

A Field Study of The Environmental Effects of Marginalization in the 19th District of Tehran Using Rapid Impact Assessment Matrix (RIAM)

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Abstract

Marginalization is one of the consequences of economic and social crises in Iran during recent years, which has caused many problems on the margin of large cities such as Tehran. Lack of living standards, as well as urban management supervision, have caused environmental problems to be one of the damages of these areas to its inhabitants and surrounding urban areas. Environmental degradations in this area attract a great deal of attention. In this field study, we have tried to assess the environmental impacts of marginalization by studying the environmental degradation effects of marginalization on the edge of District 19 of Tehran. In the first step, visits and preparation of field questionnaires were carried out in order to investigate and document the situation in the region. Then, using the results and in the form of 26 environmental indicators, the RIAM model was used to assess environmental impacts and to study the severity of their effects in the marginal zone. According to the results of the research, major environmental problems include surface water control systems' low quality, surface sewage discharges, inappropriate management of municipal waste, unpleasant smell and the presence of sludge in the neighborhood.

Keywords: Environmental Assessment, Marginalization, 19th District of Tehran municipality, RIAM

Introduction

The city has a population threshold which aims to meet the needs of the population. Population growth in developed countries has been relatively rooted in order, but this has not been well-organized in developing countries due to exoduses (Zangiabadi and Mobaraki, 2012). The trend of nomadic-rural exoduses, especially in recent years with exacerbated droughts and economic problems, has led to an increase in marginalized populations of cities, especially in metropolitan areas of the country (Padash et al., 2015; Anabestani and Anabestani, 2010).

For the first time in 1937, Robert Park described the marginalization and marginal man; he described this concept in the article "Human Migration and the Marginal Man": "A

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marginalized man is a person who is hybrid from a cultural point of view and who lives sincerely in the cultural life of two distinct population and is a partner with both of them, does not want to tell from his/her past and still does not accept all aspects of the host society” (Sojasi et al. 2015).

Environmental assessment studies in Iran have been done so far (Ghazban et al., 2014; Vahidi et al., 2016), but unfortunately, the environmental effects of the marginalization phenomenon have not been taken into account.

Marginalization is a global problem. Although the emergence of this issue attributed to industrial cities in the western countries, the main contributor to the world’s marginalized population is currently in the cities of developing countries. According to the United Nations Human Settlements Program (2003), one in three in the world, in the next 30 years will live in marginalized areas of cities and illegal settlements (Ladan Moghadam and Rezghi Shirsavar, 2009).

According to available statistics, in developing countries, 50 percent of the urban population lives in sheds and the marginalized areas, which in some cities this proportion increases to 80 percent which as a result, urban development and population growth in the cities, the sheds and marginal areas will also rapidly increase alongside them (Zangiabadi and Mobaraki, 2012).

In Iran, about eight million of the country’s population is located in marginal areas. This dilemma, which nowadays is the main cause of Iran’s big cities, has been caused mainly by the lack of economic power of people living in deprived areas. As a result, people emigrate and because they cannot easily adapt themselves to the culture of urbanization in the metropolises and do not have the financial power of staying in the city, they will be forced to marginal areas and choose marginalization (Amiri et al., 2014).

The marginalization has many unpleasant effects on human life and urbanization which the most important of which is further categorized:

Crime and social corruption: At present, the phenomenon of marginalization in cities has become a social problem because it is the source of many social damages such as poverty, unemployment, crime, addiction, and so on. The pressure from these factors and the relative deprivation feeling, lead marginalized people to crime and felony (Karimi et al., 2015). These areas are a suitable hub for the development, promotion, and recruitment of individuals with a background of organized and unorganized crime.

Health disturbance and disease outbreaks: marginalized people lack public and private health in the scale of the global and even national standards, and actions against public health and the environment are widespread in such areas. The accumulation of waste and its lack of collection, the flow of sewage in the streets and its lack of sanitation, noise pollution, and air pollution, etc., are obvious and prevalent in these neighborhoods. The main cause of health problems is the lack of government services in these areas (Anbari and Baqaei, 2014).

