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Impacts of Illegal and Expedient Development on Built Environment

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Abstract: Cities are central to the process of socio-economic growth and innovation. However, when these cities undergo through an unplanned urbanization process, they often molded themselves into numerous urban problems. Once these urban areas are expanding beyond their periphery limits, significant changes in the land-use regulation and violation of the bylaws occur. This may dramatically affect the built environment. Thus, this research is an attempt is to highlight the trends of unplanned urban development and quantify their impacts on the built environment of Qasimabad town in Pakistan. An informal approach of land-use assessment was used to determine changes and its impacts from the years 1988–2013. The study has used a wide range of substantive examples and targeted cases studies, which were helpful to identify urban land-use change and suggested a possible strategy to resolve them. The results illustrated that land-use changes were mainly driven by anthropogenic activities. Results also shows the major cause of land-use change was lack of law and enforcement and proper policies to leverage long-term consequences. Policy implications can be drawn from this research for the future development that should be based on the functionality of local environment and social aspects of urban areas.

Keywords: Land-Use, Urbanization, Built environment Impacts, Urban Development.

1. Introduction

As population and human activities increase, land become an increasingly scarce resource which put immense pressure on finite land resources and cause land deprivation [5]. Changes in land cover and land use are among the most important [13], [8]. It is also at the regional scale that land-use changes driven by and resulting from population movement are most apparent. Perceived opportunities in growing urban centers and lack of opportunities in rural settings, resulting from degraded landscapes and imbalanced economic systems, have made the migrations since the second half of the 20th century the greatest human-environmental experiment of all time [3]. In this scenario, the land-use change, and urban development trends are the major built environment and social threats in fast-growing regions in the world [4].

In Pakistan, cities are facing numerous urban development issues, such as overcrowding, congestion, haphazard growth and sprawl. The UN estimated that currently, about 35 percent of Pakistanis live in "urban areas ", and in another ten years, more than half of Pakistanis will begin to reside in urban centers [14]. This leads to the challenge of land resources. Most of the urban population is facing housing shortage, together with lack of basic services and infrastructure such as public parks [16]. The trend of rapid development of the urban space without considering inner city's redevelopment is usual in Pakistan as well as in developing countries [5]. The positive contribution of the urbanization has often been counterweighted due to

the inability of unplanned towns and cities to manage high population growth. Well, this is not the only reason; lack of consideration of land-use planning by-laws has also become an increasingly international concern in urban areas of developing countries [14]. While the future well-being of cities is significantly affected by the current land-use policy and planning decisions [7]. Therefore, great attention should be paid, in academics, professionals, and policies to eliminate such issues. The problem could be more understood by taking its one of main causes: rural-urban migration in Sindh.

This research present land-use changes and their impacts regarding social and built environment services and highlight urban development issues and their trends. The main purpose was to find out whether and how land use and urban development had brought change in the selected residential areas or not. On the basis of literature that has already proved that built environment and social problems are often taking place because of the pressure from land development [8]. The Qaimabad Town was selected which was supposed to be facing this rapid urbanization challenges.

Various studies are carried out to examine impacts of mix use of land, for example, [1] developed a methodological protocol system to incorporate the built environment impacts in the regional land-use plan. S well-executed planning must take place to produce a balanced and transparent relationship between the various environment needs and social interests [2], [12], [15]. Land-use policies (i.e., zoning, master plans, growth boundaries) help determine urban form and its impact, but a long-term study of the Seattle region found that growth-management efforts to increase housing densities within growth boundaries had the unintended consequence of encouraging low-density housing sprawl in rural and wildland areas just beyond those boundaries [9].

The adopted approach in this study has the ability to reflect the whole dynamic change in land-use pattern, with its built environment and social impacts. Like other human activities, land use planning must adapt continuously to those changes of increasing rhythms [6]. The study approach builds a theoretical procession for the systematical assessment of land-use planning, environmental and social functions with multiple aspects.

