

**STUDY THE EFFECT OF SPATIAL
STRUCTURE ON THE
STABILITY OF AN URBAN ECOSYSTEM**

**Case Study
Sahaspura Compact City**



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ABSTRACT

The study was conducted to assess the stability of human ecosystem considering natural ecosystem concept. It identified the stability attributes common to both human and other animals. In natural ecosystem when there is system instability, the survival of fittest will remain. However the drastic characteristic that shape human ecosystem is that human always tend to manipulate its own ecosystem according to their requirements and attain the stability.

The process of urbanization that taken place during the industrial revolution introduced urban built environment in more complex way while opposing the nature. With the increase of urban flux the built environment expanded, and the human ecosystem too become complicated. The housing and other infrastructure requirement left many inadequacies resulting different social strata within the community. The community group who performed in the informal sector was unable to afford for standard living and were clustered in under-served settlements like slums and shanties. Their housing conditions and infrastructure facilities are so poor and inadequate to the growing demand. Hence they always deviate from mainstream and become less recognized by the society. The Shaspura Compact City has been designed and implemented to ensure the stability of the under-served urban communities by absorbing them into a compact and standard high-rise apartments with required infrastructure in its spatial structure.

Like other organisms human too show verity of behavioural patterns and accordingly he too have territories. These territories are mainly lie within two regions such as behavioural and operational environments. In Sahaspura Human Ecosystem the

operational environment describes the area where life functions of the Sahasa community are taken place. The behavioural environment lie mainly within the Sahasa Housing Complex and it describes the human interactions from personal level to neighbourhood level. Ecosystem stability is decided by the availability and adequacy of functional elements within its spatial structure. Hence to study the stability of the Sahasa Human Ecosystem the spatial structure of both operational and behavioural environment was assessed.

The methodology used to study the spatial structure was firstly identified operational environment by studding the location or the distance traveled for various life functions. That would be the Sahaspura Human Ecosystem. Secondly the behavioral environment was studied both at Housing Complex Level and Housing Unit Level. The detail study was carried out mainly to the Housing Unit in order to see the provision (availability) and adequacy of functional elements required to fulfill the life functions of Sahasa community. The Housing Complex Level assessment is done only to see the provision (availability) of common functional elements required to fulfill the life functions within the neighborhood.

Sahasa Housing Complex is basically consist of four house types A,B, C and D with different floor areas approximately around 300, 400, 500 and 600 sq.ft consecutively. However when selecting the study sample house type D was excluded as there was only 10 houses and also no occupancy of such houses during the study period.

The adequacy of functional elements in A, B, C house types was studied in three different ways as below.

- Space allocation for functional elements by comparing with the housing standards (UDA Building Regulations and UNCHS guidelines)

- Space Utilization pattern of the functional elements by the occupants
- Occupant's satisfactoriness to the allocated space of different functional elements

The study of the operational environment showed that there were no much changes in the operational environment as the relocation of Sahaspura project has been carried out mainly within the same proximity. Accordingly it reveals that the Sahaspura Human Ecosystem lies within an area covering approximately 5 to 6 square kilometers and the highest concentration of activities observed within 1 kilometer distance. Hence people could continue their life functions uninterrupted with minimum stress. Also due to the provision of some common functional elements such as commercial outlets for marketing and shopping, pre-education facilities, banking facilities etc., within the behavioral environment (Sahasa Housing Complex), it is expected that the operational environment could result further compactness in future.

The study of the provision (availability) of functional elements of the behavioral environment in Housing Unit Level showed that the every individual housing unit in all three house types has been provided with required functional elements while maintaining privacy, security and personal authority.

Findings of the adequacy of functional elements studied in above three methods could be summarized as follows. Space allocation in accordance to the UDA Building Regulations revealed that there were inadequacies in some of the functional elements in all three house types. Apart Total Habitable Area Guidelines in accordance to UNCHS guidelines too showed inadequacies w.r.t. household size. Although there were certain inadequacies, the Space Management the Occupant's satisfactoriness on the allocated space show better results in all three house types. Apart, space management was directly linked with occupant's social hierarchy. Accordingly those

who have higher social status showed better space management practices and many of the house type C occupants and some of the house type B occupants were showed better space management practices. Occupant's satisfactoriness on allocated space for many of the functional elements was exceptionally high than any other with few exceptions linked with layout of the functional element. Eg. Kitchen and Toilet/Bathroom in house type C. The study relates this exceptionally high satisfactoriness is consistent to many factors that have attributed in the Shaspura Housing Project. Such as relocation within same proximity, poor social/environmental background in previous place of living, lack of standard house, granting ownership for new house, standard living practices in new housing complex etc were further accounted for their satisfaction with the new housing unit. Also within a neighbourhood many stress conditions has been minimized by providing functional elements for individual's/family or a household's satisfaction without interrupting common needs.

Accordingly Sahaspura Housing Complex together with its city limits can be described as a Human Ecosystem which has integrated with many stability components within its spatial structure leading to ecosystem sustainability. Also it has to emphasize that as this study has been conducted in the early stage of relocation it largely reflects satisfactoriness during transition period. As the human requirement changes over time, their satisfactoriness of the spatial structure may also be changed over time. Hence as long as the built structure of the ecosystem is maintained and managed, when their is dis-satisfaction or more requirements it is expected that people can move better places by selling their property and hence again the resilience is maintained within the ecosystem.