

# Generating the House's Backyard as a Public Space Within the Informal Settlement: A Case Study of Kampung Kedaung Kali Angke

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## ABSTRACT

The growth of the informal settlement appears to occupy the backyard space of the informal housing. This situation leads to the use of the backyard—specifically the ones located directly next to the river—for the inhabitant's daily activities, such as cooking, trading, and playing. This paper examines various spatial strategies of the inhabitants in utilizing the backyard, despite its spatial limitations. Even though a backyard is a part of private space, it can be transformed into public space, due to the interaction between the backyard's owner with their neighbors. This study employs the behavioral and spatial mappings to reveal how the people in Kampung Kedaung use their backyard, therefore producing programs that allow the existence of the backyard. The mappings also reveal the impact of the interaction between the locals within the backyard space to their general well-being. The findings of this study were translated into various strategies in allocating the use of the backyard, such as by providing specific characteristics of urban kampung in producing the backyard.

**Keywords:** *backyard, public space, waterfront, informal settlement, angke*

## 1. INTRODUCTION

Along with the development of the city, the existence of backyards in settlement as private space is minimized. Backyard becomes important in urban space because it not only accommodates personal activities but also has the potential to become a social & agronomic space [1]. As a social space, the backyard strengthens outdoor engagement as a recreational area and gathering place. As a green space, the backyard provides aesthetic value, shelter, house ventilation, and children's play area [2]. As has been stated by Hall, that backyard is essential, not just desirable. That resurrection was achieved by a better housing design and a radical change in lifestyle—a tall order, even if desired or desirable [3]. Therefore, the backyard has a role in contributing to an outdoor private space in urban development and is related to the daily lives of residents [4]. This situation shows that the backyard has been recognized as a desirable element but challenging to obtain.

Continuously, the backyard provides debate in the urban environment, such as the phenomenon of backyard shrinking that occurs along with changes in lifestyle and forms of occupancy [3]. Leisure time is more dominantly spent inside than outside. If a backyard is available, the backyard tends only to be used at certain times. Another factor causing the shrinking of the backyard is urbanization, where the focus of space is no longer on private space. This

tends to be found in suburban areas with suboptimal house designs. In contrast to high-density urban areas, there is still a desire to have a view and outdoor facilities [3]. Hall said researching the size of private open space should be related to the function and meaning of the backyard [4].

The general approach to this phenomenon is to maintain the backyard element in residential design [5] Therefore, efforts to maintain the backyard are presented with smaller dimensions or other forms in line with vertical housing growth in downtown [4]. Although developers have made various attempts, the backyard's presence is challenging to find along with urbanization. It isn't easy to realize in low-income settlements downtown because it tends to optimize the building area. There are no policies or regulations that require to have a backyard. Because of the small house design, it is not easy to maintain the backyard's existence as an essential element in a dwelling. Only a small portion of the settlements in the city center has a residential enclosed by a yard.

This situation discusses backyards in the context of urban kampung in Indonesia, as shown by the existence of backyards that are increasingly difficult to maintain but become desirable spaces, regardless of the functions that have been determined [4]. Backyard found in settlements is an opportunity to be occupied by middle and lower classes as a place to live [6]. This happened because occupying the backyard was considered more livable. Economically, residents get the feasibility of accessibility, neighborhood, and public facilities such as schools [6].

This paper discusses the existence of backyards in the context of urban kampung, where there is substantial evidence that physical elements are the most diverse in their activities [2]. This phenomenon shows that the backyard is not always restricted in use, so it is not specific to a particular person's ownership. Therefore, it is necessary to understand the phenomenon of backyard such as residents in urban kampung.

The approach in this paper is based on the understanding that the idea of a backyard and its use involves at least three components: (1) backyard, (2) the relationship between waterfront and waterfront and (3) changes in backyard function. Specifically, this paper discusses how the use of a backyard that borders directly with the waterfront in an urban village, in relation to the relations between the backyard, waterfront and informal settlement which are interrelated.

### ***1.1. Literature Review***

The yard is a network that connects blocks with the urban environment [7]. Yard has the potential as a production area, various spatial experiences, and interprets the shared urban environment to provide a different spatial experience. The variety of forms of space and activities allows users to value private and shared ownership [5]. Separation of the front and back is the most common type of yard. Therefore, the division of the yard into two, namely front yard and backyard.

