
FLAT HOUSING ON THE BANK OF THE YOGYAKARTA CODE RIVER WITH THE PRINCIPLE OF CO-HOUSING

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Keywords

Flats; shared housing;
environmental
degradation

Abstract

Settlements on the banks of the Code River in Yogyakarta are facing challenge big consequence urbanization, which causes improvement density population, degradation environment, and limitations land. Condition This influence quality life public local, especially in aspect social, economic, and ecological. Research This aiming For explore potential implementation the principle of co-housing as solution For increase quality housing and environment in the area Code Riverbank. The research method used is approach descriptive qualitative with studies case in the RT 51 RW 13 area of Jogoyudan Village, Yogyakarta. Data collection was carried out through observation field, interview in-depth, study literature, and analysis spatial. Data is analyzed use approach descriptive, SWOT, and analysis content For identify potential as well as challenge implementation of co-housing. Research result show that the principle of co-housing is able give solution effective to problem area, such as efficiency use space, upgrade interaction social through room communal, and implementation friendly design environment. Support regulation local, such as Yogyakarta City Regional Regulation Number 1 of 2015 and the Regulation Government Regulation No. 13 of 2021, becomes framework important For support sustainability co-housing implementation. Implications study This show that implementation of co-housing in the area bank river can increase quality life public through approach integrative that combines need social, economic, and ecological. Research This give contribution practical for planning settlement sustainable in the region urban with density resident tall.

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INTRODUCTION

The settlements on the banks of the Code River in Yogyakarta reflect challenge big in face urbanization, density population, and threats environment. This area become symbol complexity the city that continues developing, but Still keep problems related quality life its inhabitants. According to Suhaeni (2011), density high population influence ability adaptation community in the environment housing area dense, including in this area. Conditions This exacerbated by spatial planning patterns that are not planned, as emphasized in Regulation Government Regulation No. 38 of 2011 concerning Rivers, which highlights importance management area around river in a way sustainable.

Globally, urbanization has bring challenge big to sustainability environment, especially in riverbank areas river. Degradation environment consequence growth population and activities urban become attention main, as expressed by Capps et al. (2016) in studies they

Doi: 10.58344/jii.v4i1.6224

about flow urban areas in developing countries. In the context of This, Yogyakarta is facing challenge similar with cities big others, namely balancing need residence with preservation environment. The concept of co-housing is one of the relevant approach in answer challenge This, as expressed by Tummers (2015), is because draft This integrate need social, economic and ecological in planning residence.

Study This own high urgency remember rapid degradation environment and needs urge will residence worthy on the banks of the Code River. Maryono (2014) said that management area border river need an integral approach that includes aspect regulation, spatial planning, and engineering. In addition, the approach architecture based on community as proposed by Hidayatun et al. (2014) can become solution in create friendly housing environment and appropriate need public local. The importance of supporting regulations, as stated in Yogyakarta City Regional Regulation Number 1 of 2015, becomes framework the law that must be obeyed For reach objective the.

Various studies previously has highlight importance approach holistic in management settlements in the area bank river. Suhaeni (2010) identified typology area housing area with density resident high and give recommendation relevant handling. While that, Seftyono (2012) in his study about Code River highlights How draft sustainability can integrated in governance society. More Far again, Purwanto et al. (2012) showed How pattern room communal in flats can create a more environment inclusive and sustainable.

In addition, Roberts and Sukes (2008) in book they about regeneration urban highlight importance approach multidimensional in planning repeat area settlements. Principles This in line with findings of Ragheb et al. (2015) which stated that architecture green is element key in create environment sustainable housing.

Study This offer Updates with integrate co-housing concept in management settlement bank river, which has not Lots explored in Yogyakarta context. Isaka (2020) in his studies regarding co-housing on the banks Yogyakarta City river shows that approach This own potential big For increase quality life society, especially through strengthening aspect social and economic. However, the implementation draft This need adjustment with characteristics local, as highlighted by Wulandari (2011) and Kusuma (2008) in study they related flexibility design residential area the.

Study This aiming For Analyze condition existing settlements on the banks of the Code River, Yogyakarta. Identifying potential and challenges in implementation co-housing concept in the area Formulate design strategies and policies that support management area bank river in a way sustainable. With use framework theoretically compiled based on review library and empirical data support, research This expected can give contribution real in increase quality housing and environment on the banks of the Code River.