Cultural and social degradation: The frequently observed results indicate that the main factor affecting social damages is the existence of poverty and, more precisely, the lack of employment, wealth, and economic income. Because of unfavorable economic conditions, these areas are often more vulnerable to social damages than others (Park, 1928). In the aftermath of social damages and in effect passing of time, cultural change has also been institutionalized in these regions, with obvious effects on all age groups of marginalized people, as well as its adjacent neighborhoods.

Environmental degradation: the marginalization imposes serious damages to the environment, which unfortunately has received less attention, and few studies have been done about it so far. Lack of facilities and infrastructures and some inappropriate cultures in these areas are the main environmental impacts.

It can be said with certainty that this article is the first one on environmental degradation by marginalization and the marginalized person in Iran.

In the following, we will study a few on the previous studies that had addressed the issue of environmental damages, and, regarding the small amount of these studies, we will discuss the issues with a more detailed interpretation.

To analyze the differences in the environmental assessment of marginalized neighborhoods, Farhat Jahan (2005) analyzed two neighborhoods in India's Dhaka. In one of two places, he considered the process of environmental assessment in designing and setting up infrastructure, and examined and compared the results with the other neighborhood that the process had not been implemented on (Chowdhury and Amin, 2006). The results of this research showed that considering the infrastructure of urban management in these areas, environmental quality can be increased.

One of the actions that can be proposed to study the environmental problems of marginalized areas is environmental impact assessment methods. Environmental assessment is a systematic process that examines environmental impacts (Glasson and Therivel, 2013). The objective of the environmental assessment is to find a way to minimize the adverse effects, maintain, restoration and improving environmental quality (EPA, 1992).

Sadler (1996) described the environmental assessment as a multi-stage process, and divided these stages into three parts, including primary assessment, accurate assessment, and follow-up. The primary assessment includes an explanation of whether an accurate environmental assessment is required. An accurate assessment includes analyzing, identifying, predicting and assessing the effects and consequences of environmental assessment, identifying reductive actions to prevent, mitigate or compensate for environmental assessments' impacts, as well as documenting the environmental assessment results, decision making or approval of the proposals. Finally, the follow-up phase involves monitoring and checking whether the interventions meet the environmental assessment criteria and condition (Lohani et al. 1997).

In the study of two neighborhoods in Dhaka, the results of the project interventions with and without environmental assessment were stated that there were no major infrastructures in two neighborhoods before the implementation of two projects. In both poor neighborhoods, the physical environment was greatly degraded. According to residents of poor neighborhoods, the main physical environmental problems in both poor neighborhoods were: lack of drainage, sewage overflow, and sporadic disposing of waste (Chowdhury and Amin, 2006). Experts and specialists, during surveys, observed that drainage and sanitation were two major environmental problems in these areas. Problems associated with drainage include:

- ✓ The return flow of sewage
- ✓ Overflow

And health-related problems include (Chowdhury and Amin, 2006):

- ✓ Sewage overflow
- ✓ Sewage disposal
- ✓ Water pollution from sewage
- ✓ Destroying adjacent areas
- ✓ Disease spread
- ✓ Sporadic disposal of waste inside and around the slum
- ✓ The unpleasant smell of garbage

Both projects included infrastructure that consists of evacuation, waste disposal facilities, local toilet complexes with tubular wells, for environmental improvement. The observations indicated that after the changes, the physical environment of the two slums had varied. Also, the survey results showed that the newly implemented infrastructure could not reduce all existing problems. The development of changes in the slum where the environmental assessment was not carried out was so diminished compared to another slum (Chowdhury and Amin, 2006).

It is important to note that marginalized neighborhoods improvement programs include interventions in a highly populated and vulnerable local environment. Therefore, in planning and designing interventions, the internal and external environments are of particular importance. The poverty alleviation program cannot reduce problems in the slum where the environmental assessment was not carried out due to a lack of assessment of the internal and external environment before the project was implemented. Therefore, a similar program in case of pre-environment studies can achieve better results in the marginalized neighborhood. The lack of public participation and lack of attention to the internal and external environment appear as the main reasons for the emergence of new problems in the slum after interventions.