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Front yard and backyards contributed to the availability of urban green space and compared to public areas (parks, urban forests), and semi-public areas (green areas) used to analyze the availability of per capita green space [8]. The result is the front yard, and the backyard indeed plays an essential role as urban green space because it is found more than public green space. This situation indicates that front yard and backyard approaches are needed for urban planning. So there is an integration of the availability of green space as a whole, starting from private property (backyard and front yard), public spaces (parks, urban forests), and semi-public (green areas) [8].

It is easier to find cultivated plants (deliberately planted) and lower plant species (self-regeneration) in the front yard than the backyard [9]. Lawns and land conditions have no differences, although the public can see the front yard while

the backyard is more hidden. However, there are significant differences in the diversity of species in the yard. The diversity of species cultivated and more diverse is found in the backyard. Therefore, visibility is an essential component of landowners. This may be influenced by social factors in the yard that is seen and not seen.

My definition of the backyard is the yard behind the house. Hall described it as a private open space [3]. How to determine which areas are backyards can change from one place to another and from one community to another. The backyard can be defined as a yard that runs along a block in an urban environment [7]. It is essential to observe the backyard in terms of the local environment and how to use the backyard in daily life.

The backyard is one of the physical elements with the most variety of activities observed through the behavior of children outside the house [2]. Activities include work (hanging wash, car repair and sweeping), general play (exploring & camping), biking, passive (observing, talking & reading), walking, basketball, ball play (kickball and catch), object play (sticks, knives, jump ropes, horseshoe pitching, active play (scuffling and gymnastics). The backyard is the densest physical element besides the front stoop & private sidewalk, public sidewalk, street, parking lots, woods, public open space, and community open space. In residential domains, the main activities are oriented to clothing or work with teenagers who participate together or communal. Other activities include cycling, playing with toys, and playing ball.

To understand the backyard, we need to consider the values associated with space. Besides functioning as a play area, especially for young children, because it facilitates guarding and social space for all ages, the backyard can become a green space. Backyard has a role in producing various environmental goods (such as biodiversity, habitat, food, water, absorption areas) and the use of materials (such as paving, gravels, soils, and water). This situation is evidence that food production initiatives can be initiated starting at house. The backyard is the place most often used to start farming at house.

On the other hand, the backyard shows the interaction between humans and nature through backyard filler components. As tropical residents with enthusiasm for sunlight and water management during the rainy season, it is necessary to pay attention to the backyard as part of the house. One of them is the tree as a component that provides a sense of security, creates new habitats, and provides aesthetic value. This is related to the structure of the more substantial backyard vegetation and taller trees [10]. In addition to being a shady space, this situation can encourage the reforestation of individual and social property from the dwelling area to be used as a shared yard, thereby triggering gardening and farming activities [11].

Backyard as an agronomic space contributes to the contemporary food system and food agriculture economy.

This is a moment to understand backyard production as food sovereignty: to use the right to control the food system itself, starting from where food originates, how the land is used to produce food, sustainability, building up: community-based food and express gardening culture and lifestyle. Therefore, maintaining the backyard element can be a contributor to the interests of urban space.

The backyard is a shared space and a place for garden sharing when there are two or more people gathered together to do gardening. Backyard garden sharing is a variety of small-scale gardening communities. The advantages are physical activity, ease of getting fresh food, and learning joint ownership. This activity can strengthen connections and relationships with the broader community or start relationships with local community programs and activities. Psychologically, participants can also be connected with childhood memories or the past. And, giving confidence and self-achievement. These things indicate that backyard sharing is worth maintaining.

When determining the space included in the backyard category, it is also necessary to look at the relationship between the backyard, waterfront, and informal settlement. Backyard conditions tend to be broad and inclusive because house owners limit ownership because they are surrounded by a fence wall so that it has limited accessibility [5]. Hall categorizes fences as an element to maintain privacy, especially in avoiding visual contact in neighboring living [4]. Fences make the nature of the backyard limited to meeting the backyard owner's needs, limited to just a parking area, sunbathing, and vacant land. However, if a fence does not limit the backyard, it will naturally produce more public space. Head outlines further categories for determining the backyard based on backyard components [12]. Some categories are physical, such as trees and backyard components, in contrast, based on the preference of the relationship between the user's role and how they define the backyard that suits the user's needs.

