

Vertical Village Buildings as Sustainable Strategy to Re-Attract Mega-Cities in Developing Countries

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Abstract : Overall study purpose has been the evaluation of 'Vertical Villages' as a new sustainable building typology, reducing significantly negative impacts of rapid urbanization processes in third world capital cities. Commonly in fast-growing cities, housing and job supply, educational and recreational opportunities, as well as public transportation infrastructure, are not accommodating rapid population growth, exposing people to high noise and emission polluted living environments with low-quality neighborhoods and a lack of recreational areas. Like many others, Egypt's capital city Cairo, according to the UN facing annual population growth rates of up to 428.000 people, is struggling to address the general deterioration of urban living conditions. New settlements typologies and urban reconstruction approach hardly follow sustainable urbanization principles or socio-ecologic urbanization models with severe effects not only for inhabitants but also for the local environment and global climate. The authors prove that 'Vertical Village' buildings can offer a sustainable solution for increasing urban density with at the same time improving the living quality and urban environment significantly. Inserting them within high-density urban fabrics the ecologic and socio-cultural conditions of low-quality neighborhoods can be transformed towards districts, considering all needs of sustainable and social urban life. This study analyzes existing building typologies in Cairo's «low quality - high density» districts Ard el Lewa, Dokki and Mohandesen according to benchmarks for sustainable residential buildings, identifying major problems and deficits. In 3 case study design projects, the sustainable transformation potential through 'Vertical Village' buildings are laid out and comparative studies show the improvement of the urban microclimate, safety, social diversity, sense of community, aesthetics, privacy, efficiency, healthiness and accessibility. The main result of the paper is that the disadvantages of density and overpopulation in developing countries can be converted with 'Vertical Village' buildings into advantages, achieving attractive and environmentally friendly living environments with multiple synergies. The paper is documenting based on scientific criteria that mixed-use vertical building structures, designed according to sustainable principles of low rise housing, can serve as an alternative to convert «low quality - high density» districts in megacities, opening a pathway for governments to achieve sustainable urban transformation goals. Neglected informal urban districts, home to millions of the poorer population groups, can be converted into healthier living and working environments.

Keywords : sustainable, architecture, urbanization, urban transformation, vertical village

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