CRAFTING THE DISUSED

Graduation plan

Local waste material transformation potential and integrated waste management on a decentralised scale

Written by:
Frederice Koch
Student Number 4513924

Tutors:
Design tutor: Monique Smit
Research tutor: Jan Jongert
Building technology tutor: Paddy Tomesen

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2628 BL Delft

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Turning waste material into vernacular building material in support of a sustainable and extentable housing model for Bandung

01 Argumentation of choice of the studio

Having become fascinated with the possibilities of recycling waste material during my second semester has inspired me to continue my research on how to use this for building purposes.

During my graduation year I am planning on exploring the material and its possibilities further and am thriving to find an appropriate solution to reuse waste materials as building materials. The department of architectural engineering with its 'BuckyLab' studio has initially led to my fascination and the 'intecture' graduation studio not only gives me the freedom to explore, while offering support and guidance, but offers the thematically well fitting sub-studio 'flow'.

02 Problem Statement

Problem I:
waste pollution

Having developed an ever growing 'throw-away' culture over centuries, we are facing a growing problem of waste pollution on earth.
To reduce the impact this has on the environment, ways of reusing need to be explored. Especially in such a case as that of plastic which takes hundreds of years to break down and never degrades fully. Reusing existing stock instead of producing new is therefore of importance.

Bandung in Indonesia is a good example of a highly waste polluted city and proofs a valuable context for the above mentioned problem as it offers a high amount of differing materials that can be experimented with, due to its economic dependence on industries, especially the fashion industry, thus producing a large amount of by-products.

Problem II:
housing shortage, poor quality housing and little self-appropriation

Furthermore, the need for housing in Bandung calls for low budget solutions, making recycling a possibility in comparison to rich western countries. Having exploited most of

Bandung's natural resources, 'new' materials are needed. Many of the local factory workers gain extra income by renting out spaces within their houses. To support this and allow for future adjustments by the occupants, a design frame would be beneficial - providing the necessary spaces and allowing for infilling by the occupants, when needed.

03 Overall Design Question

How can Bandung's housing shortage be addressed in a sensible but effective way, while ensuring sufficient space and future proving, as well as supporting local businesses and craftsmanship? The architecture of the project itself will support my sustainable approach in the form of structures that can be adapted depending on the needs of the occupants and their future situations and the future economical development of Bandung.

As a theoretical model the project attempts to offer a flexible frame structure that can be appropriated and arranged as needed. Offering a variety of solutions depending on its inhabitants needs, deriving from the same basic model.

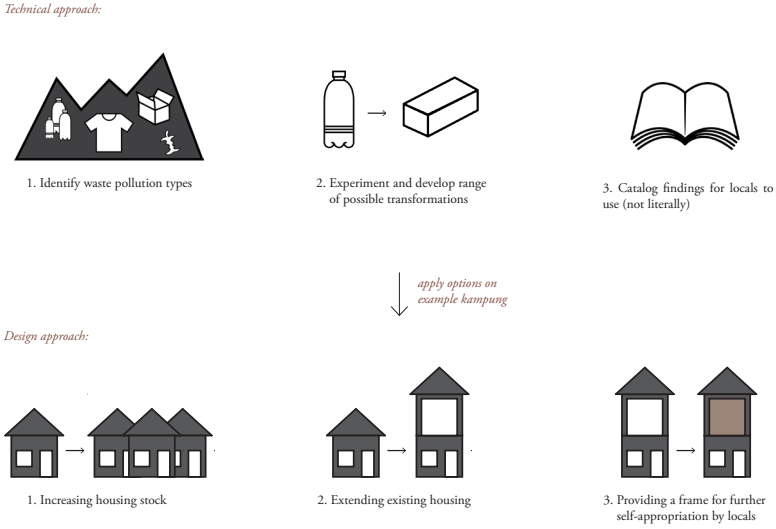


fig 1. Schematic of intention (own image, 2016)

04 Research Question

In the attempt of tackling both issues at the same time, this project concerns itself with finding ways to transform the ever increasing amount of waste into useful building materials, that can be used by locals to build with little funds and skills - resulting in a catalogue (not literally) of possible transformations depending on skill, knowledge and means of the user. In order for this to be useful, any transformation should orientate itself on the basics of traditional construction techniques.

What types of everyday waste material are best suited for reuse in the building industry and how can these be transformed into building material?

How can the process of transforming waste material into building material be streamlined and assist in the simplification of the process of construction to best be made available to unskilled locals? And how can this concept encourage appropriate waste management within the kampung and integrated recycling within the day to day lives of kampung residents.

05 Intended Result

It is the declared intent of the project to develop a suitable waste management model, that concomitantly caters for alternative solutions to waste material transformations into building material in the support of increased and safe new building typologies for Bandung and changes the current stigma of waste as an unwanted material and to recognise its potential.
The waste management model will form the basis for a new small scaled business model for Cigondewah focusing its energy on the above mentioned processing of waste materials into building materials for new dwellings in a bid to improve the current housing quality and lay ground work for facility infrastructures. The housing model should address architectural identity issues and answer with a typology suited to the context and incremental vertical expansion for future densification.

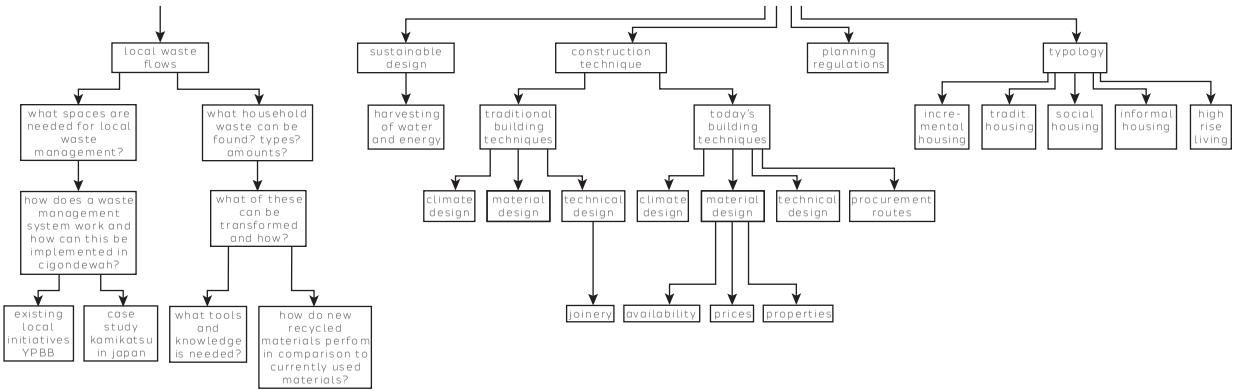
objective

Research Question:

What are Bandung's waste flows and the potentials and needs to locally transfer household waste into valuable construction materials?

Design Question:

How can the management of waste and its transformation into construction material encourage the development of local housing typologies for Cigondewah?



technique and system research

technique and system research

design research

06 Relevance

In the age of ever more depleting resources and growth of waste pollution, it is important to consider how these two are linked and how the one can be overcome with the other. Furthermore, the current housing shortage is an ongoing global issue. The idea of the project is research based and solution oriented and attempts to improve the quality of the environment and humanities awareness of environmental issues but also to open our minds to the fact that by-product based design does not automatically mean ugly or less convenient. It is the projects incentive to improve communal life, as well as communal space.

fig 2. Methodology scheme (own image, 2016)

07 LITERATURE

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