Waterfront is a space that is often occupied by an informal settlement. The primary key to poor physical conditions in urban settlements is land ownership that does not exist, which prevents residents from improving their living conditions. Therefore, the development of settlements on the river bank needs to consider why the community settled. If the community chooses to stay, there needs to be an improvement in the quality of life and give the government authority to provide infrastructure and services. The planning well in groups that are divided into two is institutions and communities where both have related relations.

Like the backyard, the waterfront can contribute to social integration [13]. This condition shows that it is essential to restore the natural strength of water by embracing water's presence. It can be achieved by reflecting the waterfront relationship with other spaces. It is also necessary to collaborate elements of soil and water to enrich the spatial

experience so that the waterfront will be an attractive and friendly city for everyone.

The above understanding shows that the use of the backyard in everyday life is closely related to the user's role, function, and relation to the waterfront. The user has a role as a determinant of the backyard's nature as a private or public space so that it will determine what activities will occur in the backyard. About the use of backyards, any activities carried out will somehow be based on considerations relating to space and how to use backyards must be considered about informal settlements.

Spaces in urban environments tend to be structured in ways adapted from society's structure, so the activities carried out in the backyard must be considered appropriately. Understanding how to structure a backyard is essential because it can influence the way people behave and how to use the backyard. For example, Visscher examines the way backyards are divided by the public into private and public spaces, and how they control the movement and access of people to the backyard [14]. Therefore, residential owners tend to prefer the backyard as a public space to carry out activities if there is a choice.

For example, if we have a house with a back garden and surrounded by a fence, this house is our private area, no one can access it without our permission. If we want to play and gather, we will do it in the back garden where we can enjoy the beauty outside the house. This example shows that the role of the backyard is determined by the people who own the area. The characteristics of backyards in informal settlements do not have clear boundaries between one page and another.

Informal settlements are easy to find in the city center that is not formally planned, accommodating the middle to lower population who have insufficient infrastructure and facilities. Kampung is one form of informal settlement that is found in cities. The existence of the river is a target to be occupied by illegal settlements along the waterfront [15]. By occupying the river's banks for water pollution, garbage disposal, and environmental problems, Not having land ownership impedes people's desire to improve the village's physical environment. Therefore, the development of settlements needs to consider the reasons for maintaining the current village. If the villagers choose to settle, then there needs to be an increase in the physical quality of the environment, such as the provision of infrastructure and public facilities. The backyard approach on the river bank as part of the development has led to environmental degradation [16]. It can happen because most Indonesian cultures have the perspective that an essential part of the house is the front. This situation makes the backyard a waste disposal site. Thus, development needs to be carried out on the river banks in Indonesia such as better river bank management, control of illegal settlements, better flood management, healthier urban environmental quality, awareness-raising, water quality improvement, improved

food security, and all done to improve the welfare of the population. As well as the awareness of residents who live on the waterfront is connected to the river, there is a need to change inhabitants.

**1.2. Methods**

The study was conducted to understand the idea of backyard in urban environments. The argument here is mainly based on findings of the use of backyards in the context of urban kampung in Kedaung Kali Angke, West Jakarta. Kampung Kedaung Kali Angke is one of the informal settlements that a group of low-income people inhabits its inhabitants in Jakarta. The data was obtained through close observation of the daily activities of the inhabitants of the environment, especially those carried out along the backyard directly adjacent to the river bank. Then physical mapping of dwellings along the edge of the canal included mapping of house types, house functions, and backyard functions. Observation is complemented by interviews with residents to understand the use of spatial space used by residents in everyday life. The analysis is carried out using mapping so that it will reveal the mechanism of using the backyard. The analysis is done by paying attention to spatial elements of space to see the backyard's formation process.

