A model for environmental impact assessment of metropolitan in Iran: a case study - Tehran region one

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Abstract—Tehran has numerous problems associated with metropolitan in the world, and continuing the trend of past years problems and lack of appropriate solutions. Tehran is close to the population explosion stage. Tehran region one problems are similar to other Tehran regions and with environmental impact assessment of region one most of the problems can be solved by this method in the present project. The method that especially has been provided for this project is mix of modified Leopold matrix and using the environmental risk assessment method. Thus can be said that transient conditions approach the environment Tehran metropolitan shows that citizens of the most effective and most important factor is that environmental changes in order to sustain their lives in the city, including exploitation of resources, facilities, industry and so on. During these appropriate and benefit changes it makes some demolition in the environment. So considering the existing problems, in region one in adopting appropriate activities and use of management tools to achieve development in urban areas to minimize damage to resources is the environment of different aspects are problems for example executive management, environment, leisure, transportation, traffic and so on. Therefore cannot claim that all these problems can be solved in the short term. Environmental impact assessment studies, one of the ways in which metropolitan projects for rules related to metropolitan environmental policies. Undoubtedly, environmental impact assessment of Tehran metropolitan especially region one is justified not only on the environmental protection, but also on the economic terms. Therefore, the aim of this project, environmental impact assessment model for Tehran region one can be different environmental issues to identify current and future development projects will provide an appropriate planning.

Keywords: Metropolitan, Tehran region one, Environmental impact assessment, model, environmental protection.

I. INTRODUCTION

This project is about environmental impact assessment of metropolitans in Iran Tehran region one. The population is increasing because of mass immigration. Planned and unplanned housing are increasing while green areas are decreasing in area. Rapid, uncontrolled and illegal urbanization accompanied by insufficient infrastructure has caused degradation of forest, water basin and barren lands in the metropolitan area, especially within the past two decades. [2].

Metropolitan area is a region consisting of a populous urban core with a high density of employment plus surrounding territory that is socio-economically linked to the urban core by commuting. A metropolitan area is also sometimes known as a commuter belt or a labor market area. A metropolis is a large city, in most cases with over half a million inhabitants in the city proper, and with a population of at least one million living in its urban agglomeration. Big cities belonging to a larger urban agglomeration, but which are not the cores of that agglomeration, are not generally considered a metropolis but a part of it. A metropolis is usually a significant economic, political and cultural centre for some country or region, and an important hub for regional or international connections and communications.

Long ago Tehran is located against the current Tehran’s gardens and natural green space was formed between the Alborz mountains and desert margins of north central, relatively flat plain [19]. Establish this area relatively flat plains of the south and southwest of the mountain by Ray, Bibishahrurbanoo, and it’s plains, Shahriar and Varamin leads north through the mountains and is surrounded geographic area in the mountains of Tehran and Karaj river plain by two in the West and the East is determined Jajrud near Salt Desert in south-east of Tehran join together [7]. Tehran, before the founding of the Qajar dynasty and being chosen as the capital, was small a city. But since then, growing agency in the mid Qajar Iran became the largest city [3]. Based on the first official census was conducted in 1956, this city with 1,560,934 inhabitants, was the most populous cities. Also according to the latest official census was conducted in 2006, Tehran's population, 13.4 million people was the area that a municipality with an area of approximately 210 square kilometers based on statistical data, more than 433,500 inhabitants in its place well known [8]. With a half-ready to create massive structures made without proper planning, management of urban development so that the third program in Iran is considered unbalanced cause changes in ecological structure has been created metropolis of Tehran, Tehran region one [18].

Noting that the laws, regulations and records of Iran, the so-called conventional and known as environmental impact assessment (EIA) was not even in the assessment and present the concept of legal regulations was not the last forecast[16].

For the first time in 1979 on regulations had been to prevent pollution impact of the workshops and factories of the House Committee 29/4/79 time, licensing, establishment of any new factory and workshop development and change
of existing factories and workshops subject to the observance regulations and environmental protection and improvement[15]. In recent years, same as the Office of Environmental Assessment in the Human Environment Department Environmental Protection Agency established regulatory and enforcement related to Environmental Impact Assessment Projects is responsible for development [9]. Due to the limitations associated with the EIA system, large-scale national development projects have seen a number of social conflicts regarding development and conservation [21].

Informed early in the decision-making process of the following matters:
- The request for development consent;
- The fact that the project requires an EIA;
- Details of the competent authorities responsible for the decision-making process, an indication of where information can be obtained and details of where comments and questions can be submitted;
- The nature of possible decisions;
- Details of the availability of information gathered pursuant to Article 5 of the EIA Directive;
- Details of where and how and the relevant information will be made available; and
- Information regarding the public participation arrangements [10].

