Constructing an Urban Future: The sustainability and resilience of cities – infrastructures, communities, buildings and housing.

• Paper / Proposal Title:
Optimizing prefabricated construction techniques in UAE as a solution to Shortage of middle-income housing

• Format(s):
In-person presentation

• Author(s) Name:
Mohamed Elkaftangui – Basem Mohamed

• University or Company Affiliation:
Abu Dhabi University

• Abstract (300 words):
Housing is a major issue in the Middle East and North Africa (MENA) region, JLL, the world's leading real estate investment and advisory firm, highlights the social and economic impact of a marked shortfall in the required supply of middle-income housing, suggesting that significant efforts are needed to address the current imbalance.

An "affordable" sales price in the UAE is currently around AED790,000 with an affordable annual rent of around AED72,000. In KSA, the affordable sales price is around SR450,000 and the affordable annual rent is around SR47,000. For an equal standard and lifestyle in UAE and KSA, the gap of prices raises many questions.

The importance of the middle-income sector of the market should not be underestimated, even if the relative numbers in the UAE are small, but there are still over
820,000 middle-income households, representing almost 40 percent of all households in the UAE. Only 22 percent of residential units launched in 2016 to date in Dubai are “affordable” to “middle-income” households “while we have not seen any residential units being launched this year that meet our definition of ‘affordable’ in the other markets.”

Several factors that have contributed to the current shortage of affordable housing, high land values which have reduced access to affordable land, High capital costs for associated infrastructure development, low adoption of prefabricated construction techniques have contributed to higher construction costs, lower financial returns compared to other residential sectors, making such developments less attractive for developers, limited access to suitable finance for low income families, due to generally immature mortgage markets. Resolving the shortage of middle-income housing requires a concentrated effort involving government agencies, private developers and other stakeholders.

In this research we will mainly focus on the promotion of industrial approaches to construction and more unified, large scale procurement processes to reduce construction costs. This Study will investigate the UAE Housing market, and will propose solutions and road map for a better evolution of the prefab sector including techniques, infrastructure and finishing in United Arab Emirates.

• Author(s) Biography (200 words each):

Mohamed Elkaftangui is born in Egypt on November 1960. He is Post graduated in Bioclimatic Architecture from “Ecole National Superieur d’Architecture de Toulouse”. From 1986 to 2007, he lived and worked in France for “Sequences” Architecture Consultants before creating his own Architecture office focusing on residential buildings. In Egypt, He related professional and academic works by teaching Architecture in AAST of Alexandria and created many residential and public buildings in Egypt, Libya, Albania and Senegal. In 2008, he worked as a design manager in United Arab Emirates and since 2013; he is Associate Professor in the Architecture Department of Abu Dhabi University, UAE. His researches and publications focus on environmental architecture and sustainability. The author has recently published the following articles: “Rethinking the old residential sector in UAE: A Methodology for Sustainable Retrofitting”, International Journal of Services, Technology and Management”, Inderscience Publishers. ; and A Computer- Based Participatory Model for Customization in the UAE Housing Market, Emerald 2017.

Basem Mohamed is designer, researcher, and educator. He has completed his Doctoral degree at McGill University School of Architecture, where he developed a digital platform for mass customization of prefabricated housing systems. His research and design work focus on design strategies, information technology, computational
design methods and fabrication tools to rethink the prefabricated housing realm. He received multiple research awards to implement his research findings within leading prefab housing company in Quebec province, Canada. Basem's research has been published in numerous conferences and journals, including ARCC, MCPC, and Open House International. In addition to collaborating with architectural practices in Egypt, Canada, and UAE, he has taught at McGill School of Architecture, and AAST Alexandria. Basem is currently an Assistant professor of Architecture at Abu Dhabi University, teaching design studios, and digital modeling and representation courses.