**2. DISCUSSION**

**2.1. The Integration Between Backyard, Waterfront & Informal Settlement**

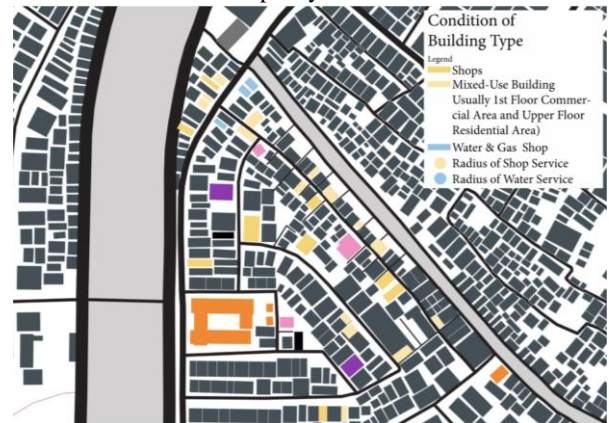


**Figure 1** Case Study of Kampung Kedaung Kali Angke House Type

Angke is a residential environment that has two orientations, front and back. Residents who choose not to be relocated and settled naturally affect the river banks' physical condition. House does not have a front yard, but has a backyard that is directly adjacent to the river.

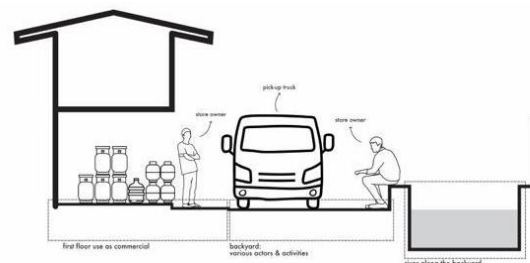
Backyard in the context of urban space is related to daily activities. Each house in the Kedaung Kali Angke village environment has a different role that illustrates the use of interconnected backyards.

The use of backyards by local residents along the river banks is mostly determined by the type and function of the dwelling. Figure 1 illustrates the types of houses in the Kedaung Kali Angke neighborhood, which are classified into single-storey, double-storey, and triple-storey houses. Occupancy along the river bank is dominated by single-storey residential, although there are still dwellings with double-storey and triple-storey types. Houses types that consist of more than one floor is mainly adding new function other than occupancy.



**Figure 2** Building Type of Kampung Kedaung Kali Angke

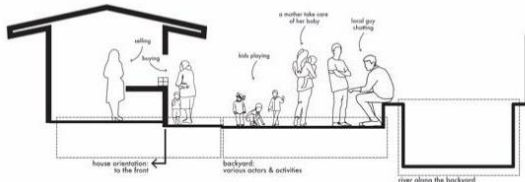
Most local residents work as informal workers and food vendors. Figure 2 illustrates how villagers use housing to support economic needs. Local residents use the ground floor as a place to sell daily needs such as food, water, and gas. Whereas 2-3 floors of residential use the ground floor of their houses as commercial areas, such as selling gallons of water, gas, and food. This small-scale commercial presence makes it easy to get water and food sources. Not only for the residents of the village but the surrounding residential environment.



**Figure 3** Single-storey houses use the first floor as commercial space

Local residents use the backyard to accommodate their activities related to various activities that occur around their

residence: children play together, local residents sit or walk together while feeding their children, and local youths hang out together. Activities with village residents produce a backyard as a public space, where users of all ages and activities can do activities.



**Figure 4** Double-storey houses use the first floor as commercial space

Interestingly, it was found that animals such as chickens and birds were raised by local residents for additional income. So, it can be found chicken coops along with the side of the backyard. Due to limited facilities, the animals were allowed to roam around in search of their own food, which resulted in an unclean backyard environment. Whereas backyard chicken farms require counseling from veterinarians to maintain animal welfare [17].

The user description and activities above relate to the characteristics of backyard use and describe the relationship between the backyard and the surrounding environment. This shows as a result of the relationship between backyard, nature and usage combined. This analysis also shows that the process of forming a backyard in the village is related to several elements.

The first element is the characteristics of activities. Activities that will produce a backyard as a public space in a neighborhood are likely to be social activities, such as hanging out together. This activity is carried out regardless of age, beginning with children, adolescents, adults, mothers, and fathers. This is because of limited housing so that it requires more space outside the house, which finally turns on the backyard. Houses that have added commercial functions need more space than those who only use the house as a residence. In addition, the number of people involved in certain activities also influences the character of the backyard produced. The more children play, the younger people gather, the more social activities among residents, the more backyard has the character of public space.

Secondly, the close neighboring life in the village can ultimately influence how they use their backyard together. Their commercial activities in the environment play a role in providing water, gas, and food facilities to local residents. In addition, the backyard is used as a road corridor because there is no boundary between the yards to change space into a shared backyard. Eventually, the activities carried out

simultaneously by local residents became the producers of the backyard itself.

