Accessibility in Housing Design: A Critical Review of Prefabricated Housing, Tirana Albania

Ina Osmani Dervishi[1] , Anna Yunitsyna[1]

[1]Department of Architecture, Epoka University, Albania

ABSTRACT

The main aim of the present research is to advance the state of the art of the accessibility in housing design. It addresses how to include the category of disabled people in the design process. In addition, the research includes the accessibility issues at different stages or completely accessible with different functions. The paper explores the key concepts via an in-depth theoretical background towards a barrier-free building design. Statistical evidences of the disabled people in Albania are illustrated. As case study, prefabricated buildings adopted in the early ’80 s are used to illustrate the accessibility limitations in housing design and to explore the modularity of the structure and the corresponding plan layouts. The results showed that prefabricated housing design is rather limited to accessibility, adaptability and universal design strategies.

Keywords: Accessibility, universal design, prefabricated housing, Tirana

INTRODUCTION

Nowadays around 10 per cent of the world population, or roughly 650 million people, are disabled (Disabled World 2011). This category, in particular in developing countries, is having obstacles in their physical environment in education, employment, health care, social services as well recreational activities (Connell et al. 2008). Besides the physiological and psychological aspects of the barriers, they face economic problems (Nasar and Cowley 2007). Case studies in a number of countries show that higher disability rates are associated with higher illiteracy, poor nutritional status, lower inoculation and immunization coverage, higher unemployment rates, and lower occupational mobility, among other characteristics (Peter 2004). A barrier free environment is the key factor for this group of people to be included in all aspects of social life (Robert 2004).

Several authors have studied the environment design and its impact into disabled development. People with impairments are rarely involved in design processes (Abascal and

Colette 2005). Connell defined the concept of Universal design as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Connell, et al. 2008). Universal design ranges from inclusive and non-discriminatory design of products, cars, architecture, and urban environments and infrastructure, all the way to information technology and telecommunications (Nasar and Cowley 2007).

Theoretical background

The accessible house design mainly concerns the following concepts: i) It should be visitable by all *(barrier free building)*- the house should include a level entry, wider doors throughout the entrance level and a washroom on the main floor ii) Should be designed to be adapted economically in a later stage and accommodate someone with disability such as removable cupboards in a kitchen or bathroom in order to create knee space for a wheelchair user. iii) The houses should be accessible and designed to meet the needs of a person with a disability *(e.g. open turning spaces within rooms, wheel-in shower stalls) iii)* Universal house design main idea is to use a house is different and comes with different abilities that change over time and used by everyone *(e.g. lever door handles, lighting levels, stairways that feature handrails, easy-to-use appliances).*

The design links key easy living features aiming to provide accessible and adaptable house, including the quality of life for all levels of occupants including single person, people with disability, old age pensioners, people with temporary injuries and family with young children. Conceptually, it is an approach to design homes, which is well integrated and meets the current and future needs of home occupants. To further describe the theoretical background the accessible housing needs to be integrated: i) Equitable to use: the design has to be useful to all potential home occupants with diverse ability. ii) Flexible in use: Housing design needs to host a wide range of individual abilities iii) Simple and intuitive to use: Housing design need to easily accommodate all home occupants iii) Easy to interpret: Housing design should communicate environmental information to the home occupant, regardless of ambient conditions or the user's sensory abilities iv) Requires low physical effort: Housing design needs to be easy, comfortable and efficient to use to accommodate a wide range of individual preferences and abilities.

Methodology

1.1. Statistical evidences in Albania

Evaluation of disability in Albania is made by special committees of experts specialized in different fields. Disability statistics collected by the government of Albania represent the number of people registered to receive disability pensions and also those registered as recipients through the social welfare system. Currently they are reduced in the number of people with disabilities and the main types of disability. According to data received from the Ministry of Labor, Social Affairs and Equal Opportunities (Bardhylka et al. 2009) the prevalence of persons with special disabilities categories is shown in Table 1 and 2.

