ENERGY POVERTY OF OUR LUXURIOUS BUILDINGS

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With the issues arising due to lack of buildable land plots, high-rise office complexes and apartments can be considered as appropriate solutions in space utilization and green land conservation. This can be seen as a trend in global context where Sri Lanka is no exception. However, at the same time the urge to live in urban contexts has paved way to popularize extensively luxurious buildings. Thus, the more concern for high end luxury living has intensified the craving for energy. Available data demonstrate that Sri Lanka's contemporary urban building sector consumes excessive amounts of energy – national average of energy foot print of our typical office and multi-level apartments is around 250-300 kWh/M2/a or well above whereas some buildings have energy foot prints as high as 400 kWh/m2/a. This situation is problematic for a country with no renewable resources to produce energy.

The most luxurious buildings that do exist in Colombo demand excessive levels of energy for operation and show poverty in respect to energy demand. The reason for this is poor climate response of architectural design. A recent on-site thermal performance investigation performed on luxurious building sector in Colombo City on weekends reveals that indoor air temperature reaches 40 Degrees C or above easily during the day when the air conditioner is in off mode and when there are no occupants and equipment is not in operation. This suggests that solar heat gain through the building facades which make the building indoors hot ovens. Another investigation on air conditioned mode of office buildings reveals that there are situations where indoor air temperature during office hours in multi zones across the plan depths and lengths deviates up to 10.50 from the set point temperature (240 0C). The work highlights the severity of heat stress on indoor environments and thus energy sustainability, an issue to be addressed by optimizing the interplay of architecture with climate. Poor daylight efficiency and stressful behaviour of occupants due to overheated indoor environments are other concerns that need to be addressed. It is becoming vital to introduce a new definition to Luxury buildings; which in turn will enable the occupants to enjoy all comforts but without disabling the ability of the future generations. There are a number of design interventions that can be integrated with the plan form, sectional form and envelope at the design stage to achieve the above. Yet, it is unfortunate that we in Sri Lanka have failed to explore this through architecture, design and construction, rather, following trends and applying just only mechanical gadgets to claim buildings as energy efficient or carbon neutral.