Framework reference study This involving contribution from various sources. including study academic and regulatory related. Ayasha et al. (2024) give view about resilience settlement communal, temporary Musofi, (2024) underline importance management risk sanitation. Study Rahalu et al, (2003) about rehabilitation settlement slum give outlook about approach practical in repair area. In addition, the contribution from Hizbaron and Hasanati (2016) and Maryono (2020) highlighted importance approach integrative in management area bank river. As additional, regulation like Regulation Government Regulation No. 13 of 2021 concerning Implementation of Flats and Yogyakarta City Regional Regulation Number 2 of 2012 concerning Building construction provides framework supporting law implementation co-housing concept in the area This. The studies of Suprayogi et al. (2024) and Asdak (2023) also provide contribution important in understand dynamics management area flow relevant rivers with context study this. With thus, research this no only give contribution theoretical but

also offers solution practical that can applied For increase quality life community on the banks of the Code River, Yogyakarta.

RESEARCH METHODS

Research methods This use approach descriptive qualitative with objective For describe and analyze implementation co-housing principles in settlements on the banks of the Code River, Yogyakarta. Research This adopt method studies case For understand characteristics unique area The data used consists of on primary and secondary data, which were obtained through various technique data collection. Primary data is collected through observation field, interview deep with resident local, and visual documentation in the form of photos, videos, and map area. Meanwhile secondary data obtained from studies literature, including books, journals scientific, document regulation government, and results study previously.

Population in study This covers all over residents living in the area the banks of the Code River, with sample taken in a way purposive For represent group relevant communities, such as head family, manager facility general, and perpetrators business local. Data analysis was performed through approach descriptive For describe condition area, analysis spatial For understand pattern space and zoning, as well as SWOT analysis for evaluate strengths, weaknesses, opportunities and threats in implementation of co-housing. In addition, the analysis content used For identify themes main from the qualitative data obtained. The approach This expected capable produce comprehensive understanding about potential and challenges implementation of co-housing in the area banks of the Code River.

RESULTS AND DISCUSSION

Microanalysis of Selected Sites

Identification of Existing Buildings

The buildings on site are dominated by residential buildings with an average size of approximately 50 m². The site also has several public spaces such as stalls, fields, mosques, study rooms, and PAUD schools. One-story buildings dominate the site area, although there are also several 2-story and 3-story buildings. On the north side, there are four flat 4-story buildings with repeating shapes.



Figure 1. Map of Existing Building Typology
Source: Author's Analysis



Figure 2. Map of Building Floors in Jogoyudan Village
Source: Author's Analysis

Circulation, Access, and Regional Activities

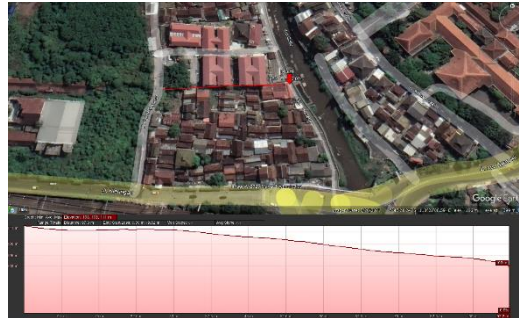
In the existing Jogoyudan village, road circulation is dominated by footpaths that cut through the east-west of the village. The size of the road is not suitable for motorbikes. The very close distance between houses also makes the village feel crowded. On the east side of the site, parallel to the river, there is a 3-meter long road that is usually passed by residents local as road a path in the village.



Figure 3. Existing Circulation System of Jogoyudan Village
Source: Author's Analysis

The site location has relatively easy access. The site has direct access from Jalan Kleringan which is a one-way road. Other alternatives to get to the location are via Jalan Jenderal Sudirman and via Jalan Kampung Jogoyudan. Jalan Desa Jogoyudan which is on the west side of the site is approximately 3.5 meters wide and is the main access to the village. The nearest public transportation is the Trans Jogja bus with the nearest bus stop being the Mangkubumi portable bus stop at a distance of approximately 350 meters. The location of the site is close to Yogyakarta Station at a distance of 400 meters. Within a radius of 700 meters there are Enough Lots building offices, hotels, schools, restaurants and stations.

land contour is relatively flat. This indicates that the site has a contour that slopes towards the river flow for 8 meters and is way on the river bank. The Kode River in this area is 15-20 meters wide with a depth of approximately 5 meters.



