

SUSTAINABLE DEVELOPMENT OF THE BUILT ENVIRONMENT IN AFRICA: A RADICAL APPROACH

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As a graduate student in Construction Management, I had always wondered how the principles of sustainable design and construction could be applied to my country and continent of origin, Nigeria and Africa respectively. For the first project that I explored, I conducted a preliminary design of a solar powered water disinfection system for African countries, using Lusaka, Zambia as a case study. Zambia was chosen because of availability of data, good water source, and keen interest of the Zambian government in water disinfection and distribution. The method utilized was basically a desk study of the literature. The findings showed that 100 liters (about 26 US gallons) of disinfected water can be provided daily to a household in Lusaka, which can be collected and stored in a tank for later use. The cost of the solar equipment utilized at the period of design was 999 US dollars (without labor cost)

from SunMaxx Solar Inc. having a life span of 20 years. Based on the literature, the installation and maintenance costs can be neglected due to the simple and basic approach proposed. The research, if implemented, would help to reduce water-borne diseases and water shortage while improving water quality.

The second research project currently pursued is geared towards increasing the capacity and capability of Nigerian students who are in building design and construction to appreciate sustainability and potentially become agents of evolution in sustainable design and construction. The project was inspired by my unique six-week summer experience at the Navy Yard, Philadelphia in 2017. The program, Global Sustainability Practice (GSP), was led by the Pennsylvania State University in association with the United Nations Economic Commissions for Europe (UNECE), Danfoss, and École Polytechnique Fédérale de Lausanne. I was one of 17 participants selected globally, with a purpose to engage a diverse cohort

of next generation professionals in collaborative, immersive, experiential learning dedicated to the advancement of the built environment through evolutionary living systems thinking. The program seeks to align and expand a community of regenerative practitioners who use the built environment as a nodal intervention for developing the capacity of ecological, social, and economic systems that grow the vitality of each place indefinitely. The output of my individual project would be the development of a university-level course in sustainability of the built environment that is suited to the Nigerian context. The envisioned strategy is to continuously engage the students beyond the classroom, leveraging solar technology as a nodal point of intervention. The expected outcomes for students that will take this course include improved understanding of energy efficiency, reduction in carbon footprint, enhanced well-being for people, and design decisions that are value-adding to all stakeholders, in alignment with the UNECE agenda.

There seems to be a shift in thinking about achieving sustainability in the built environment from using ‘best practices’ to identifying ‘place-sourced solutions’ because places and people are unique, what that may be an appropriate sustainable solution in one place may not be sustainable in another. At present, there is little or no published academic literature on place-sourced regenerative design of buildings in the context of Nigerian environment, or for the continent more broadly. The proposed radical approach of regenerative design goes beyond sustainability to aim at building the capability of the systems it affects such as people, place, and economy, to serve as catalysts for continuing co-evolution.

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