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CASE STUDY

Environmental impact of renovation projects on timeworn textures from the perspective of tourism

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ABSTRACT

Achieving sustainable development for managers and urban planning requires a systemic attitude to various urban issues and phenomena and a comprehensive urban development cannot be obtained with a single-dimensional perspective. Hence, in implementing various urban projects, it is necessary to examine the interactions of these projects with the surrounding environment and to assess their impact on the economic, social and environmental situations. Over the years, many renovation projects have been carried out in Iran; results were mainly the insecurity and expansion of environmental contaminants due to demolition, while changing the urban timeworn textures into a mixed project, especially the type of modern market, can be considered as a tourist attraction in a region. The type of present study is descriptive-analytic, which was done through documentary studies and questionnaire. The area of the project was the immediate area of the project and the perimeter area and the stakeholder survey was conducted using cluster-class sampling. Results of this study indicated the prevalence of diseases caused by severe environmental pollution and dust, the increase of sound, visual and environmental pollution during the implementation of the project.

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INTRODUCTION

The city of Mashhad is one of the tourism destinations, which there is a feeling of need for implementation of renovation projects due to the dating of some neighborhoods leading to the path of the holy shrine. Like living creatures, cities experience the process of growth and decline and the effect of each disruptive factor on the order and space organization can worn out the cities (Momeni *et al.*, 2012; Mcdanald *et al*., 2009) and if these conditions persist, it will destroy the ancient and historical textures that represent the identity and history of a city. In terms of physical expansion and formation of textures, different cities of Iran categorizes into three classes including the old texture (Momeni *et al.*, 2012; Rashidiasl *et al*., 2015) (the texture formed until the Qajar era before the first Pahlavi era, with the characteristic of harmonious, continuous, unified and romantic formation throughout history), the middle texture (about 60 years old, formed around the old texture and its formation speed is not slow as the old texture, nor the speed of the next construction phase) and external texture (formed

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after the 1960s and rapidly build) (Momeni *et al*., 2016). The term "timeworn texture" means an ancient texture that, in addition to having historical cultural values, has worn out, repaired and destroyed buildings and structures, and in some cases, slums are found in ruined lands or properties; in general, this texture is deprived of the historical and conceptual value and is considered as an old texture, hence cleaning, renovation and improvement of such buildings and centers seems necessary (Alipour-Nakhi *et al*., 2016; Greg *et al*., 2010; Ebbert, 2010). If, residential areas around the business core worn out for reasons such as the traditional context of the transit network, worn out of residential units, infrastructure weaknesses and environmental problems, a kind of social and economic processes will take place (Stenberg *et al*., 2009; Reyers, 2001; Haapio and Viitaniemi, 2008; Ostermeyer *et al*., 2013; Forsberg and Von-Malmborg, 2004) The most important economic process is the replacement of low-income groups, migrants, workers and poor people in place of high-income groups as well as changing the use of residential units to manufacturing workshops or warehouses and thus reducing the desirability of residence in these textures. This can be a factor affecting visitors to this space and due to the special circumstances of some of these areas (the study project), it also reduced the number of tourists. In other words, when a building has an appropriate and contemporary function but relative physical and spatial worn-out has reduced the efficiency of the urban environment, the need for renovation seems necessary (Asadian and Sayyahi, 2011; Kohler and Hassler, 2002; Meijer *et al*., 2009; Monjezi and Beik-Mohammadi, 2015). Renovation includes a set of measures that can protect the building and the space of the ancient city and provide the optimum returns. In other words, renovation means renovating buildings or the process of breaking down signs of failure, worn-out demolition with the concept of redevelopment and renewal of a new building (Douglas, 2006; Michaityte *et al*., 2008; Stenberg *et al*., 2009; Shafiei-Dastjerdi and Sadeghi, 2017; Zaali et al., 2016; Turner and Hesford, 2019), which must be shaped in six basic acts of revitalization, adaptation, conversion, conservation, renewal and repair. It should be noted that rebuilding is a set of measures that after more than half of the work is destroyed, a work with new faces will be created or fully adapted to its principle, which is usually necessary after a fire, earthquake or war (Davoudpour and Nick, 2011). During the reconstruction process, first the demolition of the site or space is done, and then the clearance and dismantling and eventually rebuilding will be done. In the process of urban renewal, these triple actions can be carried out simultaneously, sequentially, alone or simultaneously (Mjörnell *et al*., 2014; Thuvander *et al*., 2012). Examples of such reconstruction projects in the cities of Iran include the renovation of the texture surrounding the shrine of Imam Reza (AS) in Mashhad, old Kerman texture, improvement of old texture of Shiraz, Navab highway project in Tehran, ancient texture of Ardabil, old textural arareament of Shushtar, the detailed design of the ancient texture of Yazd, texture of Kashan and Majed project in Mashhad, which the main goals of the implementation of these projects are the provision of public services in high-rise buildings with the advantage of accessibility, economic savings in constructions, the use of more limited land for the deployment of various commercial and administrative-residential uses, solving service problems and possible road designing, creating public spaces and urban beautification and providing needed services. Considering that the implementation of such projects will have various socio-economical, environmental and physical effects on their environment, the present study examines the environmental consequences of Majd project implementation as a case study and its impact on attracting tourists and some solutions have been suggested to get out of the problems. This study has been carried out in Majd Project, Mashhad, Iran in 2017.

