

## **Quality of Life in Urban Areas (Case study: District 11 of Tehran Municipality)**

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### **Extended Abstract**

#### **Introduction**

Urban quality of life and promotion of citizen satisfaction about their living environment has attracted the attention of many urban planners and policy makers. The quality of life has two kinds of natural and human dimensions. The natural environment of a city in the form of physical setting, economic, cultural and social structures can affect the promotion of the quality of life. Attendance at religious places or membership in trade unions can be different in different climatic regions. Quality of life is the main goal prepared by planners. Issues and needs of citizens in the urban neighborhoods faced urban planners and managers with the challenges that mainly as a result of the quality of life. According to Aristotle Mkan-Hayy, cities are a base for residents to bring happiness and security. In fact, as long as mankind has achieved a kind of peace and relative security in thought and action, cities were formed. Over time with development of the cities, the realization of human ideals such as justice, public relations, law were gradually formed. However, in recent decades, cities with rapid population growth and migration of population are faced with many problems including overcrowding, pollution, pressure on natural resources, unplanned growth of cities, weak sources of income, lack of public transport, lack of opportunities and jobs and health centers, social inequalities. To achieve a suitable environment for the citizens, it is very important to consider the different issues. Given all the problems and difficulties in cities such as improper use and unbalanced distribution of landuses, lack of adequate municipal facilities and so on, it is required to study the nature of socio-cultural, economic and physical quality of urban life. District 11 of Tehran Municipality with 19 neighborhoods in the central part of Tehran is today faced with problems of poor life, including chaotic situation of vulnerable deteriorated areas, no necessary vitality, poor quality of education and health, low income level of residents, poor employment. Accordingly, old infrastructure, shortcomings and in plans of street network, intersections and squares, poor public green space, poor public transportation, low education and general welfare, and environmental pollution are among the most important problems in the city. The study for evaluation of quality of life is considered as an approach that represents the benefits of citizens

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in the district 11 of Tehran Municipality. Thus, appropriate solutions can be achieved by improving the quality of life in the region.

### Methodology

This cross-sectional study has employed survey methods for collecting library data and a particular questionnaire. Up to 400 residents of district 11 in Tehran have been selected as the samples of the research. We have used SPSS and Excel to analyze data and information. We have applied one-sample t-test to test the research hypothesis. District 11 of Tehran, with an area of 1,200 hectares, has a population of about 288 thousand people in central part of Tehran metropolitan area.

### Results and discussion

Analysis of the questionnaires has indicated that satisfaction of the residents in the district mainly show lower-middle quality of life. The greatest satisfaction is in terms of socio-cultural citizens (security, Partnership, health, leisure, vitality) and the lowest is in terms of the physical (housing quality, installations and infrastructure, educational access and treatment).

### Conclusion

The results highlight that the residents of District 11 of Tehran Municipality have low satisfaction level in terms of quality of life measures (in physical, economic, socio-cultural aspects). A significant portion of the residents of the district is poor economic situation of people. The results of the analysis have also indicated that, in its economic dimension, the quality of the urban environment show 58 percent relative to the average state. Finally, we can conclude that the highest satisfaction of spaces and buildings (building density, building aesthetics, building size), business services (shopping centers, shops), security and social relations (neighborhood safety, neighborhood vitality and connect with neighbors) and the size and housing (size of the room, the home facilities and climatic conditions of household) suffer from low satisfaction with the organization of access and transport, entertainment services, life and the cost of housing. Therefore, the greatest satisfaction is the socio-cultural aspects of the citizens and the lowest is in terms of the physical. Eightfold increase in applications services, restrictions in construction industry jobs and plants in the neighborhoods.

**Keywords:** Quality of life, dimensions of quality of life, physical quality, socio-cultural quality, economic quality, District 11 of Tehran Municipality.

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## Analysis of the Citizen's Enjoyment Level of Urban Services in Kermanshah Province, Iran

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### Extended abstract

#### Introduction

With increasing urbanization, urban services and its quality is concerned by urban managers, planners and citizens. In principle, the discussion of urban services was accompanied by expanding urbanization and apart from the nature of urban services; they are affected by economic, political, administrative and climatic conditions and structures. The quality of urban services has been one of the obvious indicators of urban management from the beginning. One of the difficulties and problems that developing countries are faced with is unbalanced and unequal development between and within the regions which mainly occurs due to national and centralized planning. Regional planning by keeping an eye on spatial view and optimal utilization of regional and local resources can create a hierarchical relationship among settlements at local, regional and national levels. It ultimately leads to a comprehensive and integrated development of the region.