**Figure 6. Contour of the north side of the site
Source: Google Earth**



**Figure 7. Contour of the south side of the site
Source: Google Earth**



**Figure 8. Contour of the eastern side of the site
Source: Google Earth**

See

The view to the site is dominated by dense and poorly organized residential buildings. Inside the location, the settlement conditions do not have a garbage disposal site so there are some piles of garbage in the corners of the village. The view of the site is quite varied, the Code River on the east side, flat buildings on the north side, and roads on the west and south sides.



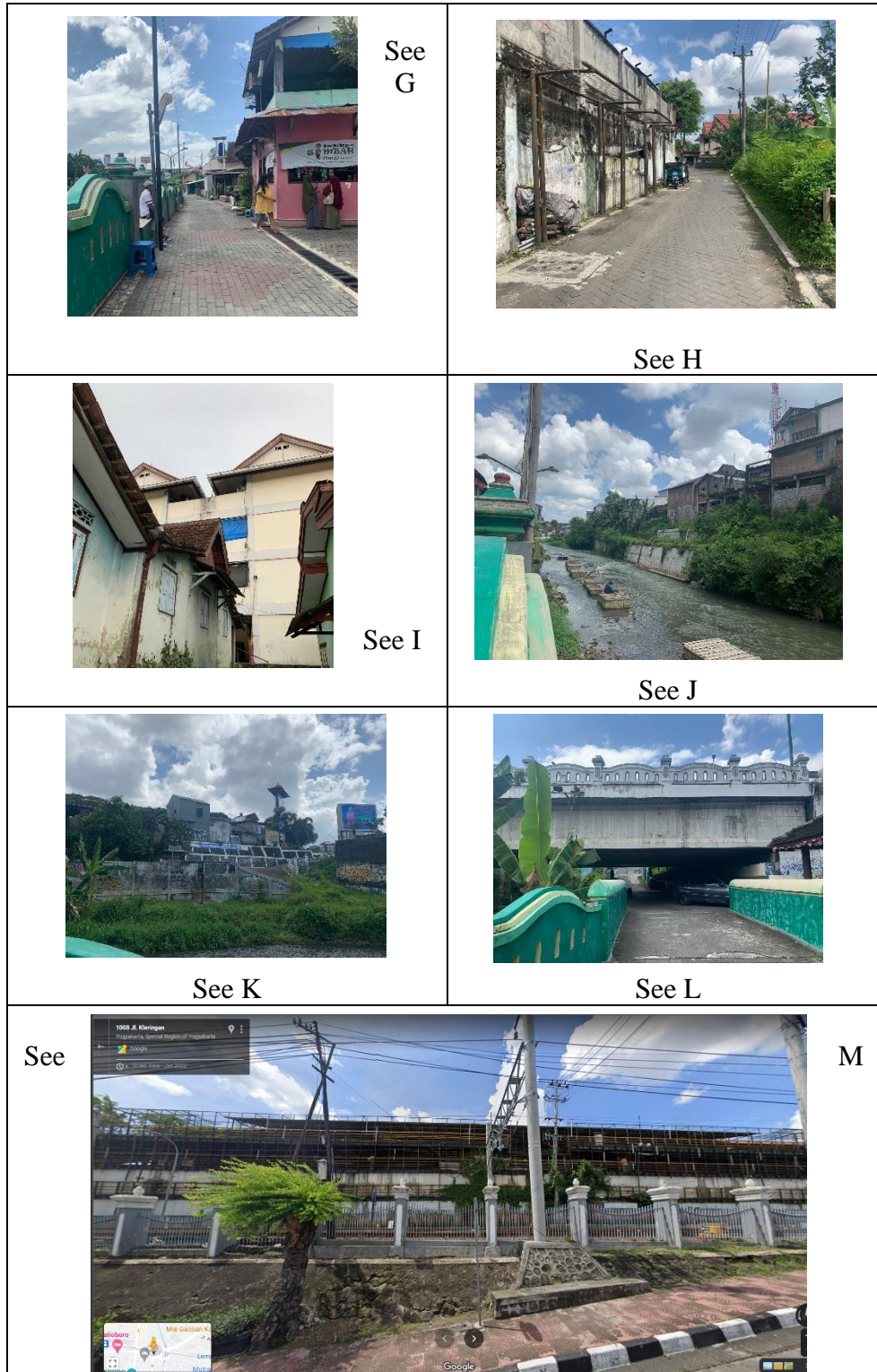
Figure 9. View in and out of the site

Source: Author's Analysis

A. Look inside the site



B. Look outside the site



Noise

The sound comes from motor vehicles on Jalan Kleringan which is quite busy. Other noise comes from the railroad tracks located on the south side of the site and has a fairly dense

train frequency because it is close to the station. In addition, there is the sound the potential gurgling sound of river water create calm atmosphere.

Smell

The source of the smell comes from the residents' garbage dumps in the corners of the village. This village does not have a special dump that is easily accessible to residents. In addition, the close proximity of the houses makes air circulation poor so that the environment feels stuffy.



Figure 10. Noise and Odor Analysis
Source: Author's analysis

Air Circulation

Air circulation in the village is not good because of the density of settlements. The condition of the buildings that are close together makes it difficult for air to enter and move. This causes the village atmosphere to feel stuffy and crowded.

Lighting

The village has very dense buildings so that the roofs between buildings touch each other. This makes it difficult for sunlight to enter the settlement. This lack of light makes the village feel dark and gloomy.

Planning Concept

Key Concepts

Flat design starts from the background of the problem being raised. Various problem formulations are considered in determining the design strategy and application of design elements.

co-housing design concept focuses on design efficiency in solving existing problems, starting from function, building area, and number of units. Several aspects can affect the quality of the environment, interaction, and quality of life of residents. Responses to existing conditions are also considered in the design so that the design can improve the quality of the existing environment. Maximizing the fulfillment of balanced social and personal needs for residents of the flats.

Programmed Concept

User Analysis

The main occupants of this flat design are residents of RT 51 RW 13 Jogoyudan Village. The existing site conditions have a total of around 76 houses. The occupants of each house are