Table 1 Prevalence of disabled people categorized by type of disability (2006)

Type of disability	Total	Urban	Rural	Caretaker
Disabled -till 21 years old	44794	19669	25125	7288
mental, sensory, physical	35547	15166	20381	3593
Blinds	8621	4197	4424	3142
paraplegic and quadriplegic	626	306	320	553
Invalid	30250	26274	3976	1462
working disabled	29676	25904	3772	1500
disabled from war	574	370	204	
Total	75044	45934	29101	8788

The number of disabled people registered is increased around 10 times during 3 years (Kospiri, et al. 2010). This includes only people who are commissioned and benefits pensions and support services (MPCSSHB 2008). In fact the number of people with disabilities is higher than official sources indicate. According to the statistical data more than 4% of total population of Albania is considered disabled and Tirana has the highest number of this community.

The main problem of disability in Albania is lack of proper infrastructure for facilitating accessibility of these people. Another problem is that only few people are attended in social care institutions, in schools or rather working. A small number of employees indicate the low degree of awareness of the Albanian society and employers as part of this society to consider persons with disabilities as active part of society. The facts show that there is a progress made in the establishment of new social services for people with disabilities compared to previous

years. Considering these dramatic statistics and current state of the environment that surrounds us this study will follow with the implementation of standards in buildings and infrastructure trying to improve and facilitate the lives of disabled people.

Table 2 Number of people with disabilities in Albania 2009

Type of disability	December 2008
Total people with disability	**105972**
Beneficiaries of disability allowance-Total	57333
Blind	10868
Paraplegic and quadriplegic	3662
mental, sensory, physical disability	42803
Beneficiaries of carer allowance-Total	**13247**
Blind	3408
Paraplegic and quadriplegic	3552
mental, sensory, physical disability	6287

1.2. Case study Description

The concrete panel prefabricated modular systems were adopted in the early ‘80s as a solution to the emergent need for social housing in Albania. Figure 1 illustrates the prefabricated building structures in different urban zones in Tirana, Albania. During 1978-1979 the first examples of this technology were tested before starting the mass production. The production factory was located in Tirana and had a capacity of 2000 apartments/year. The prefabricated buildings have been constructed in all the cities that had a railway access. The panels were transported in special wagons that facilitated the loading and transport by minimizing the damages. The variations in the buildings schemes are limited. The height of the buildings varies in general from five to six floors. The slab-to-slab floor height is 2.80 m. The distribution schemes usually present a vertical circulation core serving two to three apartments in a floor. The typical Outer Panels used in the most frequent layouts are shown in Figure 2. Reinforced concrete skeleton structure and brick partitions often have been used at the corner connection between two buildings. The solution made possible creating alternatives in urban schemes without modifying the basic plan of the module and without adding new panel types.

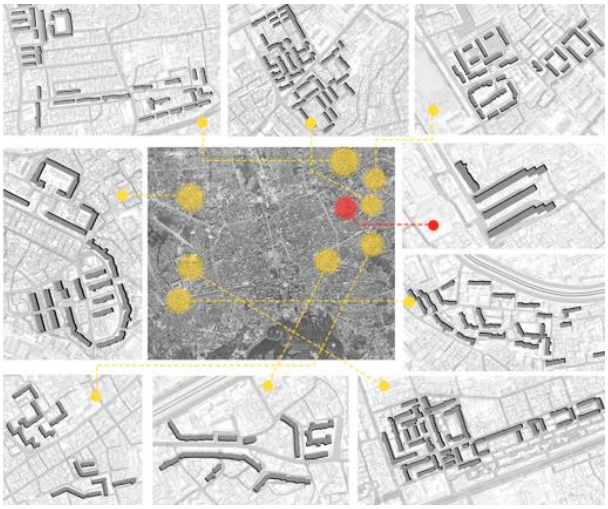


Figure 2: The prefabricated building structures in different urban zones in Tirana, Albania

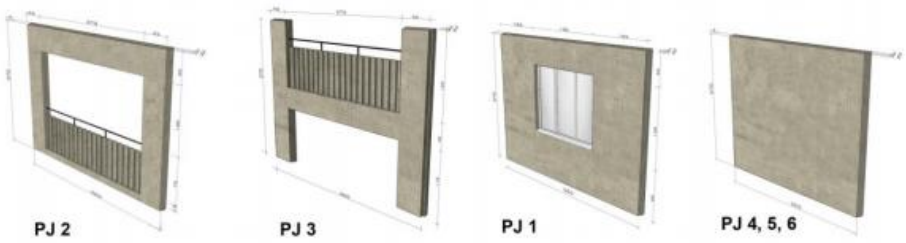


Figure 3: Typical outer panels (PJ): PJ2 – balcony outer panel; PJ3 – staircase outer panel; PJ1 –
outer panel with opening; PJ 4, 5, 6 – opaque panel.