The main task of municipalities giving general services to citizens is provision of urban services that contain the health, security and reconstruction facilities. But this part of their duty does not always receive the equal and enough amounts of attention and services. As a result, some kinds of injustice and split is always seen in receiving services by different cities. It also causes imbalance spatial distribution in urban system.

#### Methodology

The present study deals with measurement and evaluation of urban services in the municipalities of Kermanshah province. The sample is all 32 municipalities of the province. Based on urban service indicators, all cities are ranked by taxonomy, factor analysis and cluster analysis methods. Thus, all cities are ranked and compared with each other based on their own actual number of services. To show the portion of urban residents who enjoy provided services by municipalities, the percentage of their access to services is calculated by population coefficient method. This method was also applied to classification of cities in Kermanshah province.

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### Results and discussion

Presence or absence of required urban services in the cities of Kermanshah province has a significant relation with their antiquity and population sizes. It means that the ratio of urban services depends on the size of population and provided public services of those municipalities. Preliminary observations indicate that newly-established cities are enjoying higher levels of access to public urban services in comparison with the more populated cities. This is due to the impact of administrative factor which is the main factor for their establishment. As an example, the city of Kermanshah which has the highest number of population and users of public urban services occupies a lower rank in comparison with small and low-populated cities of the province. This indicates the more population suffering from the lower levels of public urban services. The current problem is intensified by dependency on state budgets or administrative factor which is the main causes in establishment of small cities. To verify the problem and achieve reliable and scientific results, appropriate models used in urban planning are applied in this study. Findings of the present study indicate that the ranks of cities in Kermanshah province, despite the consistency of applied data, are not quite similar when taxonomy and factor analysis models were applied. In most cases, each model showed a relatively different result of ranking for the cities. Therefore, to minimize the differences and achieve more realistic results of analyses in the current study, the Hierarchical Cluster Analysis model was also applied.

Using Cluster Analysis model, the cities of Kermanshah province were re-ranked based on their enjoyment of considered indicators. This time cities were ranked in 5 categories ranging from quite enjoyment to very weak. Results of applying the Cluster Analysis method, which was completed by SPSS software, showed that city of Soumar stands at the top of ranking pyramid by itself as having the highest levels of public urban services (relative to its very low population which is just 9 people!). A large number of other cities (27 cities) are located at the Very weak level of ranking categories.

### Conclusion

Growing number of cities in Kermanshah province is an obvious characteristic of urban system since 1990s. The current urban system contains a rather large number of small and low-populated cities. The main causes for establishment of these cities are not the proper expansion of urban infrastructures, services and populations, but it goes back to changing definitions of governmental division roles and neglecting many requirements which are necessary to convert a settlement to a city. Most of the cities (even after many years) are still low populated places with the least conditions of urban life. They look like a kind of semi-cities instead of real cities.

The results of the present study indicate that there is not a strong relation between the ratio of urban population and the enjoyment of urban services. In other words, the cities with higher amounts of population are located at the lower levels of ranking categories of enjoying urban services. Occupying a higher stage of ranking by Soumar with 9 people than Kermanshah with nearly 900000 is a good example.

Results of the present study also emphasizes that urban authorities of Kermanshah province should select more proper attempts and solutions to minimize the weaknesses of municipalities in case of the provision of urban services. They should find a way to make a balance between the size of population and their share of public urban services in all cities of the province. At the final part of the paper, some suggestions and recommendations are introduced aimed at the enhancement of the existing situation.