assumed to be occupied by 3-5 people. Prospective users already live in this village, so there is no need for adaptation related to social interaction between neighbors. This also makes it easier for prospective users to determine their space needs. In addition, units are provided for new residents from outside the village. In addition to residents, this flat will also be occupied by employees and visitors from outside, so that required space that can accommodate activity they.

For comparison, looking at the existing flat data which has a footprint area of approximately 4,100 m², consisting of 4 blocks with a building area of 500 m² each with 4 floors. This flat has a total of 96 rooms with an average room area of 24m². Each room is occupied by an average of 4 people and has a living room, kitchen, and private bathroom, and the first floor is used for public space in the form of parking, study room, and kiosk. Based on the analysis, the land area of 8,450 m² should be able to accommodate twice the number of existing flat residents. In addition, the provision of more adequate public space can potentially improve the social quality of existing flat residents. The target occupants of this flat design are 85 rooms for local villagers and 50 rooms for new residents.

Space Requirements Analysis

Table 1. Analysis of Space Needs for Flat Residents

Source: Author's Analysis

Activity	Properties of Space	Space Requirements
Sleep	Private	Bedroom
Defecate and bathe	Private	WC, Bathroom
Cooking and eating	Private	Kitchen, dining room
Washing and drying clothes	Private	Laundry room, changing room
Work and study	Private	Study room
Gather, chat and receive guests	General	Living room, family room
Recreation or relaxation	General	Green open space, public space, balcony
Storing vehicles	General	Parking lot
Worship	General	Mosque

Trade

General

Outlet Shop

Table 2. Analysis of Flat Visitor Room Needs**Source: Author's Analysis**

Activity	Properties of Space	Space Requirements
Storing vehicles	General	Parking lot
Wait	General	Waiting room, common room
Get together and chat	General	Living room, recreation room
Defecate	General	Public toilet
Eat and drink	General	Shared dining room
Recreation or relaxation	General	Green open space, common space
Worship	General	Mosque

Table 3. Analysis of Management Space Requirements for Flats**Source: Author's Analysis**

Activity	Properties of Space	Space Requirements
Storing vehicles	General	Parking lot
Administrative work	Private	Employee workspace
Hygiene care	Private	Janitor's room
Utility maintenance	Private	ME Room
Rest, eat, chat	Semi private	Recreation room, dining room

Defecate	General	Employee Toilet
Worship	General	Mosque
Maintain security	General	security posts

According to the general guidelines for healthy simple houses, the minimum space requirement for each individual in a simple house is 9m² with an average ceiling height of 2.8 meters. A minimum of 76 flats are needed to accommodate the needs of the existing number of houses. In addition, flat units are also provided for residents from outside the existing village.