1.3. Plan layout

The apartment layout consists on one or two bedrooms and a living room with separated cooking space (Figure 3). In addition, the apartments possess one balcony that can be accessed from the living room, one bathroom and storage space. The areas of the units vary mainly from 55 m² (one bedroom) to 73 m² (two bedrooms). The space design meets the terms of the Typical House Model that have been approved in 1972 from the State Design Institute referring to the Technical Notes of the Prefabricated Panel Housing – Section 1 (Veizaj and Islami 2014). In addition, another scheme proposing alternative layout was approved by the Ministry of Construction in 1979 (Technical Notes, Prefabricated Panel Housing – Section 2).

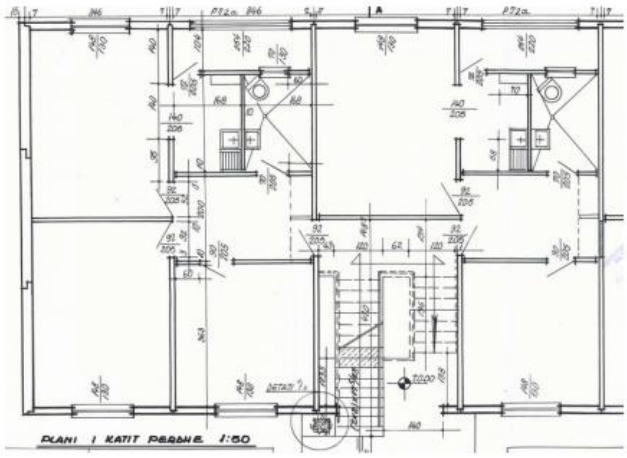
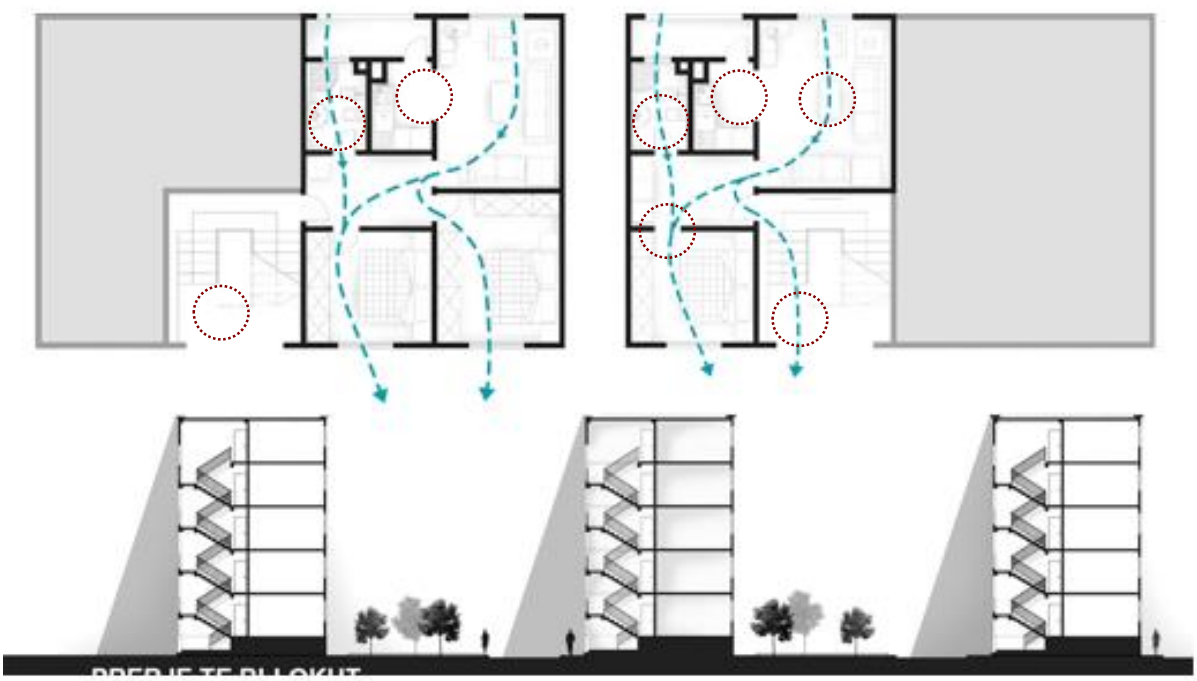