**Keywords:** Municipality, Taxonomy, Factor Analysis, Cluster Analysis, Kermanshah.

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## Identification of the Zones for Creative Development in Historical Context by a Tourism Approach (Case Study: Region 12 of Tehran)

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#### Introduction

Movement towards creative development is accelerated because of the loss of environmental quality and the exhaustion of historical textures in the cities. In one hand, the theory of creative city due to relative failure of other theories and, on the other hand, due to its emphasis on cultural and historical values using the tourism development model can be effective to transform the historical part of Tehran towards the native development of the region. Therefore, the present research is trying to focus on the implementation of creative development theory in the 12 regions of Tehran. To this way, an effective step is taken in advantage of the tourism development to reduce the decline and exhaustion of the region from using tourism attractions and industries. In terms of creative development, we make a selection of intervention centers, identification factors, criteria and context of creative development of historical texture. This is considered with the tourism approach in the case study. In the end, the development of the entire region can be achieved by ultimate creative zones.

#### Methodology

The present research generally uses statistical descriptive techniques, statistical data processing and data analysis. In this research, we have used some models including landuse measure and multi-criteria decision-making in integration with the process of AHP analysis and logic of layer estimation in the GIS environment. We have also used Expert Choice as effective software to know the value of indexes.

#### Results and discussion

The factors, criteria and related indicators in the process of identifying the areas of creative development were investigated and calculated with tourism approach. After calculating and weighting of each index, the coefficient of importance of the indexes and the overlap of the layers are calculated with multi-dimensional analysis. This can prepare the layers for overlapping in the category of factors. Thus, the final layers are obtained from the analysis, which show the creative zones in region 12 of Tehran. These layers are including economic (0.416), social (0.117), quality (0.036), accessibility (0.268), land use characteristics (0.081),

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ownership and adequacy (0.081). As it can be found from the values, the economic criterion is at the first level and access criteria in the second rank. These are relatively more important than other factors in determining the areas for development of the creative zones in region 12. These zones are Ferdowsi Square, Baharestan Square, and Parkshahr Area.

### Conclusion

This research has attempted to examine the interaction between creative development and tourism through providing strategies and effective policies by correct selection of intervention centers in the region to provide a good basis for initiating interventions in the historical context of the region. To this end, by identifying the factors and zones of the creative development with the tourism approach, we have determined the most important physical-spatial context of creative development with tourism approach in Region 12. As the research findings show, this type of intervention is required for comprehensive and accurate planning. The quality of buildings, proper access, and land use based on the models can introduce these zones as the area of creative development or development stimulus. If the entry into the tissue of region 12 is made through these zones, probably the efficiency of planning and implementation will prevent the waste of resources. The tissue upgrades will be systematic in the next steps.

**Keywords:** historical context, creative development, Region 12 of Tehran

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## Quality of Pavement Lightening and its Effect on Citizen's Sense of Security (Case Study: Shorabil Tourist Area)

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### Extended abstract

#### Introduction

One of the urban parts most visited by the citizens is city sidewalks in which a great number of people pass by day and night. Therefore, sidewalks lightening are an essential part of the night life of a city. To provide a designing guide for a lightening with a social function, it is essential to study the relations urban space lightening and perceived effects of citizens. Since the physical elements can change people's perceived safety, they have an undeniable impact on the quality of lightening. The purpose of this study is to investigate the correlation of the nocturnal lightening physical properties and the motivation of the tourist area of Shourabil.

#### Methodology

This is an applied research with a description- analytical method and analysis of correlations among the variables. It is also classified as fieldwork survey that uses questionnaire and somewhere interviews. The people included in this research are those who walk in this area at night. Sample volume is set 148 based on Morgan Table and purposive sampling. The analysis of data is performed by SPSS22. Analytical test such as One-Way ANOVA (F), U Mann-Whitney, Chi-Square  $X^2$ , Kendall's tau-b and Pearson correlation coefficient, and Kruskal-Wallis are also used.

#### Results and discussion

The main issue in this study is to examine physical and social factors influencing the sense of safety of citizens during the night walkings in the tourist zone of Shourabil, Ardebil.

Results show that physical properties of sidewalks including monotonic lightening with face detection at nights, and hiding is affecting the sense of safety. In other words, safety level according to the results has a meaningful contrast ( $P < 0.05$ ). There is also a meaningful correlations ( $\text{sig} = 0.000$ ) between people interest and prioritization of the sample area and sense of safety, people familiarity with the safety, the number of night walks and the sense safet ofy, the sense of being secure and safe.

