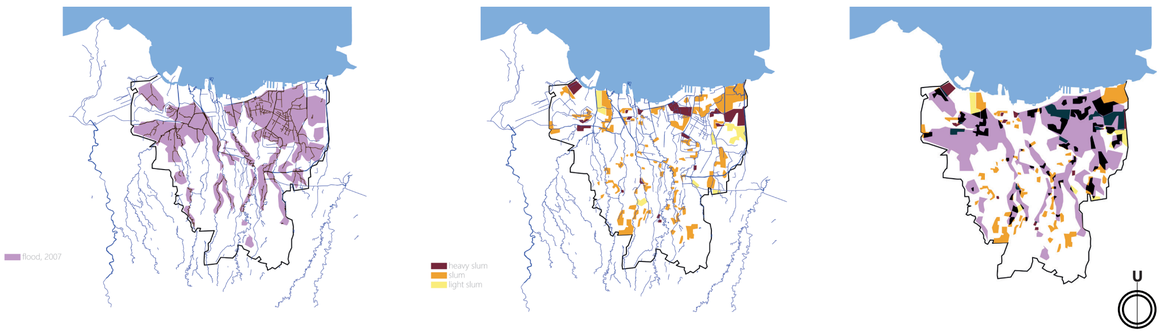
TRANSFORMATIVE RESILIENCE

A Study of Derivative Form of Resilience in Informal Settlement
Study Case: Bukit Duri, Jakarta

PROBLEM STATEMENT

Bukit Duri as one of the informal settlement in Jakarta has been exposed by flooding almost every year. The vulnerable and fragile living condition is composed by socio-spatial problem which then leads to high magnitude of disaster impact to the neighborhood. Its limited access to economic capital also brings the inhabitants close to poverty once they are exposed to flooding. Yet, very few approaches have been introduced by the government to address resilience and sustainability within the informal settlement, especially in Bukit Duri. The pragmatic and technical solution often used as the only option which tends to neglect the existing socio-economic dimension within the community. The poor operational approach is considered a huge deficiency in many resilience programs which leads to the unsustainable process. Furthermore, top-down planning approach usually performs as a generic action in slum upgrading which is difficult to be executed at the micro level.