The Rapid Impact Assessment Matrix model is one of the most up-to-date methods for assessing environmental impacts based on field studies and a questionnaire (Hoveidi et al. 2013). Rapid Impact Assessment Matrix (RIAM) is a method for assessing environmental impacts and based on the standard definition of concepts used in the assessment process (Pastakia and Jensen, 1998).

Kuitunen et al. (2008) compared the results of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) using the RIAM method. The results showed that the RIAM method can be used to compare and rank separate and distinct projects, plans, programs and policies based on their negative or positive effects.

Rawal and Duggal, used the RIAM method in 2017, to examine the environmental status of household waste produced in the slum area (Rawal and Duggal, 2017). This study was conducted by reviewing Solid Waste Management Systems (SWM) in poor areas in a region in India. The surveys were carried out through a questionnaire. Finally, responses were analyzed using the Rapid Impact Assessment Matrix (RIAM) for measuring Environmental Scores (ES).

In general, environmental studies due to the marginalization crisis have not been taken into account so far, and there have been few studies in the world about this issue. In order to improve the situation of residents of marginalized areas and prevent environmental crises and consequently human crises, it is necessary to evaluate the effects of marginalization in different cities, based on their local and climatic conditions. In this study, an attempt is made to investigate one of the neighborhoods of Tehran, to study the environmental effects of the marginalization phenomenon, in order to obtain a proper understanding of its destructive effects, along with social, cultural, security and other damages.

Material and Methods

Methods

The research method is descriptive-analytic. The main part of the data is collected through field studies, by means of questionnaire and interview, and some other required data such as theoretical and conceptual framework of research, documents, and censuses is collected through the library method. Finally, the results are reasoned by basic statistical analysis.

A questionnaire based on 26 environmental factors about the status of the study area was distributed among the residents of the region and the results were reasoned by basic statistical analysis. Questionnaires include questions such as the sewage collection system, access to drinking water, urban runoff collection, vegetation cover, waste collection system, etc. We attempted to survey consist of all aspects observed at the regional level.

The study area

In this article, District 19 of Tehran has been selected as an area that slamming has emerged on its margin. District 19 is located in the southern part of Tehran with a surface area of 20.25

Based on these steps, this matrix includes physical, chemical, biological, ecological, cultural, social, economic components. Afterward, the effects of activities on environmental components were scored regarding determined criteria. However, based on the RIAM method, evaluation criteria were divided into two groups of important criteria which can individually change the scores (group A consisting of a1 and a2) and criteria of relative importance which are unable to change scores individually (group B consisting of b1, b2, and b3).

In this method, the first group's scores are multiplied by each other and the scores of the second group are summed together. Thus; group A will weigh more in scoring and group B will weight lower but they are still considered in scoring. Eventually, both scores are multiplied together to specify the final environmental assessment score or ES. The scoring formula is as below:

$$(a1) * (a2) = aT \quad (1)$$

$$(b1) + (b2) + (b3) = bT \quad (2)$$

$$(aT) * (bT) = ES \quad (3)$$

The importance and magnitude criterion of the impact is indicated in the first group criteria a1 and a2 respectively. In the second Group criteria b1, b2, b3, respectively, indicate the permanence, reversibility and cumulative criterion (Table 1). Initially, it should be determined if the effect is positive or negative and then the scoring would be done. In order to analyze the results of the scoring in this method, resulting in environmental scores (ES) should be investigated in Table 2 range bands. Therefore range bands of various impacts for each component of the environment should first be determined. Finally, we can choose the option which has the least negative impact.

Discussion and results

The results of the study on the status of marginal tissue in District 19 of Tehran, which was carried out by questionnaires in the region, indicate that this region has many health and environmental problems. In the following, the questionnaires and the results obtained from each of them are discussed. The used questionnaire includes 26 direct and indirect items related to the environmental status of the region.

In order to determine the indicators, a primary visit was carried out and during that several interviews were conducted with residents and experts of the municipality that had good experiences in the study area. During these interviews, as well as the review of similar studies, the indicators related to the assessment of the environmental impacts of marginalization were determined and selected for further questionnaires.

