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JAKARTA HOUSING PROBLEM

OVER CROWDED SLUM

Apartment, superblock and another integrated housing is developing rapidly across Jakarta, capital city of Indonesia. Offering a home with a number of facilities for people with upper middle-income or anyone else who can buy it. Yet slums packed with trash still exist and growing to simply meet the need for a living space. 65% of Jakarta people live in slums area.

Like other slums in Southeast Asia major cities, these slums was overcrowded and chaotic. These area was unplanned and grow sporadically. People just fill the empty space and convert them into a house. Adequate green space and public space was barely seen as the result of high demands of living space. Some green space that survive was just a small plant pot and dying grass. Yet the green space is a major aspect to create living environment. It provides fresh air and gives sun shade to make a better environment for human activities. So does the public spaces. Inadequate spontaneous public space was created because of the lackness of the land-use. The street and the aisle is the public spaces. Although it was not sufficient public space but it just seems that the best they can get. Chatting adults and playing kids are fulfill the aisle. Those activities was interrupted when there is a motor or persons through it.

WATER ISSUE

Most of these slum located near the Ciliwung riverside. Originally, this river provide their needs, attracting people to live nearby. Start from bath, irrigation, clean water supply and even for waste water disposal. Today tons of building relies on Ciliwung River beyond its capacity. These ecosystem can no longer run and gradually change. River was seen as a waste disposal and

water seen as a problem that cause flood and sanitation issue. 90% of Ciliwung River was contaminated by E.Coli bacteria and 50.000 people death annually because of these sanitation issue. They had to use this poluted river as their water resources.

The current city development was to relocate them out from the riverside to a well-planned housing complex. The plan was to improve their life quality and environment. Yet this decisions created a number of consequences, one of the most significant is the energy needs to distribute the water (their main needs) to the new residential. This consequences is not worth, why wasting such energy even though the water is already near and require less energy too distribute. The people itself, didn't want to be moved with all sorts of reasons. In fact, these waterfront lifestyle already has become a behaviour that create an irreplaceable identity and tropical culture. There are several slum area that suffering this issue, one of the worst is Kampung Pulo. Slum, flood issue, lack of public and green space, clean water issue and sanitation problem.

STRATEGY

Our main idea is to create a new urban ecosystem. The goal of this new ecosystem is boost the quality of social, physical and spatial space. Improving social aspect by creating a vibrant community housing. Improving physical aspect by creating a green housing environment. Creating a compact vertical living space to improve spatial space. There are two main factor at this new ecosystem.

1. Vertical Kampong
2. Urban Wetland

The main target is to develop a new-simple-green residential. These residential will accommodate kampong culture in a unique vertical housing unit. Moreover, these residential is act as a water treatment that blending and blurring with the environment. Creating a new ecosystem between the housing unit andd the water treatment system. These housing also features some sustainable strategies, such as climate responsive design and community –oriented design.

NEW ECOSYSTEM: VERTICAL KAMPOONG AND URBAN WETLAND

These 2 factors will have a mutual beneficial relation as a reponse to the current issue. Vertical kampong is basicly a high-density housing unit. It makes more living space to the current housing. The essential key to create this kampong is using 'sharing' culture. This culture represent how Indonesian people lives. It represent their identity and behaviour, creating a bold line from inividualistic urban lifestyle. This culture was essential for creating a strong community-based housing. This new type of residence also have a minimum impact to the environment. It independetly reduces building-footprint and waste-water.

Urban wetland is a natural water treatment system that formerly has been there. However the original system was fail. It unabled to adapt with the new development. Therefore a better system is created by learning and adapting from the natural system. The space for the

water treatment itself blend with the residential environment. Maximizing space efficiency and being a part of people daily activities. Urban wetland will heal the critical part of the current slum environment that mostly have a water issue. The urban wetland formed as a several green space to collectively create a water treatment system. Moreover, this green space also serve as an urban farm. Creating a new economic opportunity.

Vertical Kampoong

Despite of environmental issue at the Kampung Pulo, this kampoong still had one culture that survives till now. Sharing culture, sharing spaces. Yet they can not apply these culture at their current house. As a result, their current house not used efficiently. The living room was rarely used. Because of their limitation, they tend to have activity in public area, sharing their living space with the other people or family. They share stuff and space. They like watching television together with another family or even using a public toilet and bath. These proved that they still have a same behaviour. Learning from those behaviour we re-create a new kampoong model that corresponded to the current circumstances, “a vertical kampoong”.

Kampoong traditionally was organized in 1 horizontal layer, located on a large site. Mostly the living space is a public area and it have high accessibility and vibrant connection. Creating a strong community-based residential. These culture not fit in the urban context so we need a new strategy. Each room needs was organized using the relation diagram, creating a space hierarchy of needs. One house usually consist a bedroom, a small kitchen and a tiny bathroom. Therefore we blend several house into 1 unit to create more adequate space. In the contrast of private modern housing unit module that have a various number of bedrooms, 1 kitchen and 1 bathroom, these module have 4 bedrooms, 2 kitchens and 1 bathroom. Each room was simplified to 1 module. Using the modular system, this building models can easily constructed and multiplied. These modules can easily divided to serve 1 big family, 2 families or even 4 families module is 3m x 3m x 2.4m to maximize space efficiency based-on basic human activity. Based on space need (4 :2 :1) hierarchy relation we arrange 4 different layer, each layer accomodate different function. This layer system based on kampung culture, a vibrant connection between each house, sharing semi - private space (kitchen and bathroom) and a large living and social space.