MATERIALS AND METHODS

This study is a survey type and is classified in the analytical descriptive and causal group. The process of its implementation was in two sections of theoretical studies and the data obtained from the documents, books, other foreign and domestic scientific resources, official statistical sources of Mashhad city, maps, plans, laws and regulations, technical and administrative regulations, rights and urban development rules. The environmental indicators effective in evaluating the effects of renovation projects of urban timeworn textures were then extracted. After that, by carrying out interviews and completing the questionnaire by residents and customers in the region, the environmental-physical effects of the project on the periphery were considered. In order to better

determine the effectiveness level of the project over different areas, the area of the study was divided into three sections: 1) the area of project implementation (complete evacuation), 2) the immediate area (outside the boundaries of the project and fully integrated into the project with the most impact), and 3) the peripheral area (the area of the peripheral neighborhoods of the project with a wider area including Motahari, Shahid Kolahdooz and Sahib Al-Zaman neighborhoods). The cluster-class sampling was used in three clusters as follows: 1) the area of the project implementation, 2) the immediate area and 3) the perimeter area. Residents and shopkeepers as samples of responding to interviews and questionnaires were randomly selected from all three clusters. As the neighborhood was abandoned by old residents, samples included those who where available and required data was obtained by interviewing. The sample size in the immediate area was determined using the Cochran formula and according to a population of about 7,181 inhabitants in this area, the sample size was 256 people. Accordingly, in the periphery area with a population of 33,977 people, the sample size was 264 people. It should be noted that within the project area, the data was gathered through questionnaire and interview. However, for the immediate and peripheral area, 10% of the 455 business units and 5% of the 1340 commercial spaces were interviewed and questioned, respectively (45 and 67 commercial users respectively). Data collection from the project management unit was conducted through interviews. GIS software was used in order to analyze the descriptive information and determine the status of access and functional compatibility of the functions in the area and SPSS software was used to analyze results of the surveys and graphs were drawn using Excel software. The final data analysis was done using Chi-squared and Wilcoxon tests and after identifying the strengths,