The indicators have been selected in such a way to include issues of water pollution (drinking and surface runoff), air pollution, soil contamination, solid waste pollution, vegetation of the region, and other items that were observed at the initial visit. During the visits and interviews conducted in the region, we endeavored to obtain information on each of the proposed factors. In addition to this information, in case of existence, national or international standard values of each indicator (such as green space per capita, drinking water pollution) are presented along with values of the indicators for comparing and determining the percentage of utility with a positive nature and concept. For some of the indicators that are not standardized, the satisfaction bound of the residents or adjacent neighborhoods status has been used and finally, all percentages of indicators' utility have been determined and presented.

A total of 100 questionnaires were collected from residents of the marginal neighborhood. These questionnaires were collected face to face.

Table 1. RIAM method Assessment criteria

Criteria	Crisp scale	Fuzzy scale	Description
a1: importance of condition	4	(3,4,5)	Important to national/international interest
	3	(2,3,4)	Important to regional/national interests
	2	(1,2,3)	Important to areas immediately outside the local condition
	1	(0,1,2)	Important only to the local condition
	0	(0,0,0)	No importance
a2: magnitude of change/effect	3	(2,3,4)	Major positive benefit
	2	(1,2,3)	Significant improvement in status quo
	1	(0,1,2)	Improvement in status quo
	0	(0,0,0)	No change/status quo
	-1	(-2,-1,0)	Negative change in status quo
	-2	(-3,-2,-1)	Significant negative disadvantage or change
b1: permanence	-3	(-4,-3,-2)	Major disadvantage or change
	1	(0,1,2)	No change/not applicable
	2	(1,2,3)	Temporary
b2: reversibility	3	(2,3,4)	Permanent
	1	(0,1,2)	No change/not applicable
	2	(1,2,3)	Reversible
b3: cumulative	3	(2,3,4)	Irreversible
	1	(0,1,2)	No change/not applicable
	2	(1,2,3)	Non-cumulative/single
	3	(2,3,4)	Cumulative/synergistic

Table 2. RIAM Environmental scores (ES)

Description	Environmental scores (ES)	Range bands
Major positive change/impacts	+72 to +108	+E
Significant positive change/impacts	+36 to +71	+D
Moderately positive change/impacts	+19 to +35	+C
Positive change/impacts	+10 to +18	+B
Slightly positive change/impacts	+1 to +9	+A
No change/status quo/not applicable	zero	N
Slightly negative change/impacts	-1 to -9	-A
Negative change/impacts	-10 to -18	-B
Moderately negative change/impacts	-19 to -35	-C
Significant negative change/impacts	-36 to -71	-D
Major negative change/impacts	-72 to -108	-E

With a quick look at Table 3, we find that many of the items in the questionnaire are in an unfavorable situation for the residents of the region, which we will discuss each one separately.

Vermin insects: One of the biggest problems in this area are flies and various types of vermin insects and mice. According to interviews with residents, most of them had pointed to the presence of vermin insects, in most of the neighborhood, especially in the hot seasons of the year. Also, insect vermin can be considered one of the causes of the disease in these areas.

Type of sewage collection system: Urban sewage collection system is a lack in this area and most buildings use absorbing wells. Also, sewage drainage observed in some ditches. The lack of continuous water flow in the canals and their inappropriate slope are the main reasons for sewage exist in the surface of the area, which results in the increase of unpleasant smell and sludge production, as well as vermin insects. Generally, the region's sewage collection system is in an inappropriate condition and can be considered as one of the main affecting indicators on undesirable environmental quality of the region.