2. MATERIAL AND METHODS

A) Study area

Hyderabad is the second largest city in Sindh province and the sixth largest city in Pakistan. Hyderabad is composed of 4 Talukas. The densely-populated taluka of Hyderabad, i.e. Qasimabad was selected as a case study in this research. Qasimabad is in the western part of the city, covering an area of 49,800 acres with an overall population of 650,000 inhabitants [10].

B) Methodology

There was a lack of information on the urban land use change impacts on the built environment and the dynamics of development. Such information was essential for a better understanding of the sustainability of urban development processes, both planned and unplanned towns. We, therefore, investigated the changes in land use and development trends of 4 residential areas in Qasimabad, using aerial photographs taken in 2013 and their proposed plans 1988. Based on a primary data collection and spatial evaluation of land use change, the development trend was examined. Four sites were selected for spatial analysis and 390 questionnaires were analyzed out of 400.

The satellite images of selected sites were compared with the proposed maps obtained from Hyderabad Development Authority. Once the selected site maps and existing images were compared, the images were classified with differences. Accuracy evaluations were conducted for each of the classification methods to calculate the probability of error for results directory. The data can be helpful for planning policies urban management and monitoring process. Analysis of changes in land-use and the impact of these changes can be the source of valuable information for regional policy makers to support sustainable development.

C) Data Collection

Performances of both approaches (public participation and Landsat images) were practiced so that the best consequences for land-use changes can be achieved for the desired study area. Out of four case studies, only two are presented here. The questionnaire had 21 questions and questionnaire were divided into three parts, the first part was about personal data, second was about socioeconomic data and third was about built environment data. But only selected questions are involved in this paper.

Further, the Qsimabad Town was divided in four areas, as described below in Figure 1. which shows four main areas Qasimabad from which data was collected. Namely Qasimabad town that covers Phase I, Phase II and road from Poonam Petrol Pump to Ali CNG. The second area covers the whole Wadu Wah Road and Naseem Nagar Chowk. The third area is Happy Homes Road that covers the road from Naseem Nagar to Citizen and Gulistan - e- Sajjad. At last, the fourth area is Bittai Nagar that covers the road from Gulistan - e- Sajjad to the highway and besides national highway. From these four areas, 390 questionnaires were filled. The proportion of the questionnaires is stated as, 98 from Main Qasimabad town, 102 from Wadu wah, 96 from Bhittai Nagar and 94 from Happy Homes Road.