Figure 4: Typical outer panels (PJ): PJ2 – balcony outer panel; PJ3 – staircase outer panel; PJ1 – outer panel with opening; PJ 4, 5, 6 – opaque panel.

Accessibility design in prefabricated housing

Based on the theoretical background of accessibility in housing design, this section analysis the typical two apartment layouts of prefabricated buildings. A maneuvering circle of 1 500 mm diameter, was used to analyze the bathroom, kitchen, bedroom. This space should be clear of any heat emitters. As figure 4 illustrates, the apartments are not designed to be visitable by everyone in the family, including the aging grandparents. Specific features limit the level entry at the main entrances and elevator. Doors and other openings throughout the main floor do not provide at least 840 mm of clear width. Both of the apartments do not have a main floor bathroom that is large enough to accommodate a person using a device such as a walker, a wheelchair or a scooter. In addition, beside the bathroom, also the kitchen units are quite small and inaccessible, and there is very limited space for the disabled people.

The plan layouts to not facilitate cost-effective adjustments to enable an occupant to live in comfort conditions, restricted access from the house entrance if unable to use the stairs for a period of time (e.g. no elevators) and limited adaption to suit the needs of occupants who have or acquire a more permanent disability and enable them to use all the facilities.



CONCLUSION

Disabled and elderly people are the most restricted part of the society. Obstacles in physical environment exclude them from different activities. A barrier free environment is vital to improve their physical and social status. Firstly, the paper addresses the key concept of accessibility in housing design. An in-depth theoretical background is provided through a barrier free building design. Then, statistical evidences of the disabled people in Albania are illustrated. As case study, prefabricated buildings adopted in the early ’80 s are used to illustrate the accessibility limitations in housing design and to explore the modularity of the structure and the corresponding plan layouts. As the results showed, this category of housing design is very limited to accessibility, adaptability and universal design strategies. Further studies will explore the accessibility issues in housing design in different other periods. In addition, future strategies are needed to enhance accessibility in the field of built environment, improving the legislation related to the human rights, especially in the field of housing design and insuring that the low is implemented. Public awareness on the importance of barrier free building is crucial. In addition, the involvement and participation of the diverse persons in decision-making process is crucial.

REFERENCES

[1] Disabled World. January 28, 2011. http://www.disabled-world.com/disability/statistics/ (accessed June 16, 2011).

[2] Connell, B. R, M Jones, R Mace, J Mueller, A Mullick, and Ostroff, E. The principles of universal design. 2008.

[3] http: // www.design.ncsu.edu/cud/about_ud/udprincipleshtmlformat. html (accessed june 10, 2011)

[4] Nasar, Jack, and Jennifer Cowley. Universal Design and Visitability: From Accessibility to Zoning. Columbus, Ohio: National Endowments for the arts, 2007

[5] Kospiri, Bardhylka, i Blerta Can, Entila Zyba, and Narbis Ballhysa. The implementation of the action plan of the National Strategy of people with disabilities in 2009-2009. Monitoring report, Tirana: ADRF, 2010

[6] Peter, Robert. "Transport strategy to improve accessibility in developing countries." The 10th International Conference on Mobility and Transport for Elderly and Disabled people.

[7] Hamamatsu, Japan: World Bank, 2004. 76-84.

[8] Abascal, Julio, and Colette Nicolle. "Moving towards inclusive design guidelines for socially and ethically aware HCI" Elsevier, 2005: 484-506.

[9] Islami Gjergji, Veizaj Denada. "Comfort Conditions and Energy Consumption in Prefabricated Houses in Tirana" Second International Conference on Architecture and Urban Design. Tirane, Albania.

[10] Imrie Rob. "Independent lives and the relevance of lifetime homes" Routledge, Disability & Society, Vol. 21, No. 4, June 2006, pp. 359–374