

## **GREEN APPAREL FACTORIES AND WORKER'S PERCEPTION: POST OCCUPANCY EVALUATION ON INDOOR ENVIRONMENT, BUILDING RELATED SICK SYMPTOMS AND PRODUCTIVITY**

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Buildings symbolize the single largest contributor to human created emissions and responsible for significant share of Greenhouse Gas emissions. Local building stock consumes 70% of the grid generated energy and with the ambitious GDP growth projections it is definite that the current national annual energy demand will increase in future. However, at COP 21 in Paris, our pledge for Intended Nationally Determined Contributions is reduction of 7% of GHG emissions by the year 2030. Thus, enforces a greater seriousness on mitigation of building related emissions. Green buildings are effective catalysts to promote sustainable built environments and several green rating systems are focused on resource efficiency, promotion of occupant's health, productivity and reduction of waste, pollution and environmental degradation. LEED the Leadership in Energy and Environmental Design of the U.S. Green Building Council is the most widely used and recognized green building rating system in the world.

There is an enduring trend for LEED green rating in the construction industry of Sri Lanka and pioneering buildings of this rating system in Sri Lanka are key players of the apparel industry and renowned as the flagship green garment factories in the global apparel sector. Thus the study focuses on the systematic evaluation of worker's satisfaction and perception of indoor working environment and emerging health issues through symptoms of Sick Building Syndrome in Platinum and Gold rated green apparel factories.

In this study worker's perception on working environment was assessed through a widely used structured questionnaire of Building User Survey (BUS). The questionnaire explores the working atmosphere through thermal and visual, comfort, perception of indoor air quality, worker's satisfaction and prevalence of sick building syndrome symptoms. Randomly selected sample of 150 machine operators participated in this survey. Results explicitly prove that the working environments of both green factories promote negative impacts on productivity and majority suffers from health issues originated from poor indoor environment conditions. Moreover, majority of workers are affected with building related sick symptoms such as fatigue, nausea, heavy head, dry throat and dry facial skin.

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Indoor environments of both green factories are not influential in the increase of productivity of its workers. Prevailing indoor environment decreases the productivity by 29% and 32% in Platinum and gold rated green factories respectively. Statistical analysis of the data proves a significant relationship between productivity and building related sick symptoms. These findings inform limitations of universal certifications in evaluating indoor environmental conditions. Moreover, establishes that the green factories in Sri Lanka do not support the worker's perception on working environment which in turn promotes negative impacts on productivity. Thus this research highlights far reaching implications and importance of national policies, guidelines and rating schemes to originate a precise green building certification approach for Sri Lanka.