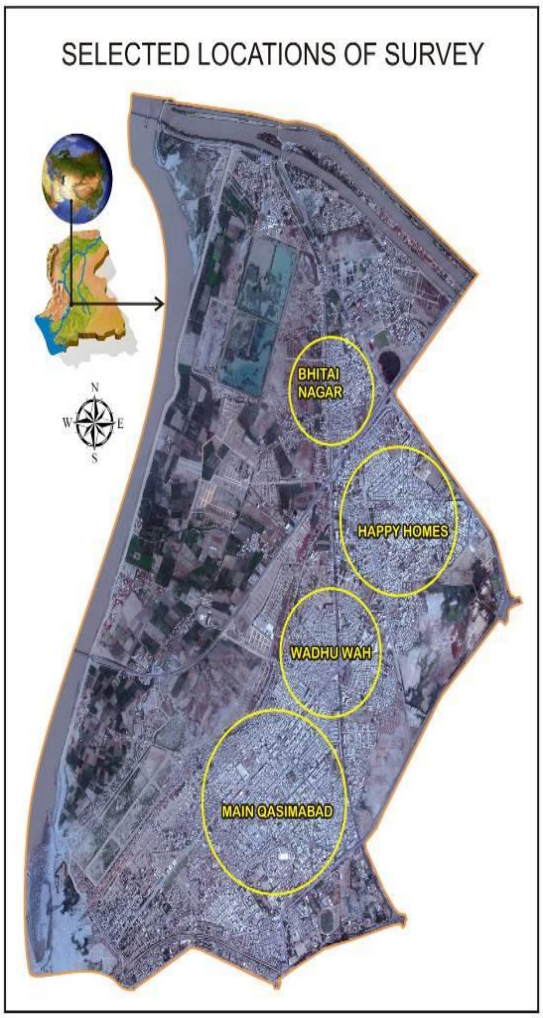

Fig. 1 Illustrates the selected sites for data collection

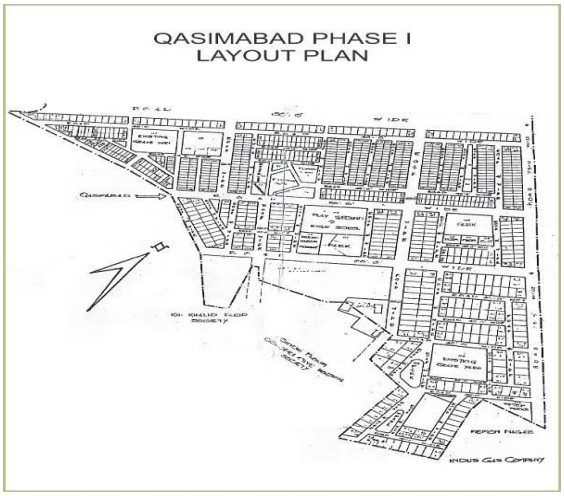

Fig.2. Qasimabad Phase I Layout Plan.

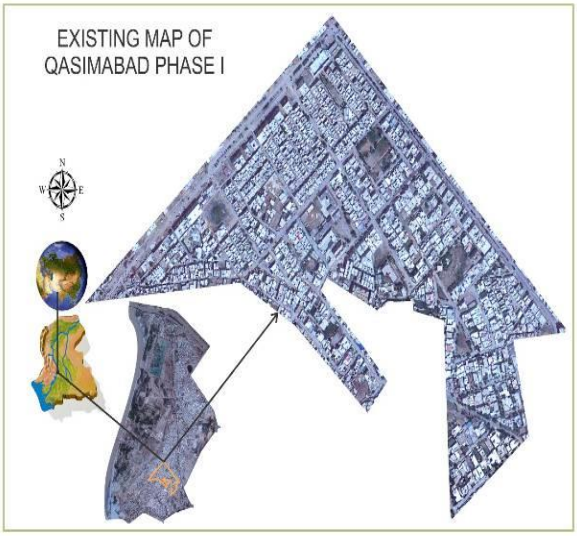

Fig.3. Existing Map of Qasimabad Phase I

The comparison of the proposed plans, maps and pictures were used to compare the changes in land use of selected sites of Qasimabad town. Although this approach is very simple it was successful to show the main problems and changes of urban expansion in the study area.

3. RESULTS AND DISCUSSION

A) Site 1 (Qasimabad phase I)

Qasimabad Phase I was taken as one of the case studies and compared the actual plan with existing development condition. Figure 2 shows the Lay Out Plan of Qasimabad Phase I Approved by HDA in 1997. With the total area of 80 acres, the scheme contains 893 residential and 66 commercial units with the following category of plots. This scheme is 100%completed schemes with 959 No. of allottees. Table 1 showing details of no of plots and their category.

Table 1. Number of plots in proposed layout plan of Qasimabad phase I.

Land Use	Proposed	Existing	Difference
Roads	25%	16%	-9%
Commercial Area	5%	15%	+10%
Amenities	10%	4%	+6%
Residential	60%	68%	+8%

Figure 3 shows the existing map of Qasimabad Phase I showing the present condition of the area after its development, it is clearly shown on the map that plots of 120 sq. yards and 240 sq. yards, reserved for horizontal development is now converted into vertical development. This case study validates that horizontal residential plots are rapidly converting into vertical development.