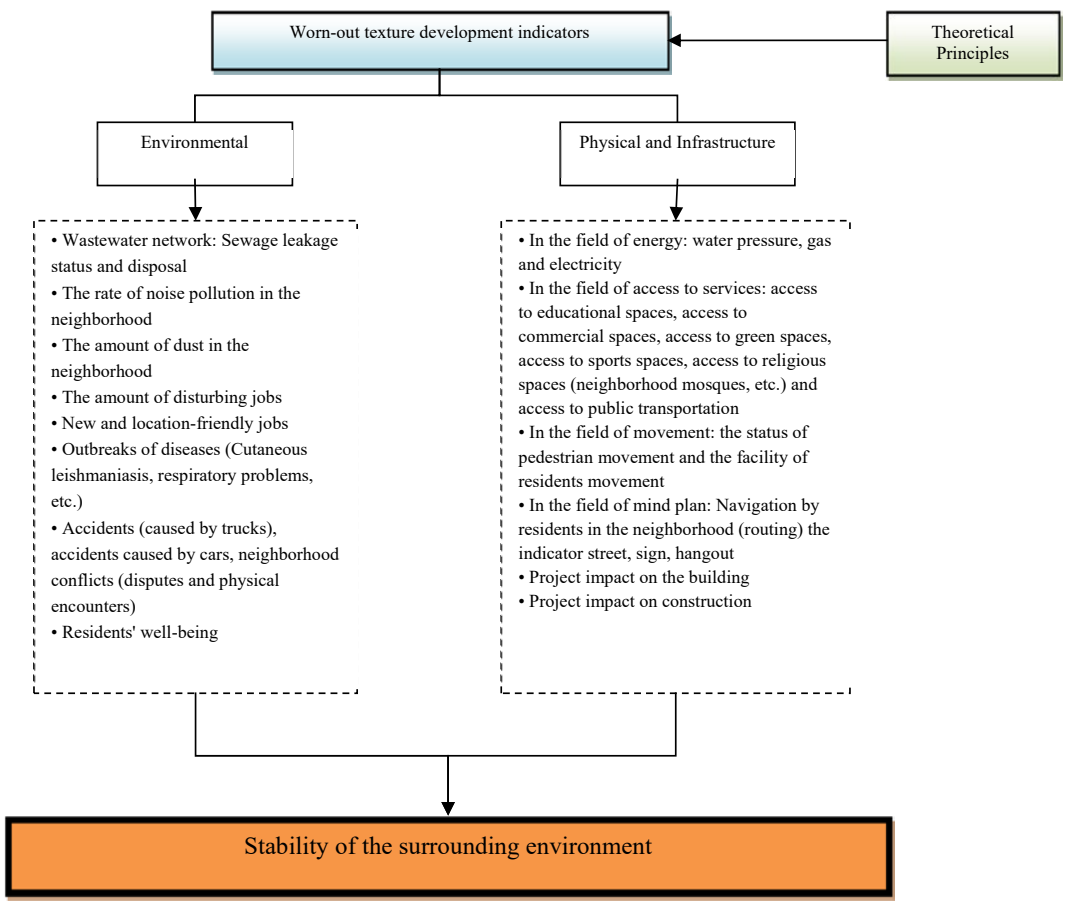

Fig. 1: Theoretical framework of study

weaknesses, opportunities and threats (using SWOT strategic model), effective strategies were introduced. The model and theoretical framework of the study in the physical are shown in Fig. 1, respectively.

RESULTS AND DISCUSSION

The study area was the different neighborhoods, which process of population changes is shown in Fig. 2. Due to the effects of the implementation of Majd project on the peripheral neighborhoods, Motahari neighborhood in the north and Shahid Kolahdooz and Sahib Al-Zaman neighborhoods in the southern side of the project were studied as the study area. The Majd project with an area of 8.6 ha is located at 3 km west of the shrine of Imam Reza and between the Shahid Gharani Blvd. and Shahid Haramali Blvd. Currently; Majd project is the most important center for grocery stores, household appliances and cosmetics. The area prone to worn-out in this project and the worn-out texture of Vali-e-Asr (with moderate condition in physical terms) are the worn out textures approved by the High Council for Architecture and Urban Planning. Majd Project with a set of commercial, administrative and residential uses, has 11 urban blocks, 13 designed plots and 36 towers (buildings).

Table 1, shows the residential, utility and warehouse uses, which had the largest area prior to Studies have shown the impact of urban development on the neighborhood with inefficient texture and heterogeneous uses (disturbing industries, large workshops, uncultivated lands, abandoned buildings). In addition, in the grouping of all types of worn texture, this area were placed in the group of problematic textures that its development after 1920s was without any planned program or was with low quality without respecting the minimum standards of architecture and urbanization, which has caused identity, social,

