DISTRIK MELINGKAR

GOALS & DESIGN STRATEGIES

CLUSTER LEVEL

ENERGY

GOAL: Reducing energy needed for passive cooling
DS: Courtyard plan is laid out according to the main direction of the wind flow on the hill side of the location. Houses are raised from the floor and are not adjacent to each other. Allowing the wind to cool each house on all sides. All roofs are North-South orientated for maximum protection from the sun. Tap water at 21°C coming from the PAM-system, runs through the floors of housing. The only active, low energy use, cooling system is the bamboo fan that is pre-installed.

WATER & SEWAGE

GOAL: Reducing the need of PAM water and reducing waste water.
DS: Grey water and rain water within the sub-cluster is guided through natural ditches to a fish pond that also contains vegetation such as 'ecen gondok'. This is the first step in filtering water. Water from the fish pond is then guided to the fish-rice field system throughout the cluster, where its filtered more, feeds the fish and naturally eventually ends up in the river in the valley. Rain water in the building is collected and used for flushing toilets. Black water from the toilets is collected to create biogass.

WASTE

GOAL: Reducing waste that ends up in landfills
DS: Industrial/general waste is sorted and collected. Plastic is recycled and other waste is processed within the cities recycle system. Kitchen waste, also known as biodegradable waste, is separately collected by the clusters waste service. This is used in combination with the collected black water to create biogass at the facilities on the east side of the cluster. Where it is then sold at the supermarket, situated next to this facility.

FOOD

GOAL: To produce foods locally, create jobs and use agriculture to filter and clean grey water coming from the houses before the water enters the biosphere of the river system. Food should also play a bigger role in the education and development of children.
DS: Using an agricultural system of rice and fish farming fields as the central backbone of the cluster. This not only creates a natural scenery to walk through, but also provides locally grown food that is sold in the newly build supermarket/open market situated on the east side of the cluster.

TRANSPORTATION

GOAL: Remove the car from the living spaces within the neighbourhood. Stimulate the people to walk to their houses and meet each other on the streets.
DS: Central parking is put on the outside of each sub-cluster. Residents can park their cars on the same height level, as that of their house and the walkways follow the contours of the hill. Preventing the residents from requiring them to walk uphill. Walkways pass the front doors and terraces of that of their neighbours. Creating spaces for opportunities of interaction between neighbours.

HOUSING LEVEL

MATERIALS

GOAL: To replace concrete and bricks as the main material with renewable materials.
DS: Bamboo is used for the structural skeleton. This not only reduces the embodied energy, but prevents the eventual waste. By structuring 'light', the building tries to minimize its impact of its surrounding. This hill side in Bandung. Industrial materials when used, are designed to be easily disassembled and prefabricated in standardized sizes. Allowing for possible reuse before becoming waste.

DESIGN FOR DISASSEMBLY

GOAL: To build the building in distinctive and separable building layers. Enabling easy maintenance, repair, replacement or disassembly without damaging other building components.
DS: By using a durable aluminium structural clamp-connection to create the bamboo structure. This connection prevents the use of glue or other adhesives. Allowing for a clean disassembly. The connection can be reused for up to 70 years while the bamboo beam and column elements can, after their technical lifespan, be returned into the biosphere while they are replaced by newly grown bamboo.

MATERIAL PASSPORT & BANK

GOAL: To make it as easy as possible to identify industrial products and materials. To design them as such, so they can easily be reused in other houses or building products. Or if needed be completely extracted from the building components and recycled.
DS: By using either renewable materials such as wood or bamboo or by prefabricating building products that can be easily documented for reuse or proper disposal and of which the materials can be extracted.

MAINTENANCE

GOAL: To make sure maintenance to the building will be done and building products and elements are easily accessible to maintenance workers.
DS: To ensure maintenance to be done, ownership stays with the developer who sells the plots through a building material lease system.
Furthermore, the building is build in distinctive layers, each with their own building material and each material with their own technical lifespan. Making sure that when one layer needs replacement, the other building layers with longer lifespans are not required to be replaced too.

STANDARDIZATION

GOAL: To standardize the building and its building components within the neighbourhood, ensuring for reuse of products and/or materials.
DS: In the sub-cluster all three sizes of houses use the same building method. Therefore using the same structural connections. The plans of the buildings are based on a 800x800mm grid. Creating 800mm wide prefabricated sandwich panels that can be reused for new homes in the neighbourhood, extensions of homes, incremental change of floor plan or entire houses can be reused as class rooms or offices in existing structures in and around Bandung. To prevent them from becoming waste.

CIRCULAR ECONOMY

ORGANIZATIONAL STRUCTURE

GOAL: To have a top-down organization with the clear ambition to develop a sustainable neighbourhood, but have it feel and behave as a bottom-up organization. DS: The Masterplan is designed by the developers and divided into sub-clusters. Future residents are included in the design of the public spaces and their own floor plans within these sub-clusters through workshops. Each sub-cluster elects a RW-leader. The 7 RW-leaders together with 2 appointees from the developers side form a board to make future decisions. RT-workgroups are formed to organize maintenance, activities and festivities.

CIRCULAR MODELS

GOAL: To provide future residents of property ownership whilst maintaining responsibility and oversight of the building materials. To prevent unnecessary building waste that fills up the Indonesian landfills.
DS: Plots within the sub-cluster for detached houses are bought by the residents. They own private land while also paying a monthly fee for neighbourhood maintenance. The building materials are leased. Responsibility for maintenance, repair and eventually recycling stays with the developer. The stacked housing apartment residents buy a long term leasehold. Allowing them to live within the community for a smaller investment.

CIRCULATION

GOAL: Biological building products should be naturally treated and be able to be returned into the biosphere or recycled into another material. Industrial products should maintain their value for as long as possible via maintenance and repair.
DS: By designing the building in separate building layers. Allowing them to be maintained and repaired without damaging other building products. To maintain their original value for as long as possible.

BUSINESSES & PARTNERSHIPS

GOAL: To create new businesses.
DS: Agricultural businesses are created for rice and fish farming. Bamboo as building material is grown, harvested and either sold or leased within the cluster and become a steady stream of revenue. Biogass is produced from black water + kitchen waste. Products such as rice, fish and biogass are sold at the supermarket situated in the North-East corner of the cluster.

SOCIAL STRUCTURE

GOAL: A neighbourhood with strong social cohesion. Where neighbours interact and collectively make decisions on the future of their housing cluster.
DS: Dividing the cluster into different sub-clusters increases the strength of social bonds within the sub-clusters. Future residents are also included within the design stage of the sub-clusters and of their type 46 houses and the communal spaces within the building blocks. A football pitch with community centre is placed within the centre of the cluster. RT-workgroups are formed to initiate neighbourhood activities, preform maintenance in and around the sub-clusters together and organize cluster festivities. If you come to live within the neighbourhood you come to live within a community.