Table 2. Comparison of proposed and existing plan of Qasimabad Phase I

Land Use	Proposed	Existing	Difference
Roads	25%	16%	-9%
Commercial Area	5%	15%	+10%
Amenities	10%	4%	+6%
Residential	60%	68%	+8%

In comparison, the results showed that there were great changes have been made in the plan. Discussed in table 2 showing main statistical changes to the existing map in comparing its proposed design plan, such as roads have become narrow from proposed 25% to 16% due to the invasion of commercial activities, Causing the difference of -9% from original value. Commercial plots are converted into residential plots with the increase of 10%, and residential plots are used as mix use residential-cum-12 story buildings. Which were not allowed in the area? The proposed residential plots in the study area were 60%, which has increased to 68%, that means 8% of residential plots are illegal or converted by some other land-use. Amenities, which were already less, are furthermore decreased by 4% that leads to the depreciated built environment.

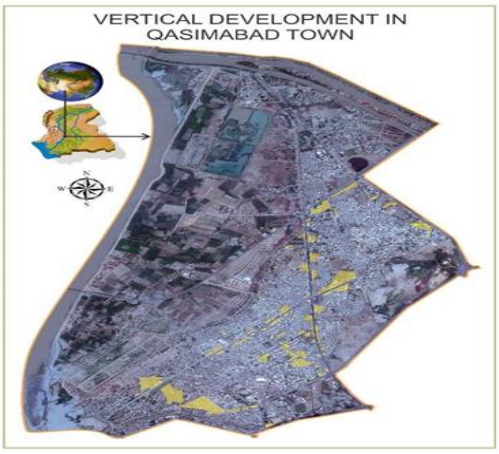

Fig. 4. Vertical Development of Qasimabad

Figure 4 shows the map of another vertical development's examples in the Qasimabad town which is carried out against the proposed master plan of the town. This massive urban development is altering the land surface by concentrating activities which retain un sufficient and create congestion and poor quality of life, thus affecting the urban built environment. Moreover, tall buildings with unsuitable location and in efficient design codes create multiple problems. Besides these issues, other local environment and social problems arise because of un sustainable urban development (e.g., limited green spaces, biodiversity loss, alteration of land uses, etc.). This is a very common phenomenon in the urban development of most cities in Pakistan. One explanation is that the job attractiveness and education status determine this kind of urban growth pattern. Owing in part to lack of efficient public commuting systems, especially public transport, most of most of the population move towards cities. In this sense, the pattern of new development is determined by improved facilities.

B) Site 2 (Ali CNG to Poonam Petrol Pump Road)

Another case study is presented here regarding decreasing width of roads in Qasimabad town. Table 3 shows the proposed roads suggested in Qasimabad Town, main road, and streets, with the measures approved by Hyderabad Development Authority.

Table 3. Proposed and existing measurement of road from Ali CNG to Poonam petrol pump

Types of Road	Proposed Measurement (ft)	Existing Measurement (ft)
Main Road	75	60
Street	30	20-25

While doing a comparison between the measurements of the actual design and current situation of the ponam petrol pump road it was found that the focal wide roads have decreased. From the table 3, it is clearly shown that the main road is reduced by 15ft. the streets are also reduced with the difference of 10-15ft because of the commercial and residential invasion. This trend of encroachment on roads is usual in the area nowadays.

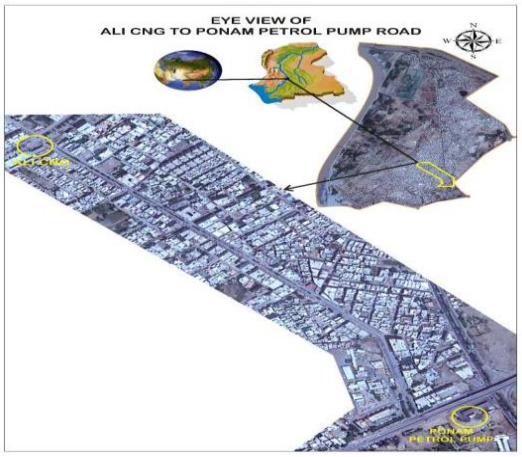

Fig.5. Existing Eye View of Ali CNG to Ponam Petrol Pump Road

C) The impact of land-use changes

During the survey for the investigation of the current development status of Qasimabad town, which is believed, is in the struggling period towards the metropolitan region and this scenario, however, cannot be addressed without reaching an agreement with the way local politics directed to respond each specific