Table 3. Results of collected questionnaires

Environmental criteria	Very unfavorable	Unfavorable	No idea	Favorable	Very favorable
1 Economic status of people	46	35	9	10	0
2 Job satisfaction	23	58	7	12	0
3 Literacy and education	21	59	5	15	0
4 Vermin	34	33	7	26	0
5 Sewage collection system	41	39	2	18	0
6 Access to drinking water	5	19	2	55	19
7 Quality of drinking water	10	44	15	31	0
8 Drinking water cut-off	8	43	3	43	3
9 surface runoff collection system	33	57	2	8	0
10 Produced sludge in surface runoff system	24	62	9	5	0
11 Vegetation	13	35	14	26	12
12 Local parks	61	33	6	0	0
13 Types of vegetation on sidewalks	15	46	9	30	0
14 Streets pavement	3	72	6	19	0
15 Alley pavement	73	24	3	0	0
16 Public toilets	67	24	9	0	0
17 Power grid penetration	7	12	15	65	1
18 Waste collection system	6	17	3	69	5
19 Resident doctor	22	49	18	10	1
20 Health Centers	31	52	5	11	1
21 Polluting industries	32	48	17	2	1
22 Noise Pollution	6	21	6	51	16
23 Soil contamination	26	41	4	29	0
24 Contagious diseases	29	42	21	8	0
25 Property Ownership	42	30	3	25	0
26 Magnetic contamination	12	10	39	21	18
Average	26.5	38.7	9.2	22.7	3
Max	73	72	39	69	19
Min	3	10	2	0	0

Drinking water access system: Since the old days, the residents of this areas had to purchase water from the tankers, but in recent years, water well in Region 5 has divided the area into two Northern and Southern parts and each part had access to water for 12 hours, but now, with the installation of an elevated water source at the area's entrance and inside the city, region's water has been provided almost permanently and throughout the day and night.

Quality of drinking water: Region's drinking water had a low quality and many residents expressed their dissatisfaction with it. In addition, periodic tests are not implying to the region's water source to evaluate and control the drinking water quality. Due to lack of quality tests for drinking water, the main discontents are due to turbidity and taste of drinking water. Also, according to the evidence, the water's hardness is high.

Surface runoff collection system: There is no system for collecting surface water in most of the area runways. Available channels are improper, and in many of which, water stagnation, sludge production, and wastewater overflow to the street surface have been observed. Sewage stagnation in this area is one of the factors that exacerbate pollution in the region.

State of produced sludge in surface runoff collection system: In most of the surface water collection channels, due to the inappropriate slope, the water has become stagnant and produces sludge and hence, increased vermin insects such as mosquitoes and flies and spreads unpleasant smells in the area. Many of these canals were built improperly by the inhabitants of the area

and only attempted to transfer the sewage to the extent possible and because of the fact that the canals were not engineered, the pollution of the marginalized area has increased.



Figure 2. The sewage entrance to surface water collection channels



Figure 3. The undesirable condition of Surface runoff collection system



Figure 4. Sludge in the alleys' surface



Figure 5. Inappropriate vegetation in the streets

Type of vegetation in the area: There is no noticeable vegetation in the area. A small number of green spaces are also personalized and there is no park, garden or playground in the area. Part of the available green space is wildling and caused by the accumulation of sewage for a long time in favorable areas.

Type of waste collection system in the area: In cooperation with the municipality of District 19, 700 liter water tanks are located on the main street, but unfortunately, there is no collecting system in the alleys and in many cases, household wastes are placed in the front door of the house in form of plastic pockets. In some areas, and especially, in vacant grounds, there are waste deposits that have created a bad condition of appearance, smell and health.



Figure 6. Waste disposed on vacant grounds



Figure 7. Industrial pollution

Polluting industries in the region: According to statistics in Tehran municipality, there are more than 120 workshops in District 19 which more than 80% of them are related to the wood

industry, and the rest of the workshops are turning, forging, chair making, chandelier making, etc. Many of the workshops, warehouses, and storehouses of these workshops are scattered in this marginalized area because of the low cost of building and land and the lack of monitoring systems. Soil contamination: waste deposits, alleys' surface soil cover, the inappropriate collection system of runoff and sewage, deposited construction waste in adjacent grounds and inappropriate road slopes have created a bad condition (especially inside alleys) for the region's soil.