Table 4. Analysis of Space Requirement Size

Source: Author's Analysis

Room Name	Capacity of People	Number of Spaces	Area per Room (m ²)	Total Room Area (m ²)
Flat Unit Type 1 (Capacity 3 people)				
Single Bedroom	1	1	7.5	7.5
Master bedroom	2	1	9	9
Bathroom	1	1	3	3
Sitting room	3	1	6	6
Kitchen	2	1	3	3
Laundry and drying room	1	1	2	2
Balcony	2	1	1.5	1.5
Total Area				32

Flat Unit Type 2 (Capacity 4 Persons)				
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Single Bedroom	1	2	7.5	15
Master bedroom	2	1	9	9
Bathroom	1	1	3	3
Sitting room	4	1	7	7
Kitchen	2	1	3	3
Laundry and drying room	1	1	2	2
Balcony	2	1	1.5	1.5
Total Area				40.5
Flat Unit Type 3 (Capacity 5 People)				
Single Bedroom	1	3	7.5	22.5
Master bedroom	2	1	9	9
Bathroom	1	1	3	3
Sitting room	5	1	8	8
Kitchen	2	1	3	3
Laundry and drying room	1	1	2	2
Balcony	2	1	1.5	1.5
Total Area				49

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Parking lot	250 motorbikes and 25 cars	1	700	700
Mosque	30	1	60	50
Shared public space	Green open space (Customize)			
Public toilet	1	4	3	12
Outlet Shop	2	10	3	30
Service Room				
Office space	2	1	12	12
Janitor	1	1	4	4
MEP Room	1	1	35	35
Employee Toilet	2	2	3	6
security posts	1	1	3	3
Total Area				60

Space Organization

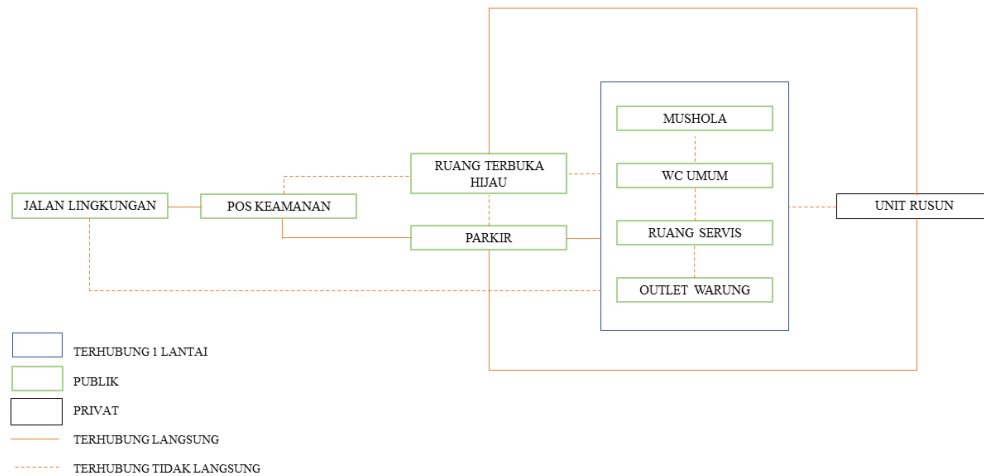


Figure 14. Spatial Organization Concept
 Source : Analysis Writer

Zoning and Mass Configuration

Based on the site analysis that has been explained, the site has the potential to integrate with the existing flats in the north. There is an open area between the existing flat building masses that has the potential to be used as an access integration with the new flats. Green open spaces are placed between the flat building masses and along the river to maximize the view of the flats. Public spaces are placed on the ground floor to facilitate access and maintain the privacy of private spaces above.