#### Conclusion

The lightening in public walking areas has an essential effect on people experience of being in a

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public space. Different properties of lightening cause various emotional responses in people. Sidewalk space could either induce a good feeling in citizens or make them feel stressed. Safety is a crucial index of the lightening quality affecting people behavior in sidewalks during the night walkings. Preparing sufficient infrastructures, minimizing crimes and improving nocturnal lightening in public place, can develop perceived safety of citizens. It is also notable that quality of lightening is not the same as increase in the lights.

**Keywords:** lightening, pavement, sense of safety, Shourabil, Ardebil.

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## Classification and Change Detection of Urban Built-up Lands Using Remote Sensing Images

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### Extended abstract

#### Introduction

Urbanization and use of urban lands is the result of social and economic development. Urbanization is a major concern in many parts of the world. By 2050, the world's urban population is expected to double from about 3.3 billion in 2007 to 6.4 billion in 2050. Today, changes in land use occur without clear planning and little attention to their environmental impacts. At present, the built-up lands cover 400,000 square kilometers of the Earth's surface and it is expected to increase to 120,000 square kilometers by 2030. Recently, urban studies, classification of built-up lands and land-use change detection in urban areas using remote sensing data have been highlighted on an unprecedented manner. Various spectral indices have been proposed for rapid detection and accurate classification of built-up lands using satellite images. The purpose of this study is to compare the performance of the indices and the introduction of a new index for classification of the built-lands using satellite images to determine spatial and temporal differences of land-use in the city of Tehran.

#### Methodology

The data used in this study is Landsat 7 ETM + and Landsat 8 OLI / TIRS satellite images for Tehran. In this research, we have initially used the MNDWI index and the Otsu thresholding method to separate water surfaces from the waterless surfaces. Then, for the purpose of masking the water in the image, water mask was created. Finally, using indices such as Urban Index (UI), Normalized Difference Built-up Index (NDBI), Index-based Built-up Index (IBI), Normalized Difference Impervious Surface Index (NDISI), visible red/green-based built-up indices (VrNIR-BI and VgNIR-BI), visible blue based built-up index (VbSWIR1-BI) and Otsu , the built-up lands are separated and classified. The accuracy of the classification was examined using 3500 reference points for each image.

#### Results and discussion

The histogram of the spectral indices of two satellite images and the Otsu method has showed

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that for the ETM + sensor, all indices except NDBI and VrNIR-BI show double distribution signs. For the OLI / TIRS sensor, only the IBI, VgNIR-BI and VbSWIR1-BI indices show signs of a dual distribution. The classification accuracy results show that the VbSWIR1-BI index has the highest overall accuracy and the NDISI index has the lowest overall accuracy for both Landsat 7 and Landsat 8 images. The temporal and spatial variations of the built-up lands indicate that the highest increase of built-up lands can be found geographically in the western and southwestern part of Tehran. According to the results of the VbSWIR-BI index, built-up lands in the studied area between 2001 and 2015 increased to 6.38%.

### Conclusion

The rapid development of geography and remote sensing technology has led to creation of different spectral indexes for classification. A review of studies on spectral indices indicates that the blue band coupled with the near infrared band, has not been used for classification of built-up and non-built-up lands and the results of this study have shown that this index is good and has been able to classify the built-up lands and increased classification accuracy. This index also enables the determination of changes in spatial and temporal built-up lands in Tehran accurately.

**Keywords:** Landsat 7 and Landsat 8 images, Classification, spectral indices, change detection, urban growth.

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## Localization Pattern of Water Sensitive Cities (Case study: Tehran Metropolis)

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### Extended Abstract

#### Introduction

The increasing population growth and tendency to live in the cities have led to maximum urban population for the first time throughout history. In fact, substantial rise in the population of the earth and overexploitation of environmental resources to meet economic needs have particularly influenced water resources. Iran is by no means an exception in this regard and increasing urbanism, particularly in metropolitans such as Tehran, has hindered the implementation of necessary policies to protect the environment generally and water resources specifically. At present, it is widely agreed that traditional approaches to water management in cities cannot be adequate for current and future sustainability. Thus, fundamental changes are required in technical and managerial structures of urban water systems. Some modern approaches should also be applied in sustainable planning for urban water. In this regard, a rather new concept in urban water management, namely "water-sensitive cities", has emerged since twenty years ago. This management which deals with offering ecological solutions to gain sustainability in urban development, calling for basic modifications in common methods in managerial, social and technical areas. The present study aims at localizing patterns of water-sensitive cities and determining Tehran's position compared with water-sensitive cities.