In line with regard to assessment of the capital Tehran is massive as part of the most polluted cities in the world [14]. Major pollution created as a result of pollution from mobile sources such as transportation systems and fixed sources such as factories and commercial and domestic resources are so far beyond acceptable standards [12]. Natural atmospheric is phenomena that direct and indirect effects on the distribution of contaminants. These natural areas undertake many diverse functions such as cleaning the air, conserving the earth, providing nutrients to underground water resources, etc [2]. No doubt if any city development with tact and caution not fully carried out, these issues will be added more than before [6]. Extending green tendrils into the centre of cities, organizing metropolitan areas around a green framework, and constructing green spaces where none currently exist are ideas that have driven the work of landscape architects since the profession became established in the mid-nineteenth century [4].

Concentration of population and activities in different environmental Tehran Metropolis first result has been that different forms of air pollution, water, soil, sound, and so on [1]. In the environmental, economic and social parts as well as the rapid growth of metropolitan Tehran region one, especially cause problems are such as unbalanced distribution facilities and services and failure, dramatic differences in the value of land and housing and living conditions and ultimately class differences and social and economic separation by implantation [11]. Government regulations can influence residential construction in numerous ways [17]. Strategic perspective has been observed on the letter of the capital Tehran municipality, a city of originality and Iranian-Islamic identity, mental, coherent and stable structure suitable for settlement and activity. Finally, the study examines the potential opportunities to more fully integrate environmental review and planning efforts [20].

Areas of the region one:

One area of Tehran Municipality located in the Alborz mountain range south and is approximately 54 square Kilometers And adjacent areas 2 and 3 and 4, the Tehran Municipality is located. This area of 650 thousand populations of low-density parts of Tehran is considered. This area is limited to altitudes of 1800 meters north of Alborz Mountains, south to Highway Crossroads Hotel Chamran Expressway and lecturer to the top bridge, river lands of the West and the East limited to Darakeh Street in the town. One hundred years ago, because Shemiran tourist attractions such as the canyon, resort, Kolkchal, Evin, Darakeh place recreational component of the inhabitants of Tehran and currently also learn to create regional parks such as Jamshidieh, Niavaran, Gheitarieh number used Visitors from places of entertainment Shemiran. A region is a zone8 area, population and range in table and graph is shown next. Area 26 is an area that has names of some of their words from Ajoodanyeh, Araj, Dezashib, Ozgol and etc.

MAP1. REGION ONE

II.MATERIALS AND METHODS

Methods used in this project, is based on the altered interactions by modifying Leopold matrix and using environmental risk matrix.

By mix them together and due to the cases been used to evaluate the precision of various issues related to this project has been considered:
- Obtaining and analyzing the statistics from the Tehran region one.
- Using Leopold matrix and environmental risk matrix to evaluate the effects of the environment Tehran region one.

Description The first case:

Study and obtain statistics and information about the Tehran metropolitan region one from maps and physical resources including: slope and direction and altitude, soil type zone, surface water and underground water, lithology and fault and climate. Study and identification of biological resources including: maps of vegetation, animal cover and habitat [13]. Study and identify social and economic parameters including: population, income, ways of communication and infrastructure, current user.

Description The second case:
To scrutiny by the appropriate value system Tehran region one, combined with the method used. Reasons for using this method are a combination of the following:

Analyses of environmental conditions are suitable for the region. Method used to match with the environment, to increase the reliability of the results of the method. The urban dynamics originates constant interventions, causing different intensity environmental distortions. This situation deepens the imbalance in the natural–artificial environmental relationship [5].

Ability to provide a management plan needs for urban area development projects with regard to the future operational. Increase capacity to provide logistics projects with regard to land area tourist capacity for this project a software program is designed under Windows program (available to install on all Windows versions) works and the ability to analyze data as accurate and precise results as graphs showing the standard.

The previous two stages, the project method is as follows

From Tehran region one all environmental factors and urban indexes were related to this study have been considered for preparing the tables of the method. After put all these items to the tables the and preparing the special method for environmental impact assessment of Tehran metropolitan, region number one software has provided and all the results came from this software.

Due to environmental factors and an urban area risk assessment methods to help the environment and the Leopold matrix interactions to evaluate the environmental effects of a district of Tehran region one, the combination of the following tables are presented from both the model.

<table>
<thead>
<tr>
<th>TABLE I. THE METHOD OF ERA</th>
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<tbody>
<tr>
<td><strong>Risk Score</strong></td>
</tr>
<tr>
<td>9-10</td>
</tr>
<tr>
<td>7-8</td>
</tr>
<tr>
<td>5-6</td>
</tr>
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<td>0-4</td>
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</tbody>
</table>

This method as an innovation and initiative for preventing irreversible mistakes and errors of regional urban plans have been discussed Tehran that the occurrence of each of them causing damage and loss of investment was extremely high. Identify, evaluate, prevent, eliminate or control conditions, causes and effects of factors in an urban area, indicate that potential risks in the area where the evaluation is done in the shortest time and with maximum precision, the causes and effects related to the identification and scoring.

This project innovation and initiative for preventing irreversible damage of urban and regional, which were considered to reach its conclusion, the following points are necessary:  
- Participation of environmental experts (team work sciatric).  
- Create an information cycle suitable for proper parameters.  
- Providing conditions and resources necessary for change, if changes are necessary.  
- Using related software and integration of their information management system.