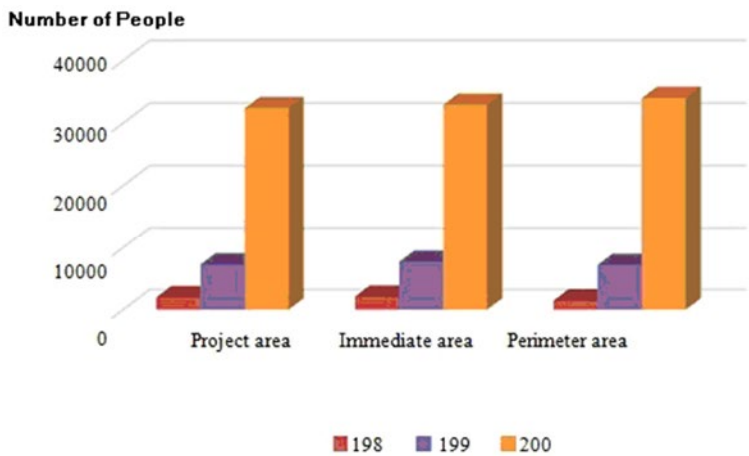

Fig. 2: The demographic changes of the study area during the years 1978 to 2007 (Momeni *et al.*, 2016)

Table 1: Uses' levels before and after implementation within the project area

Uses		after project implementation		Percent of study area	before project implementation		Percent of study area
		Area (m^2)	number		Area (m^2)	number	
warehouse		281	1	0.45	11779	22	13.5
Uncultivated land		8608	39	15.67	632	14	0.73
Educational	elementary School	4141	4.75	4.75	4141	4.75	4.75
	Junior high School	1086	1.25	1.25	1086	1.25	1.25
Residential		29542	2.8	46.91	59112	879	67.8
Commercial		19504	27	30.97	4640	45	5.33
repair shop		0	0	0	5733	12	6.58
Total		63162	281	100	87123	978	99.94

biological, environmental, physical, economical and institutional issues, and during the implementation of the project, uses have been altered and many workshops, warehouses and disturbing industries have been removed from the textures.

Although field observations indicated the inappropriate use of habitat during project implementation due to the departure of the primary residents from the area and establishment of disturbing uses (Most of these activities are related to shoe manufacturing workshops) with accommodation in the area, however 12% of the disturbing uses have been removed from the area compared to the pre-project conditions. The reason for this is the demolition of travel terminals and related repair shops. Results of interviews, by understanding the concept of incompatibility and disturbing uses for habitation, based on the number of changes in the number of compatible and incompatible uses and the number of disturbing occupations in the area, pre-implementation and during the implementation of the project are described in Table 2. In addition, the activities, which had caused disturbance to residents and decreased the quality of life in the area, include increased air and dust pollution as well as increased noise caused by extensive excavation within the area.

Considering that increased disturbances are due to project implementation conditions (excavation operations and heavy vehicle transportation for the displacement of construction waste), many of these interactions are removed after completing the project and taking out construction equipment and workers and therefore it's possible to have a safe environment with fewer disturbances for the project area and its surrounding environment. But during the implementation of the project, there is an increase in noise and dust pollution and disturbances for residents and increased respiratory diseases such as various types of *cutaneous* diseases and, of course, the residents' opinions were different. The overall environmental impacts of project implementation are presented in Fig. 3.

Identifying the access network (comparative study) before and after the project (in terms of access quality, passage width, traffic volume) indicated the increase in traffic around the project and increased noise pollution as well as reduced safety and increased accidents due to increased speed. Prior to Majd project implementation, the area had an irregular checkered texture and supported local and non-transferable commuting, which usually reduced the flow of traffic to the area. On one hand, the implementation of this project has led to the opening of some routes, facilitating the access of minor passages to main roads and the construction of roads in old and worn-out textures in order to create a hierarchy of road networks; on the other hand, the large volume of parking lots had reduced the outlying park and provides the need for stakeholders and had also increased unused areas during holidays and closed hours. This means a clever utilization of these spaces is required by planning to reduce visual contamination. In addition, access to the public transport system in the area, facilitates and secures travel, reduces air pollution and preserves the environment (Momeni, *et al*., 2016), reduces the travel time and solves traffic problems caused by personal transport that it will generally reduce environmental and health problems. Meanwhile, with the passage of Mashhad train line No. 3 from this route, road traffic will be greatly reduced, which itself reduces visual, air and noise pollution. Eexamining the surface water disposal network and water supply and wastewater