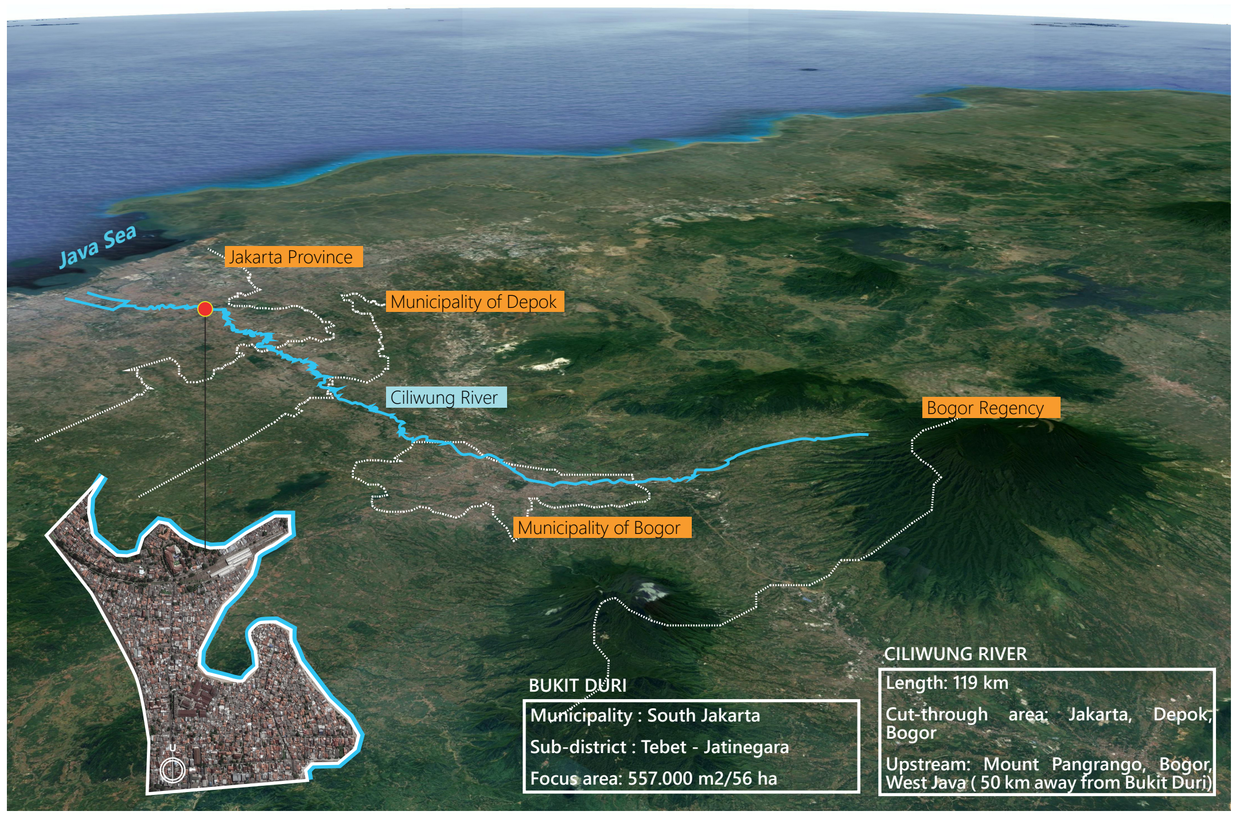


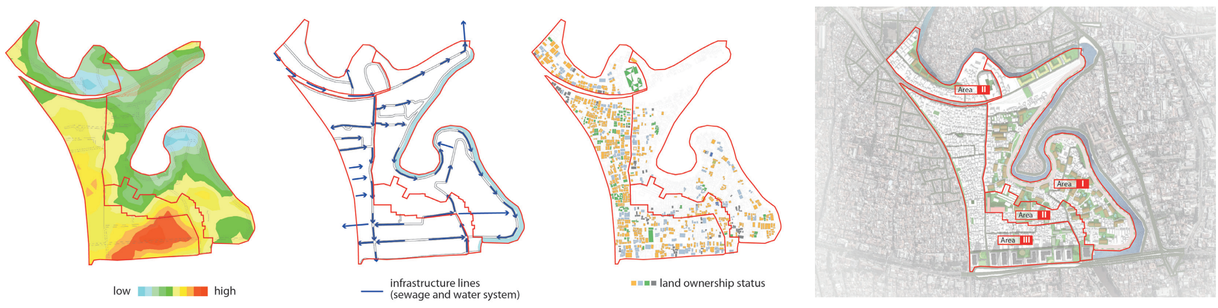
Overlayed map of flood-prone area and the location of slums (3rd map). Most of the slums are located in vulnerable area in which the magnitude of disaster is exacerbated by the poor living caondition.
Source: Jakarta Urban Challenges in a Changing Climate Change, 2010)

Poor living environment has brought the inhabitants of Bukit Duri more vulnerable to any natural hazards. Lack of infrastructure support secludes them from the major system.
source: jakartaglobe.id; kumparan.com

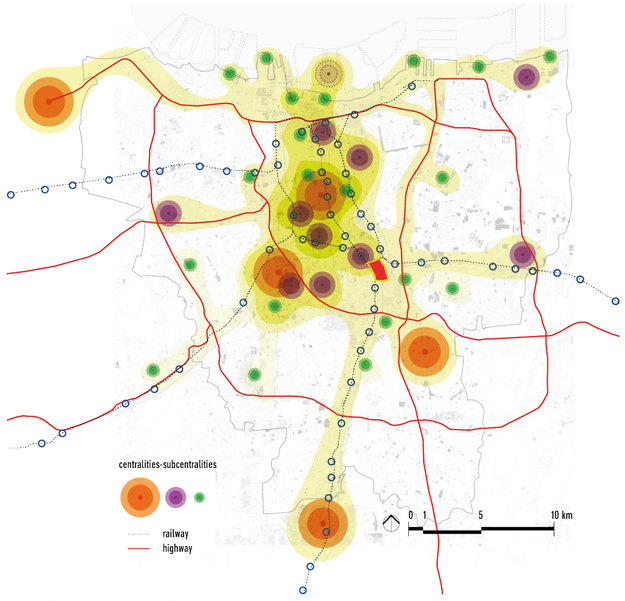
Lack of infrastructure connection in the neighborhood has resulted to problematic mitigaion of flooding
(source: author)

