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# **FILL-IN KAMPONG**

## **PROJECT BACKGROUND**

High population growth leads to limited land in Bandung, has been seen from the area development of Bandung downtown; North Bandung, West Bandung and South Bandung. To overcome these problems, the governments of Bandung wants to make an equitable development concentrated in East Bandung area, located in Gedebage. According to Detail Spatial Plan of Bandung, Gedebage area is directed as the new city center after Alun-alun (old city center). Collaborate with private developer, Gedebage will be labeled as Bandung Technopolis that include green city, urban infill, vertical development, transit oriented development and mixed use development. Gedebage has flat topography which supporting special function as residential area but there will be many changes because the development. The development built on 300 ha of paddy fields and slum area. Paddy field is one of source of the livelihoods of people this district and the habitat of Blekok (*Ardeola speciosa*). Main occupation of people in Gedebage as farmer although the ownership of paddy field does not belong them. Then private developer bought large area of paddy field which is the reason a lots of people become unemployed.

There is main issue in Gedebage: flood. Bandung is a large basin surrounded by volcanic highlands and Gedebage is one of the lowest altitude point in Bandung. Located at an altitude of 768 meters above sea level, Bandung has very high rainfall with the highest number (418.7 mm). The main river in Gedebage, Cinambo river not able to accommodate the water flow from the upstream sub-riparian area Cibiru, sub-riparian area Cinambo and sub-riparian area Cipamokolan. Flood character in the area is flash flood because it happened in a very short time due to heavy rain and because the topography is relatively flat, water flow of river is very slow and cause the water overflow to residential area. Moreover, some parts of Cinambo river is occur silting due to sedimentation, human activity such as throws waste into the river that cause the water does not flow well. Other aspects are land conversion in upstream and river narrowing due to the construction of houses beside the river. Gedebage was formerly water catchment area to accommodate an abundance of water from highland around bandung, therefore gedebage was once a vast swamp area. Unfortunately swamp area is heavily stockpiled due to the need of new residential area, so its original function as water catchment can not function properly. These are several problems that cause flooding in Gedebage.

Although Bandung is one of the big cities in Indonesia, its local wisdom is still well kept. Sunda as the natives in Bandung, greatly maintains the relationship between man and nature. This can be seen in how the Sundanese manages the layout of their house. In general, traditional Sundanese house is a stilt house with square shape and spacious yard. Stilt house serves to protect residents from threats such as floods and wild animals, also serves as a storage or cattle pen. There is a wide multifunctional space that can be used for family events, preparation rooms for religious and cultural events and other functions. There is also a terrace as a place to interact with neighbours, because in general the distance between traditional houses in Sundanese culture is very close, so from the terrace can be directly in contact with the neighbours. The large yard serves to grow crops, usually in the form of medicinal plants, spices and fruits. The main function of this fruit tree is to attract animals to come to the house yard, such as birds and squirrels. So when the inhabitants are

relaxing by the house can simultaneously hear the singing of birds. This is a culture that we can still meet and must maintain its sustainability.

In Gedebage there is village named Blekok Creative Village, located between Cinambo river and Cisaranten river which is a conservation area for Blekok (*Ardeola speciosa*). Blekok is the endemic bird of West Java, breeding in bamboo clumps and looking for food such as fishes, insects and crabs in paddy field. It has important ecological functions in nature, such as pollinators of plant species and predators of agricultural pests but the population is not much in nature. Eventhough protected by law, population degradation continues due to poaching and habitat destruction because the conversion of paddy field into housing. The purpose of Blekok Creative Village is to increase public awareness to Blekok and keep the population and habitat of this species. Some community efforts in cooperation with non-governmental organizations are like creating Blekok dance, Blekok batik and bird show events. However, this effort can not be optimized well amid the onslaught of development in Gedebage.

From this background, we want to make new image of slum area to urban kampong that can survive by itself from energy needs aspect, economy and social aspect. This project is to merged the newest sustainable technology, the social culture of kampong people especially sundanese and harmonize with its unique natural landscape.