From the analysis of actors and activities in the Angke environment, it can also be seen that each occupant treats their backyard differently based on their current role. This is because each household has a different identity that may be influenced by various ways of using the backyard to become a public space. In a residential environment, where space is limited, the backyard has an essential role in shaping identity and facilitating daily activities [19]. In addition, it can be concluded that the backyard has the potential to become a public space when people use it in specific ways or practiced repeatedly. This repetition is a characteristic that eventually becomes a backyard characteristic.

There is a tendency to utilize all existing space because there are limitations to residential space. The term 'backyard as a public open space' happens because there is a plan for open space to become public space [18]. Residential owners don't value open space as much as respect for private space. That way, the backyard is no longer referred to as private space. It accommodates all activities and users by defining a backyard where someone uses it routinely in everyday life. Therefore, a backyard is a space that is permanently located in a room that is recognized by people and is part of their daily routine.

The identity of the space can then influence the identity of the backyard in the region. Residents conduct commercial, socializing, and commercial activities in backyards and canals, thus changing these spaces' identity into public spaces. This transformation of backyard use practices may also relate to what Law has stated as the idea of 'public open space' which expresses symbolic systems [19]. Every community has a symbolic type in their daily culture. Because spatial identity is an effect of this order, changes in performance can create new settings that will later change spatial identity.

It became clear that backyard users in the environment carried out routine spatial practices that created certain norms that affected spatial identity. Part of this routine performance consists of activities that trigger the presence of the backyard. The backyard is positioned in a particular place as part of a residential area that unconsciously is a backyard.

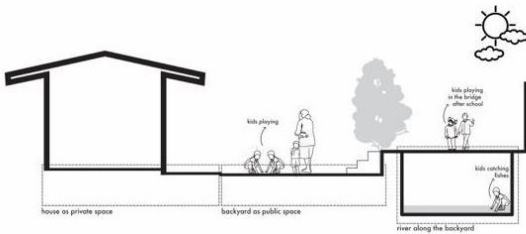
## 2.2 The Use of Backyard as an Public Space

The environment along the backyard has varied spatial programs, in addition to residential, commercial activities. Figure 3 illustrates how residents utilize a backyard to support the needs of their daily activities. Village dwellers use the backyard as an extension of their commercial activities. The existence of this activity dramatically strengthens the relationship between residents and their

context. Backyard means a lot to the local community and its ability to attract visitors from outside the village to interact and share experiences.

By mapping the conditions of open space, it can gain an understanding of the backyard mechanism. This mapping tries to describe the main activities that occur in the backyard in two forms of representation. The first representation is the main corridor along the river—the backyard's primary function as the central axis in the village environment. The corridor is intended as a conflicting pedestrian and car lane. The speed of vehicle traffic in this corridor tends to be slow because residential and commercial functions surround it.

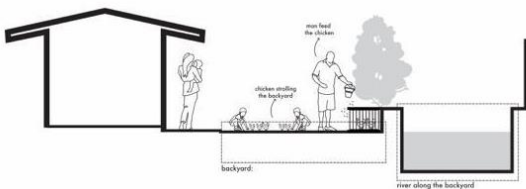
The use of the backyard is more dominant because of the location of adjacent housing. There are no specific restrictions on land use to be a road corridor or backyard. This blends the backyard with other spaces. This will result in a flexible public space and while it can be freely utilized and implemented.



**Figure 5** Backyard activities in the late afternoon

The second representation, the backyard, is closely related to a particular time. Backyard tends to be used when it is late afternoon. Children after school use the area as a playground due to their larger size. These varied activities illustrate diverse programs to contribute to the characteristics of the backyard as a public space.

The previous illustration regarding the backyard's use shows that there is no boundary separating one backyard from another backyard. Residents of the house can move from area to other areas freely and thus divert backyard ownership connections from the private domain, the boundary between the backyard and public roads being the boundary that marks the spatial change in space. Backyard users here reflect the optimal use of fillers to utilize space within their personal boundaries.