Some examples of existing local business in the neighborhood which uses private and public space threatened by flooding..

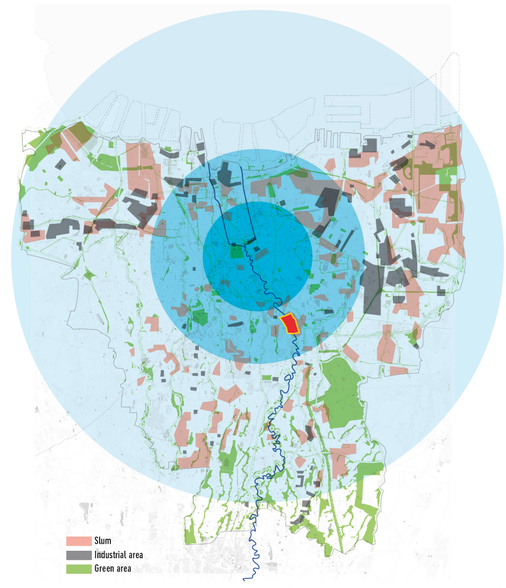




Vulnerability-based areas are defined based on the layerof geography, infrastructure network and land ownership
(source: author)



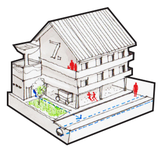
Map of centralities and infrastructure network in Jakarta. Bukit Duri is located in the area with a high concentration of centralities which suggest masive development pressure
(source: author)



Proportion of green space in the inner ring of the city is considerably limited. Bukit Duri is located in second ring where several slum settlement emerged
(source: author)

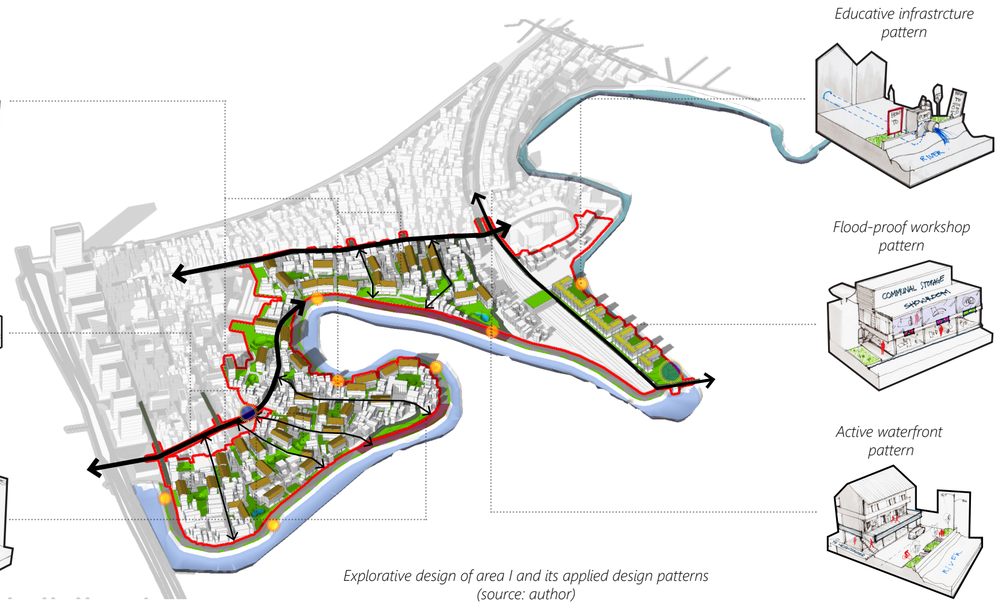
Vulnerability-based areas are defined based on the layerof geography, infrastructure network and land ownership
(source: author)