Table 2: Comparison of disturbing occupations and adapted jobs before and during construction of the project from the viewpoint of the residents

Answers	Disturbing jobs				compatible jobs			
	During the project implementation		before the project implementation		During the project implementation		Before the project implementation	
	No.	%	No.	%	No.	%	No.	%
Very much	48	7.5	13	2.1	18	2.8	4	0.6
much	108	16.9	63	10.1	140	21.9	56	9.0
medium	162	25.4	157	25.1	241	37.8	229	36.7
Low	222	34.7	283	45.2	152	23.8	235	37.7
Low	99	15.5	110	17.6	87	13.6	100	16.0
Total respondents	639	100	626	100	638	100	624	100

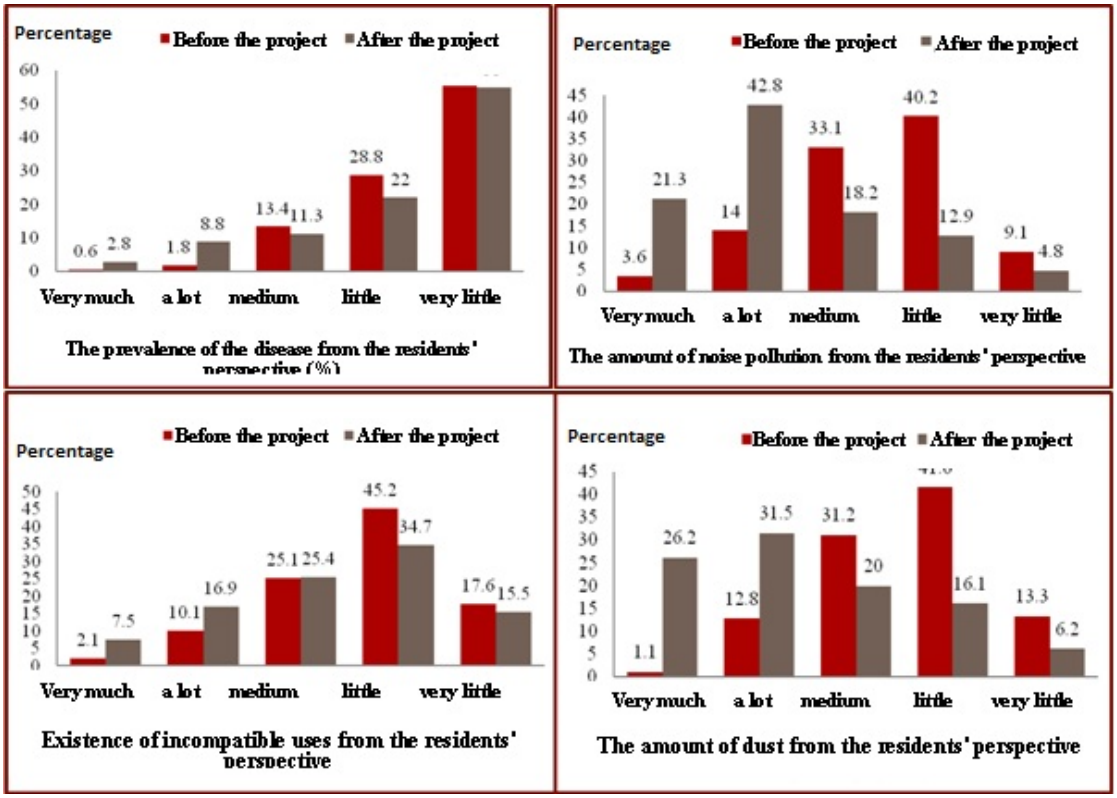

Fig. 3: Investigating the effect of Majd project on environmental indicators

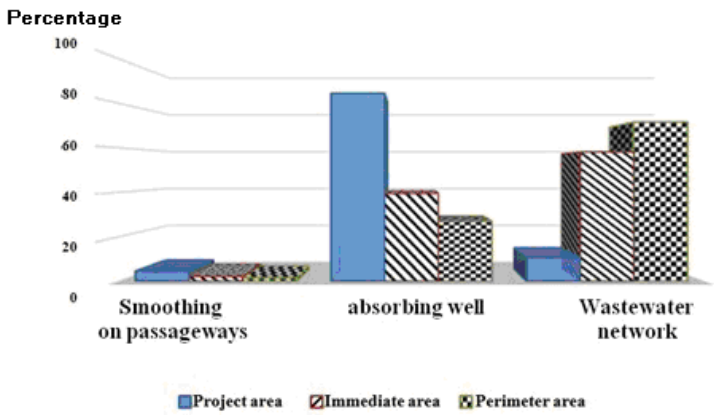

Fig. 4: Wastewater disposal in the study area

treatment network shows about 60,925 m water distribution network, which is located in the Khin Arab water treatment plant area. Currently, household wastewater disposal of 60.2% of the inhabitants of the study area is done through the sewage network and 37.7% is done through absorbing well and only 2.2% of residents left their sewage in the neighborhood that in addition to increasing environmental pollution, it has caused distress to visitors and will prevent the development of attracting tourists to the region (Fig. 4).

Failure to change the level of residents' satisfaction in terms of sewage leakage, in comparison to prior the Majd project, indicated that the sewage

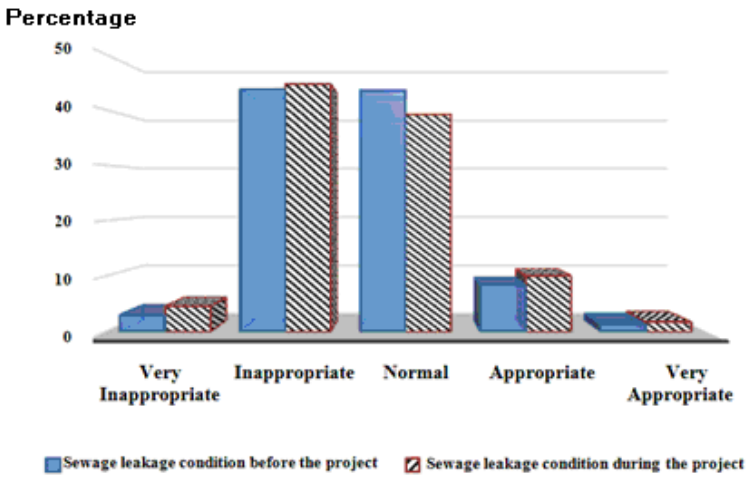

Fig. 5: Sewage leakage situation in the study area before and during project

Table 3: The reputation of the neighborhood before and after the start of the project for residents

The reputation of the neighborhood after the project			Rank	The reputation of the neighborhood before the project		
Reputation	No.	percent		Reputation	No.	%
Majd	71	25.8	1	TBT	48	17.1
Factor	38	13.8	2	Factor	42	15.0
Kolahdooz	37	13.5	3	Gharni	40	14.3