**Figure 6** Backyard activities in the morning

Figure 5 shows the use of a backyard along the river bank located in the backyards of houses in the Angke

neighborhood. River banks are used by local foot walkers and locals from time to time. Many residents flock around, chatting and enjoying the afternoon around the concrete wall on the river bank, while children are often found playing in the area. In this process they produce a variety of activities both in the backyard, on the road and on the river. In addition, the river bank functions as an unofficial waste collection site, with accumulation of waste from various sources: household waste disposed of by local residents on both sides of the river and waste from other places, all mixed together with mud and waste carried by river currents. when the flood. All these different types of waste eventually accumulate in the river body, clogging the flow of water and turning it into a waste chamber.

The river banks are located in the backyards of houses, and are therefore difficult to access or visible from the main neighborhood roads. This area has a minimum level of ownership, it does not belong to residents, or even to owners in nearby houses. It is not clear from where the garbage is guilty, so that waste along the river bank, as part of their backyard, has no ownership or ownership connection. This is complicated because the river also carries rubbish from other places, so the waste has no connection with the residents of the house. It can be concluded that belonging to social areas is affected by accessibility (how easily accessible to actors involved in waste disposal practices) and orientation (how many people can be connected to space and waste). It is understandable that disturbance in the river is due to unclear property in this social area, and ultimately affects the identity of the river and the surrounding space.

The river today is not the neutral river space we usually think of, but has been linked to a backyard for locals who live with it and use it every day. The practice of waste disposal becomes an element that forms the identity of the physical space to the waste site. However, the practice of sharing using the river as a space for waste without further treatment has led to the loss of connections between the backyard, river banks and local residents.

The river example can illustrate the importance of accessibility and orientation in establishing ownership in social areas. However, accessibility and orientation do not always mean that a place with a high level of accessibility and orientation will be free of distractions. In the Angke environment, the availability of accessibility such as road corridors in the backyard increases physical activity so as to create activities in the backyard. The existence of the backyard encourages an active living lifestyle for local residents. Public spaces like this can trigger positive changes regarding the atmosphere and the desire to organize the green space. Providing pedestrian paths can motivate people to walk from one backyard to another.

Backyard location directly adjacent to the waterfront has the potential to provide visuals. Although the waterfront character is no longer naturally replaced with a concrete

embankment. River pollution that is getting worse due to waste is certainly not sufficient to become a recreational area. The characteristics of the backyard and waterfront as public spaces are increasingly strengthened by the aspect of connectivity so that they can be easily accessed by local people. Therefore, it is the river example can illustrate the importance of accessibility and orientation in establishing ownership in social areas. However, accessibility and orientation do not always mean that a place with a high level of accessibility and orientation will be free of distractions. In the Angke environment, the availability of accessibility, such as road corridors in the backyard, increases physical activity to create activities in the backyard. The existence of the backyard encourages an active living lifestyle for residents [20]. Public spaces like this can trigger positive changes regarding the atmosphere and the desire to organize the green space. Providing pedestrian paths can motivate people to walk from one backyard to another.

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Figure 4 illustrates the actual practice of using backyards and unused open spaces that anyone, including local children, easily accessed. Because of the limited space available for children, the space they use often intersects with space where garbage can accumulate. This intersection is also triggered by blurred boundaries between backyards, corridors, and river banks. Besides, children's activities in this area also trigger further distribution of waste.

Figure 4 illustrates how unofficial waste space boundaries are so vague that they can be accessed by other supporting actors in the environment: local animals. Animals around the environment contribute to the further expansion of the backyard by foraging freely. Because backyards do not have rigid boundaries, in this process, animals often travel to other spaces throughout the environment, including spaces that are more difficult for anyone to access.

The examples in Figures 4 and 5 show the practice of waste disposal in spaces with high levels of accessibility and an orientation towards major environmental roads. Space has been used as an unofficial place for collective waste. Therefore the waste in it has no connection with the local people who throw garbage anonymously into space. These places do not have rigid boundaries and are often ignored by others. This situation has invited frequent use of these spaces by children to play and animals to find food.

Examples show that common areas in the environment appear to be innumerable possibilities for all the actors involved, which affects the waste space. This unclear space boundary triggers actions for the disposal of waste by children and animals. In both instances, the crossing of a backyard with a waterfront turns a private space into a public space for children to play with and forage for animals. This means that space can be used for other activities when there are opportunities for a repeat performance.