Figure 8. Pollution of vacant grounds in the region

Region parks: There are no specified parks in the area. The lack of urban open space in the region has greatly affected the appearance of the neighborhood and created a bad condition. Most of the vegetation was created by residents and are irrigated by surface runoff, sewage, and especially, drinking water.

Types of vegetation on sidewalks: In some sidewalks, trees have scattered by residents. There are generally no regularities in the selection of vegetation type.

Public toilet: There is no public toilet in the area.

The most important detailed activities are described in Table 4.

The quantitative evaluation results of the Physical/Chemical, Biological/Ecological, Social/Cultural, and Economic/Operational components of this complex indicate the predominance of negative effects on positive effects.

The final evaluation of each item is based on Table 2 and the range in which the final score (ES) is located. In fact, for a project, different options for its implementation are considered and by the assessment team's scale evaluating, each criterion's final score is calculated. Then, by comparing the options, an option that represents a better environmental score is more appropriate.

In the Physical/Chemical components, the industrial waste produced with a negative score of 36 has the highest negative score, which indicates significant negative changes/impacts and the criticality of this item in the area. Also, surface water contamination, the presence of waste in the region and soil contamination items in the set of Biological/Ecological components with negative scores of 28 have the highest negative points and have moderately negative changes/impacts on the region. In the Social/Cultural components, the theft of electricity with a negative rating of 84 has the least amount of utility among existing items and introduces major negative changes/impacts. The average household income in a set of Economic/Operational components with a negative score of 63 has significant negative effects/impacts and indicates a deterioration of the economic situation in the region. The conclusion of the results of the RIAM matrix in Figure 9 shows that the most negative effects of marginalization in Tehran's 19th area are the Social/Cultural complex, which is mainly D-rated. Subsequently, the majority of the Biological/Ecological negative effects have the C-rated score which reflects the area's environmental conditions. In the third place, there are Physical/Chemical components which are mainly B-rated.

Table 4. Indexes of RIAM environmental assessment

Components	a1	a2	b1	b2	b3	Es	Es
Physical / Chemical							
1 Per capita waste production	2	-1	3	1	1	-10	-B
2 Waste collection system	2	-1	3	1	2	-12	-B
3 Produced industrial waste	3	-2	3	1	2	-36	-D
4 Streets pavement	1	1	3	1	1	5	+A
5 Alley pavement	1	-2	3	1	1	-10	-B
6 surface runoff collection system	1	-3	3	1	2	-18	-B
7 Sewage collection system	2	-2	3	1	2	-24	-C
8 Vermin	2	-1	3	1	2	-12	-B
9 The presence of sludge in the thoroughfares	1	-2	3	1	3	-14	-B
10 Unpleasant smells	2	-1	3	1	2	-12	-B
Biological / Ecological							
1 Surface water pollution	2	-2	3	1	3	-28	-C
2 Soil contamination	2	-2	3	1	3	-28	-C
3 Noise pollution	1	1	2	1	3	6	+A
4 Air pollution	3	1	2	1	3	18	+B
5 Drinking water quality	1	-2	3	1	2	-12	-B
6 Drinking water cut-off	1	-1	2	1	2	-5	-A
7 Deposited construction waste	2	-2	3	1	3	-28	-C
8 Vegetation status	2	-2	3	1	1	-20	-C
9 Vegetation diversity	2	-1	3	1	1	-10	-B
Social / Cultural							
1 Visual Beautify	3	-2	3	1	3	-42	-D
2 resident healthcare	2	-1	3	1	3	-14	-B
3 Illegal construction	2	-2	3	1	3	-28	-C
4 Theft of electricity	4	-3	3	1	3	-84	-E
5 Social Security	3	-3	2	1	3	-54	-D
6 Education quality	2	-3	3	1	1	-30	-C
7 Local parks	2	-3	3	1	3	-42	-D
8 Observing the principles of urbanization	3	-3	3	1	3	-63	-D
9 Recreational and Entertainment Facilities	2	-3	3	1	3	-42	-D
Economic / Operational							
1 Job creation	3	-2	3	1	3	-42	-D
2 Median family income	3	-3	3	1	3	-63	-D
3 Municipal services	2	-2	3	1	1	-20	-C
4 Traffic facilities	2	-1	3	1	1	-10	-B

With a brief look at Figure 9, we find that the positive effects of the matrix components are negligible, indicating the undesirable condition of the region.

