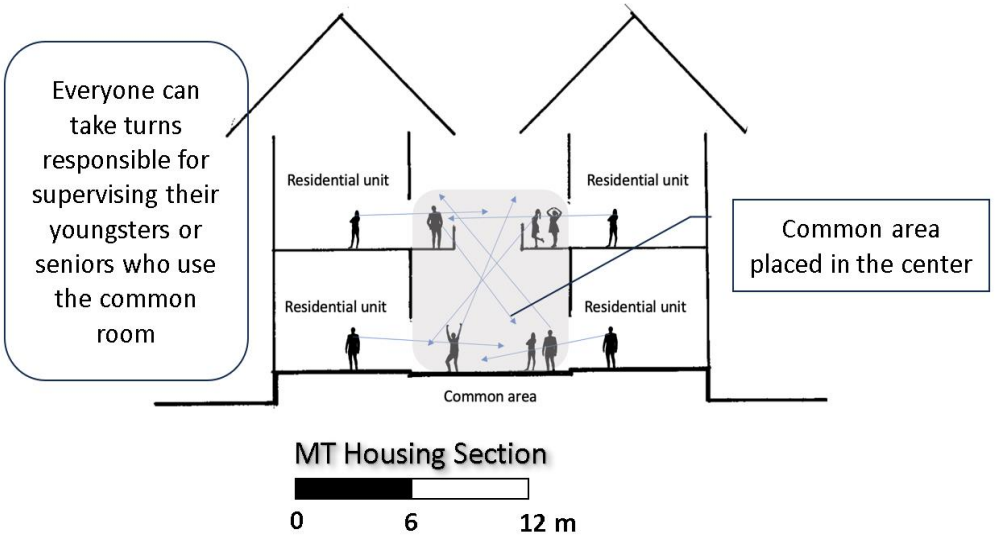

Figure 7 Joint supervision of junior and senior members in the communal area

Because they are connected to government-run facilities for building maintenance, they are also able to readily resolve any issues with residential structures. The government also periodically regulates the complex's maintenance, allowing the community to focus its energies on the duties for which it has assumed responsibility.

> *"Living in this complex is comfortable because we are being noticed by the government. The government will control the complex and buildings periodically and then arrange a repair schedule if there is any damage."*
> *"We only need to think about the cost of our respective electricity and clean water contributions."*
> *"Living with the government, we feel protected and honored."*

The government-provided housing offers certain flexibility, as previously mentioned. Every community member has a unique set of skills. This creates unique demands for each individual or household, particularly if a family has grown and requires additional space. Interestingly, each home in the MT community adapts effectively to these needs despite the limited available space and the challenges of expansion. Vertical space is added and adapted to their demands for work. Although the number of slots can be expanded, the area of the space remains constant. Every residential unit makes different changes based on what it requires (Figure 8). This demonstrates how the co-housing units that this group resides in can adapt to changing requirements without endangering the environment.

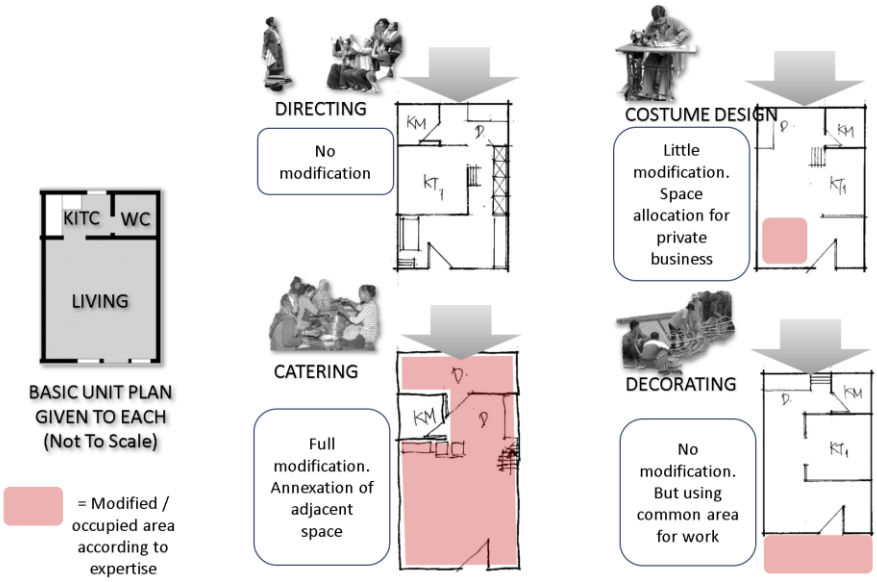

Figure 8 Adaptability (modification) of the unit according to the occupants's expertise

4. Conclusions

The co-housing concept of residential design regulated by the local government has multiple roles that can answer a variety of problems faced by the communities. The multiple roles are (1) providing an opportunity for members of this community to live side by side with their co-members, or in other words, providing a support system. At the same time, (2) it also provides an opportunity to contribute to saving resources through the design of the housing they live in, or in other words, promote environmental awareness. The arrangement of units that are compact and oriented towards a shared space (3) allows each member to supervise one another and stand by to assist each other. This not only (4) strengthens the kinship and bonds between members but also helps each member save on the use of resources in residential complexes. All of these ultimately support the sustainability of life and the carrying capacity of the environment itself. In general, the role of co-housing helps the community in solving various problems, such as (a) the difficulty of getting affordable and qualified housing for the community. (b) The difficulty of saving household expenses. (c) The difficulty of meeting the need for resources, and of course (d) the difficulty of reaching social support systems. That is why this study states that the concept of co-housing is very appropriate for helping low-income people in cities obtain affordable housing while participating in environmental sustainability efforts. One of the key features of co-housing is the common room. In this arrangement, each unit typically requires only a private bedroom, as most activities take place in the shared common room. The common room serves as the heart of the co-housing community. It facilitates resource management by allowing the community to oversee usage collectively. Moreover, it promotes mutual supervision and support among members, fostering a sense of accountability and solidarity. The common room also serves as a gathering place, enhancing social interaction and contributing to the mental well-being of its members. The openness and unifying nature of the common room is the central architectural feature of co-housing. This design is both simple and cost-effective, making it adaptable to a variety of urban communities. Shared spaces not only reduce costs but also optimize available resources, helping diverse communities sustain themselves in urban environments. In that case, this study states two valuable findings from the concept of co-housing applied to a community. The first is the value of togetherness. The second is the openness of space. This openness is

not only in a horizontal scope but also vertically. The main advantage of this feature is the ease with which all residents can interact, communicate, connect, and support each other without having to be in the same space. This rapid communication allows residents to maximize not only the use of space, but also the sustainability aspect. In the end, this study also wants to propose the importance of the concept of cohousing as an answer for various communities living in cities. Not only does it provide access to basic needs as well as mental and physical health, but also the opportunity to participate in environmental sustainability efforts. This research contributes to the development of co-housing concept housing that has been present for a long time. This research wants to open a broader discourse on the potential of co-housing in the social aspects and mental well-being of its residents, which has been under-discussed so far. This research also wants to open a discourse on the potential of co-housing concept housing to answer the needs of marginalized communities present in the city. This research also initiates a more comprehensive discussion on co-housing's potential as a settlement model that may prioritize sustainability initiatives cost-effectively and straightforwardly

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