

# INDIGENOUS RURAL HOUSING AND ITS INDOOR THERMAL PERFORMANCES BESIDE THE PADMA RIVER BANK AREAS

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## ABSTRACT

A unique geographic location, coupled with climate change impacts, has made Bangladesh one of the worst victims of natural disasters. 'Living with disasters' is a cruel reality for the people of Bangladesh, and rural housing is one of the major sectors which is badly affected almost every year. This study focuses on one of the primary problems of traditional vernacular dwellings beside the Padma riverbank areas, which is the overheating of indoor spaces due to changing demand of building materials as well as harsh, barren landscapes. This empirical research was conducted by doing surveys and analyses about the available building materials, housing characteristics, homestead layouts, space-use patterns, and environmental conditions on the northern side of the Padma riverbank areas, at Munshigonj, Dhaka. Again a quantitative method of analysis was carried out for assessing indoor thermal environments of a few randomly selected houses with the help of a pocket weather meter. The surveys reveal that these houses were vulnerable to recurrent natural hazards, and their indoor environment was relatively uncomfortable. But in terms of affordability and availability, they are clearly optimum and sustainable. It may be possible to suggest ways and means of improvement of the physical environment of rural housing in such a way as to improve their indoor thermal performance and reduce vulnerabilities.

**Keywords:** *rural housing, vernacular dwelling, indoor environment, thermal comfort, natural hazards, riverbank areas, vulnerabilities.*

## 1. INTRODUCTION

Indigenous rural housing construction and its overall layout in certain localities develop according to the needs of inhabitants under a set of geographic features. Again, climatic variability, economic reasoning, and changing trends of human need have always been a foremost apprehension in any housing technology being practiced, especially among those groups of people who have been living in close association with nature for years. In order to adjust with

natural calamities and environmental disasters, these people have generated a traditional paradigm of well-protected, sustainable, and ecologically-sound housing technologies which have been changing due to the presence of several factors. Demographic growth, shifts from rural to urban areas, resource depletion caused by natural as well as man-made reasons, and significant changes in expectations and life styles, all combine in their various ways to erode the viability of traditional approaches to shelter provision and the usage of building materials. However, during the past few decades, due to the advent of a cash economy (Mitchell and Bevan, 1992), industrialization, and population pressure (Alauddin et al. 1995) traditional housing is declining, or changing in form and layout. Thus, inappropriate use of materials and construction methods, fuelled by populist notions of wealth in rural housing, creates unhealthy and uncomfortable indoor environments.

Bangladesh lies in the northern hemisphere, with a composite monsoon climate having a rather long warm-humid season (Ahmed 1994). It is a generally held view that traditional houses in this region are more sympathetic to the prevailing climate, and are well collaborated with local beliefs and traditions as well as local materials, which in turn provides comfortable interiors. Again, the Ganges-Brahmaputra and Meghna river basin make this country one of the most disaster-prone regions in the world. Thus, rural life has always had a slow, steady pace here, broken only by changes of season, celebrations of their life cycle, and by natural calamities. The region already has a very critical geographical location along with poor economic conditions, and the impacts of floods, tropical cyclones, storm surges, and bank erosions are high and heavy on the housing, physical infrastructure and the life and livelihood of the people. However, the advent of frequent natural disasters and the current scarcity of natural resources have greatly affected the traditional rural housing process. Thus in rural Bangladesh, affluent households are shifting to manufactured materials like C.G.I (Corrugated Galvanized Iron) sheeting due to its widespread availability, portability and durability. As a result, the quality of housing, both within the interior and on the exterior, especially beside the riverbank areas,