#### Methodology

The present research is purposeful, applied and developmental, and in terms of the research method, it is an analytical descriptive study. In order to collect information in this research, we have used library and documentary methods including documentary studies, library and deep review of research literature in relation to water sensitive cities and the determination of water-sensitivities to the conditions of Tehran. In the next step, two types of questionnaires were used for data collection, one of which was related to pairwise comparison and the other to determine the location of Tehran using the Likert spectrum. It should be noted that both of these questionnaires were distributed among 45 water and urban planning experts by the Ministry of Power (8 persons at the Ministry of Energy and 5 persons at the Water Resources Management Company of Iran) and Tehran Municipality practitioners (Protection Organization Out of the environmentalists, 8), and (Management and Planning Organization of the country, 5 people). To select the respondents, we examined them among the people related to the issue of water and

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urbanization among the academic elite for interview. Due to limited access to these subjects, only 30 questionnaires were returned to the distributed questionnaires. The incompatibility risk in the process of analyzing the hierarchy of the main indicators in this research was 0.16 which is less than 1.0. Therefore, compatibility is acceptable. To determine the reliability of the questionnaire after the distribution of 30 questionnaires, we employed SPSS software to analyze the Cronbach's alpha. The Cronbach's alpha for this study was 0.863 that indicating the necessity of the questions. In the first stage, the relative weight of each of the criteria and sub-criteria specified by paired questionnaires was used, so that the questionnaires were distributed among 45 experts and decision makers in the field of water and municipal affairs and related organizations. The pairwise comparisons between each criterion and the sub-criteria were then taken to create a single matrix of all the scores obtained. This ranked each of these indicators using the AHP hierarchy analysis and the SUPER Decisions software. In order to determine the status of each criterion of water-sensitive cities in Tehran, a water-sensitive city uses a Likert spectrum questionnaire, after distributing the questionnaire among water and urban planners and rating them to any criterion. Using SPSS software, one sample T test shows the status of each of these criteria and sub-criteria in Tehran relative to a water sensitive city that is optimal and in this research it is intended to be specified.

### Results and discussion

Converging cities to sustainable cities in terms of water, or water-sensitive cities, requires major social and technical changes than conventional ones. The concept of water-sensitive cities is a new urban water management model that supports the use of decentralized water systems. Awareness and understanding of policy makers and urban planners about new concepts and methods of water resource management can be helpful for optimal decisions in water problems. One of the main steps in these issues is localization of indicators by new methods according to the conditions of the country. In this research, the theoretical foundations of water-sensitized cities were identified in accordance with the conditions of Tehran with 7 general areas. The overall result of the research have indicated that the highest importance was related to the index of water-quality governance with 0.2932, and the lowest value, 0/0616, is related to the quality of urban space index. The maximum distance between the standards in Tehran with a water sensitive city is due to planning for all strata with a value of 0.6636 and the lowest distance from the vegetation index and the cost of using the same services with the values of - 0.3830 and - 0.4010. The results indicated that Tehran is faced with serious deficiencies in current high-priority criteria.

### Conclusion

Finally, corrective solutions based on general and detailed findings of the research are proposed in the form of objectives, strategies and policies; some of them are:

- Achieving proper governance for water sensitive cities
- Increased social capital
- Maintaining justice and equality in water affairs
- Increasing the efficiency of water resources
- Utilize Multipurpose Infrastructure
- Improvement of ecological health
- Increasing the quality of urban spaces

**Keywords:** localization, water sensitive cities, sustainable urban metropolis of Tehran.



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## Monitoring the Process of Land Use/cover Changes Using Markov CA Model: a Case Study of Kermanshah City