Finally, by doing each activity, children and animals can inadvertently emphasize the backyard function. In the next process, the expanded backyard will continue to be extended because they exist without ownership. The examples clearly illustrate that backyard use practices result from complex relationships between unclear spatial boundaries, low levels of ownership, and spatial identity changes. In particular, high accessibility and evident spatial orientation trigger changes in spatial identity, which ultimately affect the practice of backyard use.

### 3. CONCLUSION

As we know, some houses are equipped with only a front yard, backyard, or both. The Backyard character has a strong relationship with the front yard. This affects the fill elements and functions of the front yard and backyard. Backyard as a back area of the house as an exclusive private space only accommodates the house owner's activities. As a green space, the backyard has aesthetic value, shaded-space, and house facilities. Backyard also has the potential to become a house-scale food production space that contributes to food security.

Further development leads to the concept of sharing, changing the backyard from private space to public space, where the backyard can be used together. So that homeowners have the freedom to interpret the backyard [22]. One crucial element of the backyard is the tree because it provides a sense of security and shade for the user. So that backyards tend to have higher biodiversity than front yards. This paper suggests several possible implications for urban planning processes and designs that consider the relationship between backyard, waterfront, and informal settlement. There is a shift in the function based on the relationship between the backyard and the waterfront. In the informal settlement and backyard ownership so that it can be understood as urban space. Functionally, the backyard has the potential to be a place for communal activity and a gathering place, even though the backyard has an essential role for residential owners and is often marginalized because it is not related to shared functions. So that in urban planning and design related to kampung must pay attention to the diversity of forms and functions of the backyard.

**Table 1 Backyard characteristics analysis results**

Elements	Backyard	Backyard in Kampung Kedaung Kali Angke
Position	<ul style="list-style-type: none"> <li>- Located in the back of the house with a transparent barrier and ownership</li> <li>- The orientation is facing other houses</li> </ul>	<ul style="list-style-type: none"> <li>- Located in the back of the house without a transparent barrier and ownership</li> <li>- The orientation is facing the river</li> </ul>
Activity	<ul style="list-style-type: none"> <li>- Space is used as playing area and gathering place</li> <li>- Space is used with the agreement of the owner.</li> </ul>	<ul style="list-style-type: none"> <li>- Space is used as street corridor, playing area, loading dock, chicken flock and gathering place</li> <li>- Space is used without agreement of the owner</li> </ul>
Behaviour	<ul style="list-style-type: none"> <li>- Actors of space have a sense of ownership</li> </ul>	<ul style="list-style-type: none"> <li>- Actors of space have a neutral sense of ownership</li> </ul>
Limitation	<ul style="list-style-type: none"> <li>- Space is used with permission of the houseowner</li> </ul>	<ul style="list-style-type: none"> <li>- Space can be used by anyone</li> </ul>

Examples of the use of backyards in urban village environments do not limit the movement of their inhabitants. So that residents can visit one backyard to another backyard freely. Besides, occupants play a role in the process of determining the use of backyards, especially in terms of determining the position of the backyard and waterfront. The relationship between the backyard and waterfront becomes more complicated in a shared space, which involves various users with various interests. The backyard has no clear boundaries, so that it triggers an expansion of the backyard itself. The accessibility level of the backyard and the orientation of the house is closely related to how the backyard is adjusted. The availability of accessibility, such as pedestrian paths in the backyard, increases physical activity, thereby creating a healthy life, especially for old age. Not only the elder, but the backyard is also the house area that accommodates the most activities of children. Therefore, the backyard can be said as a public space because it has characteristics that are open to accommodate creativity, social interaction, and strengthen the community.

This conclusion points to several possible implications for practice in urban design and planning that considers backyard relations and waterfronts in informal settlements. The use of backyard about being a different character—private space and public space—has discovered how the backyard is related to ownership. They have several consequences on the need to see the existence of boundaries both visible and invisible - between 'my backyard' and 'our backyard,' especially in urban environments, such as in urban village environments.

The findings of this study are the need to consider the development of a backyard that borders directly with the waterfront and their character as a public space.

Approaches in rivers or lakes or water bodies as the backyard of development make the backyard neglected and focus on the front yard. City designs need to discuss backyards and waterfronts as a part of urban environment activities.