Co-housing pattern



Recreational detention pond pattern

Thematic waterfront pattern



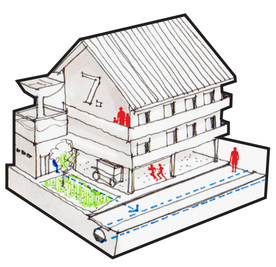
Explorative design of area I and its applied design patterns
(source: author)

Educative infrastrcture pattern

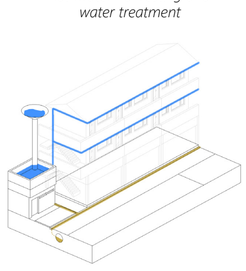
Flood-proof workshop pattern

Active waterfront pattern

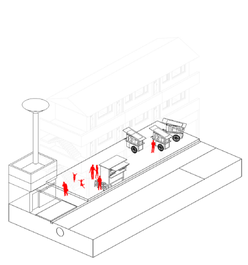
Co-housing pattern



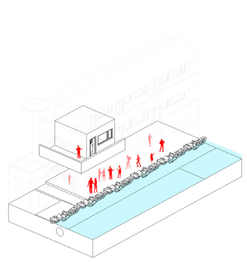
Rainwater harvesting and water treatment



Storage space

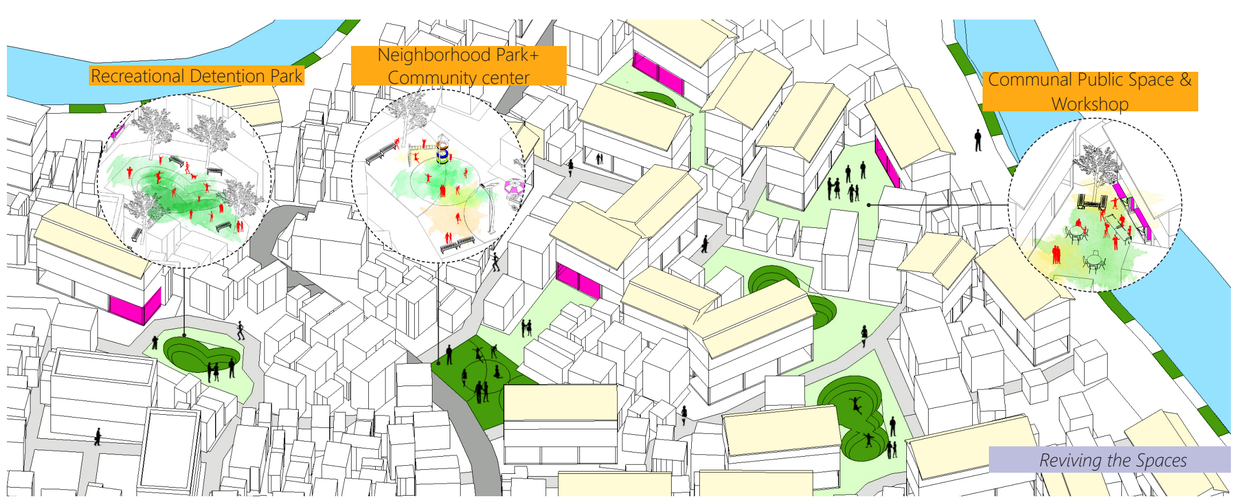


Communal self defense

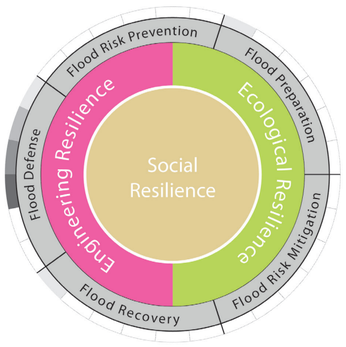


The improvement of livelihood in the neighborhood is first proposed on the basic entity of household by organizing a communal housing typology to accommodate multiple families in one single housing building. By the introudction of **community land trust** (**CLT**) scheme, land adjustment of several parcels of land gives opportunity for the inhabitants to have legal ownership status and performs a more communal adaptation to flooding.The objectives of this pattern is to prepare a better adaptation to flooding by introducing several physical infrastructure and non-physical infrastructure. Moreover, the building is constructed by elevating the living space on the upper level to avoid destruction of properties caused by flooding.