## **RESILIENT AND SUSTAINABILITY**

The idea is to design the sustainable and resilient building to relocated people from slum area to better quality living area. Project purpose is to provide areas that can withstand the impact of natural disasters (floods) as well as ongoing development by building environmentally, socially and economically sustainable areas.

Slum area in Gedebage wich often flooded because lack of water catchment area, will be transformed into vertical housing with triangular shape that aims to increase the water catchment area, also adapted from Sunda traditional house, this buildings is a "house on stilts" to avoid the effect of flooding. This building is built with 6mx6m sized frame module structure and residents can built their own unit with local materials and local skills (some people in Gedebage works as a builder) so the spatial order in this building will grow organically following of their previous kampong's character and structure. The purpose is to fit financial capability of each resident in design their own house. Local material can be used as building material is bamboo, which grow well and can be found easily in Gedebage. Therefore, we design area near Cinambo river for bamboo clumps because bamboo need a lot of water to grow well and river is the best habitat for bamboo. It has two main functions, first as a habitat for Blekok and can used by resident for building material, furniture, crafts and decoration, animal food, medication and many other efficiacy.

Middle area between building designed as rain garden for water catchment and green public space where the resident can interact each other. This green public space also connecting ground area with another ground area. Ground area made from permeable material like grass block, can be used as a market when not flooding. It also, can used as a creative space for the resident who works as a creative workers (shoe maker, furniture maker, baker, tailor etc). We design market area and creative area made into one space so the residents can be mutually motivated and be more creative so as not to be left behind by the city's development. This building also utilizes sunlight as a natural lighting and renewable energy resource. In roof top, there are solar panels for electric supply in each building. This building also maximize openings with the application of cross ventilation so can optimized the air circulation inside the building.

The new development resulted in the reduction of paddy field, so in site and in each building we design a new green spaces for the residents especially for farmers who lost their jobs, and also can be used as an urban farming area. Urban farming become a new job opportunities for resident, beside it can supply their own food, it also increase their financial capability with sell vegetables. This is in accordance with traditional Sundanese culture where they used to grow crops in their yard. In the other hand, urban farming activity is also a form of social economic sustainability.

To take advantage of high rainfall in Bandung, we design rain water harvesting system on buildings, rain water stored in storage tanks and then flowed to each module houses by gravitation. Rain garden also aims to help the absorption of water into the soil, which then the groundwater can be reused and to prevent land subsidence.

### **Environment Sustainability**

There are some points that answer sustainability from environment aspect, such as:

1. Flood resistance by "house on stilts" concept.
2. Maximized the capability of buildings to catch and processes solar energy with solar panel system.
3. Create comfortable thermal and adequate lighting
4. Independent food sector to the community by urban farming and paddy field.
5. Green area for local planting such as bamboo, banana tree etc which can be used as building material, as habitat for wildlife creature, furniture, craft and decoration, culinay purposes (as an example banana leave is traditional food wrappers still using today ), to help absorbing water into soil and stabilized ecosystem in this area.
6. Utilization of rainwater resources with rain water harvesting system.

### **Social and Cultural Sustainability**

There are some points that answer sustainability from social aspect, such as:

1. Make public spaces where resident can interact and socialize each other as replacement of terrace in traditional Sundanese house.
2. Creating work space for farmers and other workers by provide communal space at ground level.
3. Prevent social gap between kampong and new development from private sector by making creative program opportunities.

### **Economy Sustainability**

There are some points that answer sustainability from economy aspect, such as:

1. Urban farming.
2. Communal space in ground level. Accommodate various occupation from resident, can functioned as market, work space etc.
3. Creative opportunities for better occupation by using natural resources in this site.

### **SPLIT-GROW HOUSE**

According to population data of Gedebage district, family varied from one child families until full family. To adjust the need and economic ability of these people, we design split-grow house with space inside the 6mx6m structural modul can be develop in accordance with the needs of its user such as room, multifunctional space or private garden. The building material also can be used from local material (bamboo, wood, brick etc). When the resident wants to built their units, they have to follow the rules and the criteria, the main rules are maximized the ventilation to be achieved the cross ventilation and to maximized the natural lighting.