**REFERENCES**

[1] Cameron, J., & Wright, S. (2014). Researching diverse food initiatives: from backyard and community gardens to international markets.

[2] Sanoff, H., & Coates, G. (1973). Behavioral mapping: An ecological analysis of activities in a residential setting. *Ekistics*, 36(216), 362-364. Retrieved June 2, 2020, from [www.jstor.org/stable/43619874](http://www.jstor.org/stable/43619874)

[3] Hall, T. (2010). *The life and death of the Australian backyard*. CSIRO publishing.

[4] Hall, T. (2010). Goodbye to the backyard?—the minimisation of private open space in the Australian outer-suburban estate. *Urban policy and research*, 28(4), 411-433.

[5] Blake, A., & Cloutier-Fisher, D. (2009). Backyard bounty: exploring the benefits and challenges of backyard garden sharing projects. *Local Environment*, 14(9), 797-807.

[6] Turok, I., & Borel-Saladin, J. (2016). Backyard shacks, informality and the urban housing crisis in South Africa: stopgap or prototype solution?. *Housing Studies*, 31(4), 384-409



- [7] Lang, U. (2014). The common life of yards. *Urban Geography*, 35(6), 852-869.
- [8] Haase, D., Jänicke, C., & Wellmann, T. (2019). Front and back yard green analysis with subpixel vegetation fractions from earth observation data in a city. *Landscape and urban planning*, 182, 44-54.
- [9] Locke, D. H., Avolio, M., Trammell, T. L., Chowdhury, R. R., Grove, J. M., Rogan, J., ... & Hall, S. J. (2018). A multi-city comparison of front and backyard differences in plant species diversity and nitrogen cycling in residential landscapes. *Landscape and Urban Planning*, 178, 102-111.
- [10] Ossola, A., Locke, D., Lin, B., & Minor, E. (2019). Greening in style: urban form, architecture and the structure of front and backyard vegetation. *Landscape and urban planning*, 185, 141-157.
- [11] Larder, N., Lyons, K., & Woolcock, G. (2014). Enacting food sovereignty: values and meanings in the act of domestic food production in urban Australia. *Local Environment*, 19(1), 56-76.
- [12] Head, L. M., & Muir, P. (2007). Backyard: nature and culture in suburban Australia.
- [13] Tumpele, I. (2016). Waterfront Integration Project in Trelleborg.
- [14] Visscher, R. S., Nassauer, J. I., & Marshall, L. L. (2016). Houseowner preferences for wooded front yards and backyards: Implications for carbon storage. *Landscape and Urban Planning*, 146, 1-10.
- [15] Usavagovitwong, N., & Posriprasert, P. (2006). Urban poor housing development on Bangkok's waterfront: securing tenure, supporting community processes. *Environment and Urbanization*, 18(2), 523-536.
- [16] Permana, A. S., Astuti, W., & Er, E. (2017). Waterfront Development Concepts in Indonesia from the Perspective of Urban Planning and Environmental Sustainability. *International Journal of Built Environment and Sustainability*, 4(3).
- [17] Elkhoraibi, C., Blatchford, R. A., Pitesky, M. E., & Mench, J. A. (2014). Backyard chickens in the United States: a survey of flock owners. *Poultry science*, 93(11), 2920-2931.
- [18] Peiser, R., & Schwann, G. (1993). The Private Value of Public Open Space within Subdivisions. *Journal of Architectural and Planning Research*, 10(2), 91-104. Retrieved June 2, 2020, from [www.jstor.org/stable/43028735](http://www.jstor.org/stable/43028735)
- [19] Law, L. (2019). The tropical backyard: performing environmental difference. *Geographical Research*, 57(3), 331-343.
- [20] Greenshtein, I., Keidar, O., Tziraki, C., & Chinitz, D. (2020). 'Greening our backyard' - health behavior impacts of the built environment within the overall ecology of active living. *Cities & Health*, 1-18.
- [21] Shamsuddin, S., Abdul Latip, N. S., Ujang, N., Sulaiman, A. B., & Alias, N. A. (2013). How a city lost its waterfront: tracing the effects of policies on the sustainability of the Kuala Lumpur waterfront as a public place. *Journal of Environmental Planning and Management*, 56(3), 378-397.
- [22] Gehl, J. (2011). *Life between buildings: using public space*. Island press.