known location. Real estate monopoly, dubious developers, land mixing speculation land mafia and inefficient bureaucracies exist to a greater. From a broad range of question which was asked during survey from residents of selected case studies, some are presented here. The analysis we have argued above shows how the rich array of local-level human-environment case studies can be used to create regional "generalities" of land-use change that helps to improve understanding and modeling of critical themes in local built environment change and urban studies.

TABLE 4

Privacy issues by vertical development

Households	Privacy	Valid Percent	Problem due to Vertical Development	Valid Percent
Not at All	44	11.3	37	9.5
Yes merely	146	37.4	163	41.8
Yes severely	123	31.5	126	32.3
Not sure	77	19.7	64	16.4
Total Sample Size	390	100.0	390	100.0

Table 4 shows the number of households having privacy issues due to vertical development. Many residents feel that the window openings, Plaza's entrance and some managerial and parking issues are causing privacy issues for them. According to this data, 163 people say yes merely they are facing problems created by existing practices of vertical development and 146 said they have privacy issues due to vertical development. The severe issues are faced by 126 and 123 have severe issues w.r.t privacy.

Table 5. Problems of orientation and unsustainable location of vertical development

	Orientation problems	%	Unsuitable Location Crises	%
Yes	52	13.3	78	20
Usually	165	42.4	152	38.9
Rarely	165	42.4	152	38.9
No	102	26.2	114	29.3
Don't know	46	11.7	28	7.1
Total	25 390	6.4 100	26 390	6.7 100

The above table 5 shows the general satisfaction of the people with the existing location of vertical buildings in their privacy, parking, orientation and all other problems. It can be said they are not satisfied with all developments in Qasimabad town. The above table shows the general satisfaction of the people with the existing location of vertical buildings in their privacy, parking, orientation and all other problems. It can be said they are not satisfied with all developments in Qasimabad town. 347 people said "No" with the percentage of 89. Only 43 people said "Yes" with the proportion of 11%," which were satisfied.

The results from the above discussion reveal the higher accuracy and efficiency of satellite images and primary data interpretation. The overall land use change, which is computed through this evaluation as follows, from the period 1988-2013, the available horizontal land decreased by 25 % on average and converted into vertical development. The overall road width is decreased by 11% due to encroachment. Although the people do not seem satisfied with the Existing Practices of Urban Land-uses, 89% people said that they are not happy with the existing situations. While the 41% found, people face some privacy issues due to vertical development. Orientation and unsuitable location of vertical development also cause a variety of issues.

4. CONCLUSION

Case study evidence supports the conclusion that neither population nor poverty alone constitutes the sole and major underlying causes of land-cover change. Rather, peoples' responses to economic opportunities, mediated by improved facilities factors actually drive land-use changes. These trials indicate that land-use policies and projections of the future role of land-use change in urban planning must not only capture the complex socioeconomic and biophysical drivers of land-use change but also account for the specific human-environment conditions under which the drivers of change operate.

Besides this, the impacts of urban development on the built environment were measured and analyzed. The results obtained with higher accuracy and efficiency of a satellite image from the period 1988-2013, were compared and found that 25% of the proposed land for horizontal development converted into vertical development illegally. This is a very common phenomenon in the urban development of most cities in Pakistan. Urban land-use planning is in constant change. Often caused by lack of good governance. In this regard, the role of implementation and regulation authorities were also found outdated, producing difficulties for planning authorities to carry out laws. Thus, like other human activities, land use planning must adapt continuously to those changes of increasing rhythms. Current development trends described in this paper, provide baseline towards the development of decision-making strategies that can play an important role in the development of regional policies for sustainable development.

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