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### Extended abstract

#### Introduction

Land is one of the primary natural resources required for many activities in cities. A city is expanded not only by population, but also by changing in the spatial dimensions. Changes of land are a natural process and can't be stopped, but it can be organized. Supervising land zoning in the rules of city zoning to residential, commercial, industrial, and administrative areas is one of the important issues of urban life. Land use is one of the basic concepts in urban and regional planning. Thus, in optimized urban and environmental management, it is necessary to know about the proportion of land use changes / land cover and their causes. Remote sensing is considered for monitoring and supporting decision making for effective tools related to urban planning. The modeling for prediction of land use changes by remote sensing data is also a helpful tool that can manifest a good recognition of land use changes and present good solutions for management. The goal of the current article is to survey changes of Kermanshah city's zones through Landsat satellite images in the past three decades (1985-2013) and to predict changes until 2026 by using a combination of regression logistic, Markov chain and Markov CA models.

#### Methodology

1. In order to produce the land use maps, satellite images of TM Landsat 5 and OLI Landsat 8 with the resolution of 30m, for 1985, 2000, and 2013, all in July, have been used. General stages of the investigation can be categorized in four sections, which are as follow:
2. Providing land use maps of three periods and manifesting changes.
3. Checking the factors influencing the urban growth, land use change, and providing the potential map of town expanding in the future periods. This has been done by the regression logistic model.
4. Estimating land use changes and spatial distribution of them by analytical methods of Markov chain.
5. Running the Markov CA model and predicting land use changes over the study area.

For the classification, the number of classes was determined by the available images and maps, conditions of the studied region, and the classes needed for vegetation maps. Finally, the classification has been done through maximum likelihood algorithm. To determine the changes, we used post-classification comparison method. Following the procedure, the potential change map was produced through regression logistic, as one of the extended linear models. Markov

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model was used for calibration to extract changed area matrix and change potential of each class. Finally, the change prediction map of 2026 was provided through Markov CA model.

### Results and discussion

The results showed that in the first period (1985-2000) the pure changes of reduction in areas of vegetation and water surfaces is 4153 and 14 hectares, respectively. The pure changes of area increase in urban areas and mountains are 3947 and 221 hectares. In the second period (2000-2013), the area reduction in the mountains and the areas with water surfaces is 3261 and 22 hectares, respectively. The area increasing in towns and the areas with vegetation is 2594 and 689 hectares. In the last three decades, the most area reduction is for the vegetation and water areas, for example Ghare-sou River, and it's up to 3465 and 35 hectares, respectively.

The change prediction results with Markov CA model shows that, according to the past event, the most changes will occur in the built urban areas. This is in a way that these changes that are 9565 hectares in 2013 will increase to 2790 hectares in 2026. After the above-mentioned use, the vegetation area will increase to 1053 hectares in comparison with that of 2013. This is probably resulted from the afforestation plan of Kermanshah which has been started since 2015 by Kermanshah's municipality, Assistance of Parks and Green Spaces. Again, some parts of mountain areas will be placed in the vegetation class which is because of increase in the green spaces and tree planting establishment, causing a decrease in the level of the above-mentioned areas. However, the water bodies in 2026 will increase by 52 hectares. This is due to evacuating a very large amount of the waste water entering into the Ghare-Sou River, according to the present recognition of the region. This can make an increase in this class.

### Conclusion

One of the principal properties of the developing cities is the fast and unplanned urban residency. This is one of the main factors of land use changes on the earth. The purpose of the current study is to predict the process of Kermanshah city expansion in order to provide a comprehensive plan for developing the city in the future through the prediction models. The results of monitoring and evaluating the changes of land use/vegetation of Kermanshah during the studied years showed that 6540.48 hectares were added to Kermanshah area from 1985 to 2013. Moreover, the results of Markov CA, urban growth, and land use changes of Kermanshah for 2026 show that 1426 hectares of vegetation cover, 2462.3 hectares of mountain areas, and 63 hectares of water areas will change to urban use until that year. Using these results in Kermanshah city plans and decision makings helps us prevent the urban growth to inappropriate areas in the future and avoid undesirable problems. Besides, it is important to state that the physical development of Kermanshah can be effective if it is in a controlled and monitored way and before any growth the appropriate options for this purpose should be evaluated.

**Keywords:** land use change/vegetation, Markov CA model, Kermanshah city.

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