Using a modular system this module form a highly compact housing. Moreover, using the sharing culture some room module can be removed and replaced by a green space (green box). These green spaces act as a filtrator system, a vertical wetland that also can act as a urban farming area. Old kampoong program was re-organized from a 2D relation to 3D relation. Creating 4 layers – each layer accomodates different acitivities. The social interaction is adapted in every layer of their house. With this spatial re-arrangement, their sharing-culture of Kampung Pulo can be sustained.

All 4 layers have a different function, organized by their space needs:

Top layer : bed

Top layer is the most private space, bedroom. This layer consists 4 solid boxes so this layer has the largest space. The partition between the boxes is flexible and adjust the family needs. Each box can includes a different family or even one single big family. The bedroom itself not only

function as a bedroom. This room can be used as a family room or study room, according to their needs and behaviour.

Second layer : cook

Second layer is the (sharing) kitchen and dining space. Each 2 bedrooms have 1 kitchen that had a dining space with a green space and create 'on ground' dining experience. A connection between kitchen can easily created. Creating a connection and communication between the housing unit, sharing recipes, cook together or sharing dinner.

Third layer : bath

The third layer is for the public bath, toilet and washing area. Creating a communal space for woman while he washing laundry manually. Make a more lively neighborhood.

Bottom layer : living

The fourth or bottom layer consist 4 void boxes that create a semi-outdoor space. This area represent kampung Pulo culture that most of people's activity was held in public outdoor space. Watching television, chatting or just wasting time. Public activity triggered street vendor to come and sell their things so it can increase society's active income by developing their own business. This layer is actually as the consequences of the annual flood. Minimum footprint is created to maximize the water absorbtion.

These 4 module form a sustainable housing that easily multiply and creating another housing that have a vibrant connection. In micro scale, the housing unit itself already self-sustain. The housing unit features an independet rainwater catcher to help meet the needs of clean water. Therefore the construction process can developed gradually. Furthermore the housing will grow and multiply creating an area that consist a housing, a public space and a well-integrated environemnt. These area will representing how kampoong culture can be applied in urban area.

Collectively, the housing unit and the environment act as one ecosystem. Resolving slum issue by providing culture-fit housing while it also rejuvenating the surroundings, restoring Ciliwung river and creating a micro water supply.

Urban Wetland

A new urban wetland was create a new water resource for the housing. Such an irony, their live next to the water, but they have a difficulty to get the water. Therefore we created a urban wetland to help them get a clean water. Ciliwung River as a potential water resource was polluted. The idea is simple, clean the water and used it. The polluted river water was clean through a natural filtration: riverside wetland. Riverside wetland was the first wetland to clean the water. Separating the water with the garbage and another component, also clean the water with wetland plant. These wetland have a number of levels that ensure the water is clean. These water supplies the housing ground and upper tank. The riverside wetland act as a filtrator and as a clean water storage

Not only clean the water, the idea is also cleaning the disposal of the residential unit. Therefore, we try clean the water through a series of natural filtration too. Ater the water used

for household activities. The water first filtration is the vertical wetland that also act as an urban farm. After that the water goes through a housing wetland that located near the housing complex. These filtration ensure that the water is clean. The wetland also act as a public space, so the people can play and interact with a clean water. In addition the riverside wetland also clean the urban disposal and creating a new water supply to the surroundings urban area.

The space for the water treatment itself blend with the residential environment. Maximizing space efficiency and being a part of people daily activities.

THERMAL AND SHADING ANALYSIS

To provide better environment quality in such a dense spaces, analysis from climate is required. Based on Ecotect analysis ,these design still need some adjustment to create a better thermal and shading condition. Therefore, this building feature a circulation that act as a shading device, void between building to create stack effect, and creating a different air preasure to ensure the air is flowing inbetween these housing units.

Based on this psychrometry chart , this housing needs a better air circulation by providing ventilation or evaporate some air because of Hot and Humid Jakarta's climate. Based on that fact, we create many voids in housing module that can provide air circulation because of the differences of the thermal received by module.

These thermal result relate of thermal comfort in module living space. Based on thermal analysis, the circulation received most of thermal, and absorb it. The rest of spaces module and surrounding has the minimal thermal, leaves the room temperature to comfort while stile providing the effective luminous. Based on this thermal anaylis, housing circulation act as shading elements. These circulaition adequate thermal comfort in housing modules by recieving most of the thermal on the east nd west facade. These circulation also provide the diference in tempreature between outside and inside module. This difference create difference preasure of air that produces some adequate air circulation.