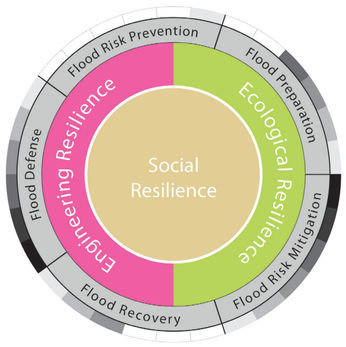
New infrastructures of rainwater-harvesting and water treatment are introduced to provide the inhabitants with a proper and good sanitation of water supply. The connection to broader network of infrastructure, for instance sewage system, is enhanced by connecting every co-housing building with the sewage channel. Daily activities such as social gathering and workshop are accommodated in a designated space on the ground level. Initiation of open space also triggers a more intimate interaction among the inhabitants which shares the activities communally. As an addition, the space on the ground level can be utilized as the storage for carts, workshop utilities and any other business properties which predominantly used by the inhabitants.



Existing capacity of resilience

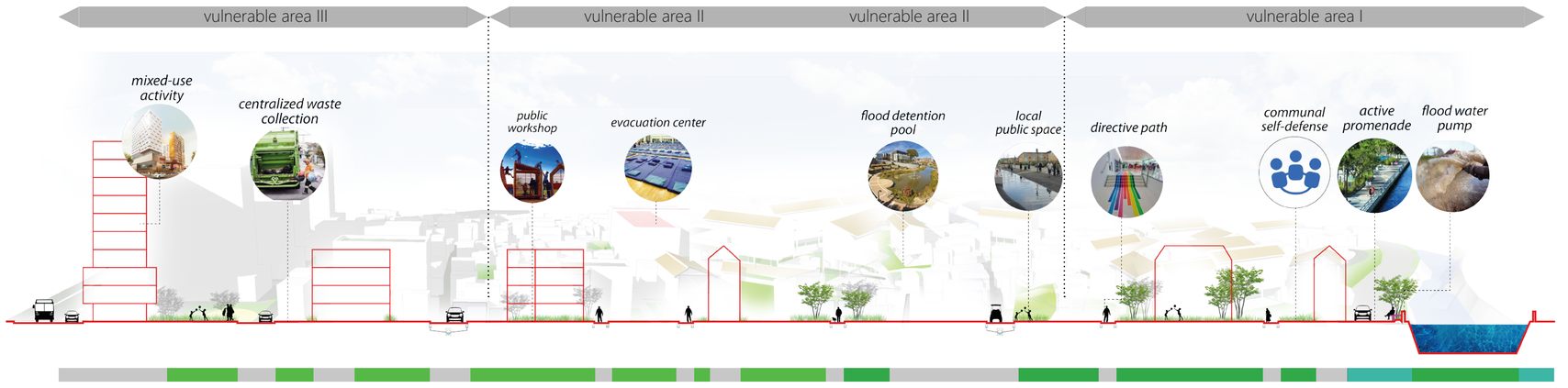


Proposed capacity of resilience



low degree — *high degree*

Comparison between existing and proposed capacity of resilience of Bukit Duri
The capacity of resilience is assessed by referring the proposed intervention and design patterns with the measurement of flood-risk governance
(source: author)



Diagramatic section of Bukit Duri shows different development character based on vulnerable areas
(source: author)

Ardian Wiratama

Student Name : Ardian Wiratama

Student Number : 4626133

Faculty of Architecture and the Built Environment

(Urbanism track)

Delft University of Technology

ardianwiratama@gmail.com