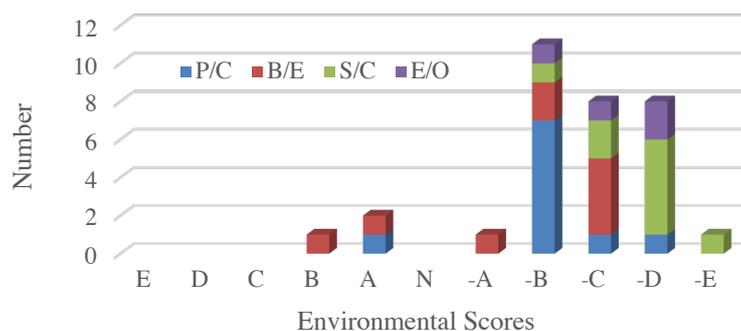


Figure 9. Environmental Impact Assessment of marginalized in D19

The average points given to the environmental situation of the area are shown in Figure 10. The highest negative score is related to the Social/Cultural components and the theft of electricity has the most negative effect on this component. After that, the Economic/Operational components have the highest negative effect and the average household income has the most negative score in the entire complex. Physical/Chemical and Biological/Ecological components are ranked in the third and fourth places with an average of -14 and -12 respectively, with less negative effects to the region in comparison with the first and second components.

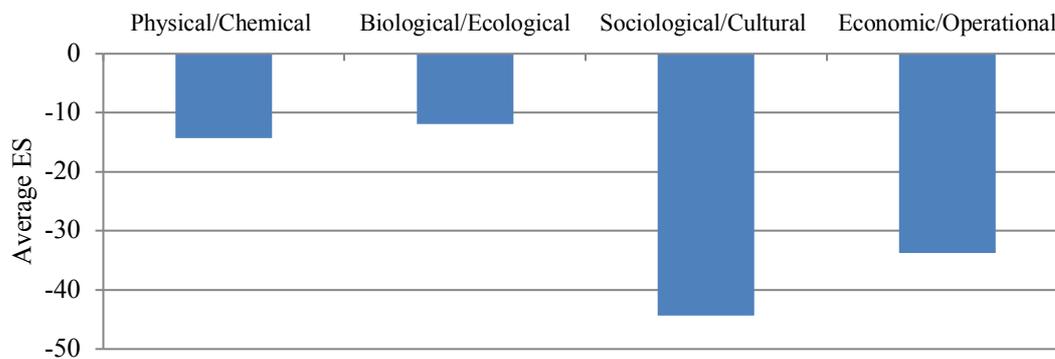


Figure 10. Average Environmental score of marginalized in D19

Therefore, according to the results of the RIAM method, it can be mentioned that in general, the number of environmental condition's negative effects of the Tehran District 19's marginal area is more than its positive effects, which requires serious and coherent measures to improve the conditions of the region.

Conclusion

During visits and surveys in the marginal area near District 19 of Tehran, it was found that a variety of environmental pollutions in various aspects such as water, wastewater, soil, waste, green spaces, etc. is significantly observable. Majority of this pollution is due to the lack of urban management services by the municipality in the region, which, by the mutual cooperation of the inhabitants of the slum with urban managers, the penetration rate of municipal services can be increased and many of the damages caused by environmental factors could be solved. The conclusion of the results of the RIAM matrix showed that the most important negative effects of the marginalization of Tehran District 19 are related to the Social/Cultural components, after which the Economic/Operational, Physical/Chemical and Biological/Ecological components are placed, respectively, and among the sub-indices the most negative points belong to the theft of electricity.

Certainly, the municipal cooperation with this region can help to improve the situation of the risks and damage caused by the environmental problems. However, the suggestions for improvement of regions environmental condition include establishing an independent marginal unit as part of the municipality, providing urban services to marginalized areas, providing waste collection services in these areas and last but not least, establishing of educational and health care centers.

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