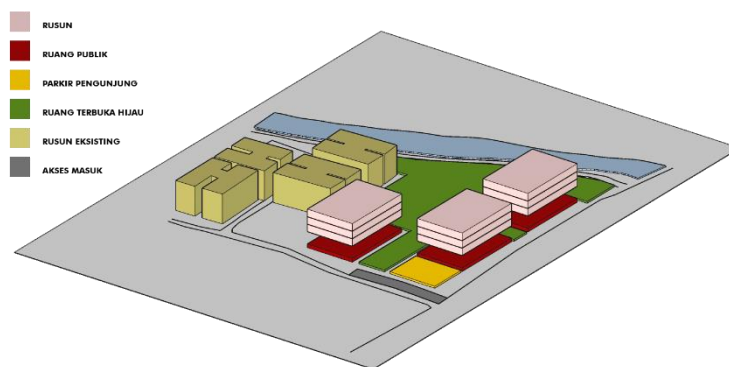


Figure 15. Concept of Zoning and Mass Configuration
 Source: Author's Analysis

Human Circulation

The circulation system on the site is accessible through the space on the ground floor. The entrance is on Jalan Kleringan and directly faces the public space of the flats. On the ground floor, the space is accessible to visitors and residents. This aims to maximize the quality of social interaction on the ground floor and strengthen the integration of the design with the existing flats. This area consists of a parking area visitors, open area green, and public areas.

To access the private space, residents can pass through the public space on the ground floor or through access from within the residents' parking area, so that vertical circulation occurs.

The private space in the form of flat units is arranged vertically to maximize space efficiency and provide connecting corridors as interaction spaces between residents.

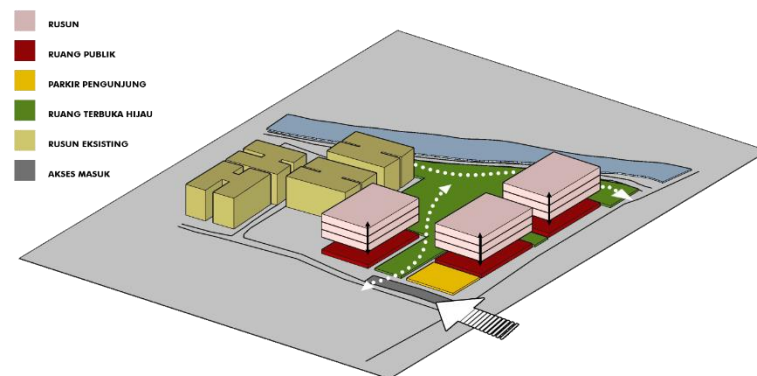


Figure 16. Human Circulation Concept
Source: Author's Analysis

Material

The materials chosen maximize the local potential and adapt to locations prone to flooding, erosion, and earthquakes. The choice of materials also considers ease of construction. Elements such as concrete, stone, and wood are used to provide a natural and sustainable feel.

Energy and Utilities

The apartment design is made with a sustainable architectural concept that is environmentally friendly and energy efficient. Passive design by minimizing the use of artificial energy such as air conditioning and natural lighting is intended to save energy and support sustainability.

CONCLUSION

Residential area on the banks of the Code River in Yogyakarta has potential big For developed become more housing worthy with adopt co-housing principles. Concept This offer solution to problem density population, degradation environment, and limitations land through efficiency - focused approach space, sustainability and strengthening connection social between populations. Research This find that management area co-housing based can give impact positive in increase quality life residents, such as creation room inclusive communal. efficiency use land, and application friendly architecture environment. This study also shows that the implementation of co-housing requires support strong regulation, as stated in Regulation Government Regulation No. 13 of 2021 concerning Implementation of Flats and Yogyakarta City Regional Regulation Number 1 of 2015 concerning Detailed Spatial Plan.

In addition, the results study emphasize importance involvement public local in planning and implementation design For ensure sustainability social and environmental. Integration of approaches architecture ecological considerations potential local, as proposed by Ragheb et al. (2015), was also shown to relevant For applied in the area this. In overall, research This give runway theoretical and practical for development residence vertical based on co-housing in the riverbank area river as effort sustainable urban regeneration.

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