Incremental Construction
Low-cost modular housing scheme, Addis Ababa, Ethiopia

Summary and appraisal by the jury

The research project Sustainable Incremental Construction Unit (SICU) is a response to the housing challenge in the rapidly-urbanizing capital of Ethiopia, Addis Ababa. The project is process-oriented and aims to both explore and implement specific construction techniques to tangibly upgrade the city’s housing stock. Whereas the first phase of the process was framed by collaboration between academia, local administration, and inhabitants, the second phase is specifically focused on the development of a prototype – a purposefully incomplete structure that is both affordable and rapid to assemble. Close to 100% of the building components including prefabricated concrete elements and lightweight eucalyptus frames are prefabricated and produced by micro and small-scale enterprises, creating the opportunity for skilled employment and capacity building. The housing unit is a “half-ready construction” where the homeowners will be able to finish the construction themselves, installing building components and finishes according to their needs.

The project incorporates a series of features that promote the concept of sustainability beyond the common understanding of the term. The jury greatly values the role of the university as a critical player in advancing the constructive framework of the city, engaging a range of stakeholders – city officials, local inhabitants, craftsmen, etc. – in the very formation of the urban habitat. While the project offers strategies for formulating the informal, at the same time it learns from local construction practices and social customs to produce a new form of urban vernacular – a strategy that essentially formalizes the informal.

Sustainability concept

The Sustainable Incremental Construction Unit (SICU) experiment attempts to address the climatic, economic, cultural, and social sustainability of the project context. This is achieved by using locally available and locally produced prefabricated building elements with standardized dimensions, an easy to construct modular system, and a culturally and socially motivated design that enables highly flexible forms of occupancy. At the same time, the approach targets mass-customization, affordability and “up-scalability” of the building prototype.

A high proportion of building parts of the house (approximately 70%) are prefabricated in a workshop by micro and small-scale enterprises, creating the opportunity for new jobs and skills. Considering the current building system in Ethiopia – which is highly dominated by imported technology, expensive customized processes, and inflexible ‘cast in-situ’ systems – this shift will present a cost-efficient and faster alternative for the construction sector.

Through the efficient employment of resources, energy, labor and time, Incremental Construction demonstrates that the city’s complex and seemingly insurmountable installation process of housing units could be overcome. By learning from the experiment, it would be possible to self-construct a very affordable housing unit in less than three months. It also makes it possible to activate private enterprises. From the pre-existing or newly-organized youth associations can be able for them, and pursue its production as a business initiative. The pre-prepared design that is modular allows for easy adaptability for small-scale manufacturers to adopt essential details and proportions and then further develop and modify them, as required.

In addition, the physical structure is designed to support the incremental nature of construction in the Addis Ababa context. The approach allows homeowners of incomplete structures to further the construction themselves; installing building components such as enclosure walls, windows, internal partitions, and finishes, according to their needs.

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