Gharni	28	10.2	4	Kolahdooz	37	13.2
Motahari	22	8.0	5	Kaffashi	14	5.0
Majd Mall	19	6.9	6	Motahari	13	4.6
Total respondents	273	100		Total respondents	297	100

leakage conditions have not changed before and after the project implementation and of course, the dissatisfaction rate in the area of the project is more than before. Upon completion of this project, the connection to the municipal wastewater network will improve the conditions of wastewater disposal and absorbing well within the area of the project can be removed (Fig. 5).

It should be noted that the study area, Travel best terminal (TBT) is one of the most important travel terminals before the implementation of the project and also before the construction of Mashhad terminal and still its name is famous for some old travelers. According to Table 3, the credit of neighborhoods in the project area before and during the implementation of Majd project is due to the replacement of TBT with Majd and other neighborhoods did not get any credit. The name TBT is still prominent for old passengers, which is necessary to hire a tour guide knowing the old and new names of famous neighborhoods.

Given the possibility of increasing the presence of citizens in different age, sex, physical and cultural groups that guarantee the physical and mental health of the community, the necessity of designing bike lane in the project and the perimeter environment is quite evident and so transportation network can be improved by completing this project flaw and the air and noise pollution can also be reduced.

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CONFLICT OF INTREST

The authors declare that there are no conflicts of interest regarding the publication of this manuscript. In addition, the ethical issues; including plagiarism,

informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy have been completely observed by the authors.

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