III. RESULTS AND DISCUSSION

This analytical method that tries to possible potential risks in the area in which an environmental impact assessment is done and the causes and effects associated with it to identify and rank. Analyze error conditions and effects of it is a method to prevent occurrence of errors and support the creation and development of a product, process or service to register new parameters and indicators in the design and development, process or service. This method is of effective tools to predict and the most inexpensive and fast most solutions to prevent errors. With new generation of environmental impact assessment method that presented for start or revision and development of urban design is organized and can be used for making many of the key issues related to the region together.

This project control methods after an environmental impact assessment Tehran area using a broad and comprehensive program with the new method involves the executive. Major components of this program are as follows:

- Identify problems and evaluation of urban projects having risk factors
- Identify and evaluate factors regenerator
- Conscious and participation active experts
- Control program should be carried out comprehensively
- Continuous monitoring and evaluation information collected in Tehran region one

<table>
<thead>
<tr>
<th>TABLE II. RESULTS OF CASE STUDY BY USING THE INTRODUCE METHOD</th>
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<tbody>
<tr>
<td><strong>Likelihood</strong></td>
</tr>
<tr>
<td>Almost Certain</td>
</tr>
<tr>
<td>Likely</td>
</tr>
<tr>
<td>Possible</td>
</tr>
<tr>
<td>Unlikely</td>
</tr>
<tr>
<td>Rare</td>
</tr>
</tbody>
</table>
What need to do?
- Consider what can go wrong
- Determine how bad the outcome would be – consequences
- Determine how likely it is to happen – likelihood
- Calculate the risk level

The results show that different will be considered effects and evaluation. Due to past discussion about the colours and numerical method total result will appeared after calculation same as case study Tehran region one (the table that number II). The red colour shows extreme effect and serious impact on the area. It means for this matter need to have a special programme to make it close to clearance the effect with the long term management planning. The yellow colour means the high considerable items appear in the area and items should be understood and discussion for the people and local groups for trying to solve them with short term management planning. The green colour means the result of evaluations of the effects are moderate and they need to attention by the professional meetings and negotiations with the local people. The white colour shows that minimum results from evaluating of the effects of the items appear and all of them are proportional with the local environment and nobody has against opinion with these items.

IV. CONCLUSION

By using this method these items that come follow will be take for the present time and future; Obtain information for the physical structure of the desired region one. Obtain information climate, topography, maps, land applications. Studying the important items for determine the transportation sector and stable sources of pollution in the Tehran region one. Review the information and data related to environmental standards, assessment and selection factors in the area of environmental pollution. Using a seamless management system and providing various layers of data from the Tehran region one. Review the amount of pollutants release from vehicle traffic in the region one. Review pollutants generated from fixed and mobile sources in the study region one. Review the environmental situation 10 fold in areas with a comprehensive map of the urban area of Tehran. Reviewing and evaluating the environmental problems in Tehran. Logical solutions in relation to assessment and control of environmental issues in the region are looking for solutions and their impact in preparing a comprehensive urban design and physical model - the physical area of Tehran.

This method of evaluation for environmental impacts including three major knowledge-based urban environmental hazards and the consequences resulting from their emphasis on complete knowledge of the environment an under the effect of Tehran and its sensitivity and values of a particular environmental area, is estimated identification and estimation of parameters and control methods and reduce the effects of presentation. Environmental Impact Assessment seems to be effective in a few projects of social, economic, cultural items. For prioritizing and making little likelihood and consequences have been used of environmental hazards resulting from the implementation of such plan from the above evaluation methods. In the first structure is considered priorities, possible environmental impacts and the second level of possible hazards and pollutants separately. Third acceptor level environmental priorities and has been weighted and classified according to severity of risk classification and with the same classification system using probability and severity of risk, the degree of environmental risk and calculate is determined the environmental risk level. Finally, to reduce potential hazards resulting from design or from its consequences, the effects of reduction strategies are presented. The results of quantitative evaluation of environmental construction projects to strengthen gas station indicate that among all environments affected by dust hazards, health and general health and safety of biological contamination resulting from various degrees are examined, with the risk, are examined respectively 7-8 and 9-10 at a very high degree of risk level.

ACKNOWLEDGMENT

Considering the growing trend of urbanization and the problems caused by this phenomenon has chances including traffic, pollution, respiratory sound, and a waste of energy, time and importance and necessity of migration in a Tehran. Duties and responsibilities of a regional council and a variety of different study area are responsible. Implementation of a regional council based assessment of environmental impacts as a necessity in this region to work programs. Reduce many urban problems including traffic, pollution and environmental costs resulting from unnecessary transportations citizens in the not too distant future municipal services to help assess the effects of environmental and cognitive strengths and weaknesses should be given enforcement experts and urban projects environment.

With consideration to this method and environmental impact assessment thru the assessment methodology better results will be taken for present time and future. It means by people co-operations and consideration the environmental evaluation results show the clear data for decision-making in environmental problem solutions. By using the combine methods same as this methodology results can help well than individual methods with high probability errors. But mixing methods need to be advance in the special scientific courses related to the case studies titles.

REFERENCES