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**ANALYSIS OF THE SPATIAL LIMITATIONS OF RESIDENTIAL AREAS AND
FORESIGHT OF PLANNING HOUSING SPACE: SAMPLE STUDY: MARAGHEH**

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ABSTRACT

Housing sector is one of the most important land uses in urban areas. As its quantity and quality can suggest the stability degree and desirable development and quality of life of the inhabitants of a city. Equitable access to land and take advantage of that is one of the essential components of sustainable development and social justice. The concept of land and urban areas in terms of natural and physical as well as economic and social has qualitatively changed, and therefore the extent and purpose of land use is also very vast and rich. Since residential users contain about 40 to 60 percent of land in cities and towns of the world's countries. The city's population in 1996, 132,318 to 163,859 households in 90 levels has increased in this period 47,772 and the increase of households in need of housing, this study aimed to investigate the spatial limitations - Maragheh housing and planning to improve the situation with the use of cursor (method to estimate the area facing residential units). The method used in this research is descriptive - analytical and quantitative. The results indicate that based on the population analyzes in Maragheh by 2026, it reaches to 201259 (it means that 3700 people will be added). Also, the number of households will be 58676 (it means that 10904 will be added). It indicates that 10904 residential units are needed. In addition, lack of houses up to 2011 that 14690 residential units are needed, and according to the formula group facade, facade area of 154 square meters, the total area of residential housing units, about needing to Horizon 1405 Front housing units needed

by multiplying the Group obtains in the city to 2,262,260 square meters (226.2260 hectares) will be need.

Keywords: residential use, group view, scenario, foresight, Maragheh.

INTRODUCTION

Housing is as one of the basic human needs and one of the measures of development. Now, the thing of it is spoken about housing worldwide. The scarcity of housing units and at the same time that the quality of the housing units in many parts of the world can be traced back almost to be applied. On the other hand the trend towards urbanization in Third World countries and the spread of slums housing crisis in cities and regions has been marginalized in most cities.

One of the most important parts of planning for housing is review the current situation and the future that the present research based on that is going to act for future development of the city and housing development.

In this paper, after the issue, until the housing situation in 2011 has been found to predict the population, to predict the number of future housing needs to be propelled by 2026, and according to the existing powers within the context of the city center and surrounding areas, the capacity of housing is determined. In order to create a sustainable

urban environment, the optimal model of housing in Maragheh is examined. Finally to determine the appropriate strategy to achieve the objectives of the study will be conducted.

Expressing the Issue:

One of the outcomes of industrial revolution is the growth of urbanization (Darkoush, 2002: 14) that following many problems such as lack of houses would be increased. Flood of migration from rural to urban areas and a large number of people and households living in border regions and cities, particularly in developing countries represents a large-scale housing needs, as well as planning for it (Shabirchima, 2000). Since 1341 Iran, as a developing country, by land reform and change in the mode of production faced with the trend of urbanization and its problems, particularly in the housing sector (Hsamyan, 1998). Maragheh is an old city. In recent decades the development of national, regional and local levels and enhance the natural population growth and migration village - city, a shortage of housing units, long life and corrosion housing units contexts, lack of

provision of housing by the residents, especially rural migrants and people low-income, high cost of housing in household spending and housing problems faced aggravating factors, and a shortage of housing units in the years 1986, 1996, 2006, and 2011 have been 3103, 4668, 4698 and 3786. (In 2011 44,008 housing units and the number of households is 47,772 family housing units shortage of residential units is characterized Boxer's 3786 needed housing units in 2011). Also in the absence of proper spatial planning, according to the garden city of Maragheh, there is a risk that the development of connected physical damage to gardens and challenge the development. Therefore, through this method smart urban growth can be an appropriate model of endogenous city to provide housing.

Research purposes:

A general objectives:

- Identifying factors affecting the spatial planning Maragheh

B) Specific objectives:

- Defining the urban smart growth housing increase Maragheh
- planning housing for 15-year horizon(2011-2026)

- offering suitable solutions to provide housing space within the city of Maragheh for Horizon 1405

Research Methodology:

The research is applicable and developmental and its analysis method is descriptive-analytic (Hafeznia, 1998: 47). The target population is Maragheh. In the analysis of mathematical method (protected population, average household size), the annual growth rate formula group, etc. are used.

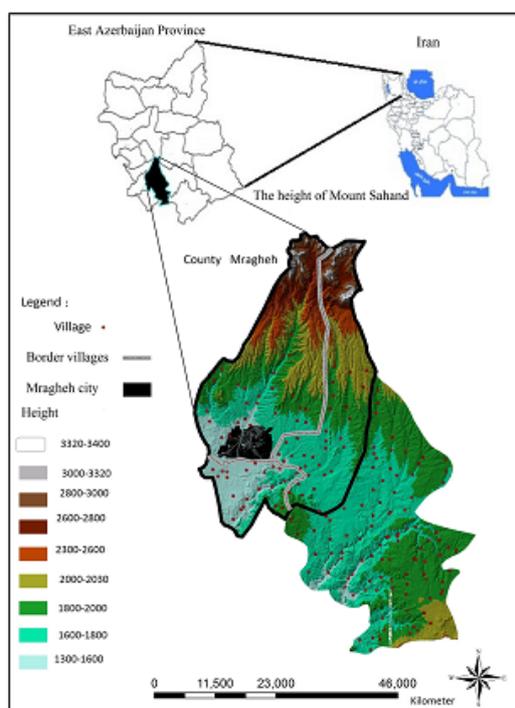
Case Study:

Maragheh as one of the old city is located on East Azerbaijan province and North West of Iran. Maragheh city due to the location and its importance in the history of Azerbaijan as one of the region's cities have always been the region's densely populated cities. Prior to the 1956 Census, detailed information is not available from the population. According to the last census was conducted in 2011, 47,772 households and 163,859 people, respectively. The city's population growth rate of 2.77 percent from 36,551 in 1956 to 163,859 in 2011. (Statistical Center of Iran, the population in Iran)

Table 1: Political divisions in Maragheh according to the city and country until 2011

Central	The number of villages			Village	Section	Province
	Uninhabited	Inhabited	Total			
Varjoi	0	18	18	Qarehnaz	Central	Maragheh
Dash Atan	1	27	28	Norht Sarajoo		
Alavian	1	24	25	West Sarajoo		
Aqcheh Kohol	3	13	16	South Sarajoo	Kharajoo	
Kharajoo	2	28	30	East Sarajoo		
Dashbolaq Bazar	6	48	54	West Qourichai		
Maragheh	13	158	171	6	2	Total

(Source: Authors based on the General Population and Housing Census 2011)



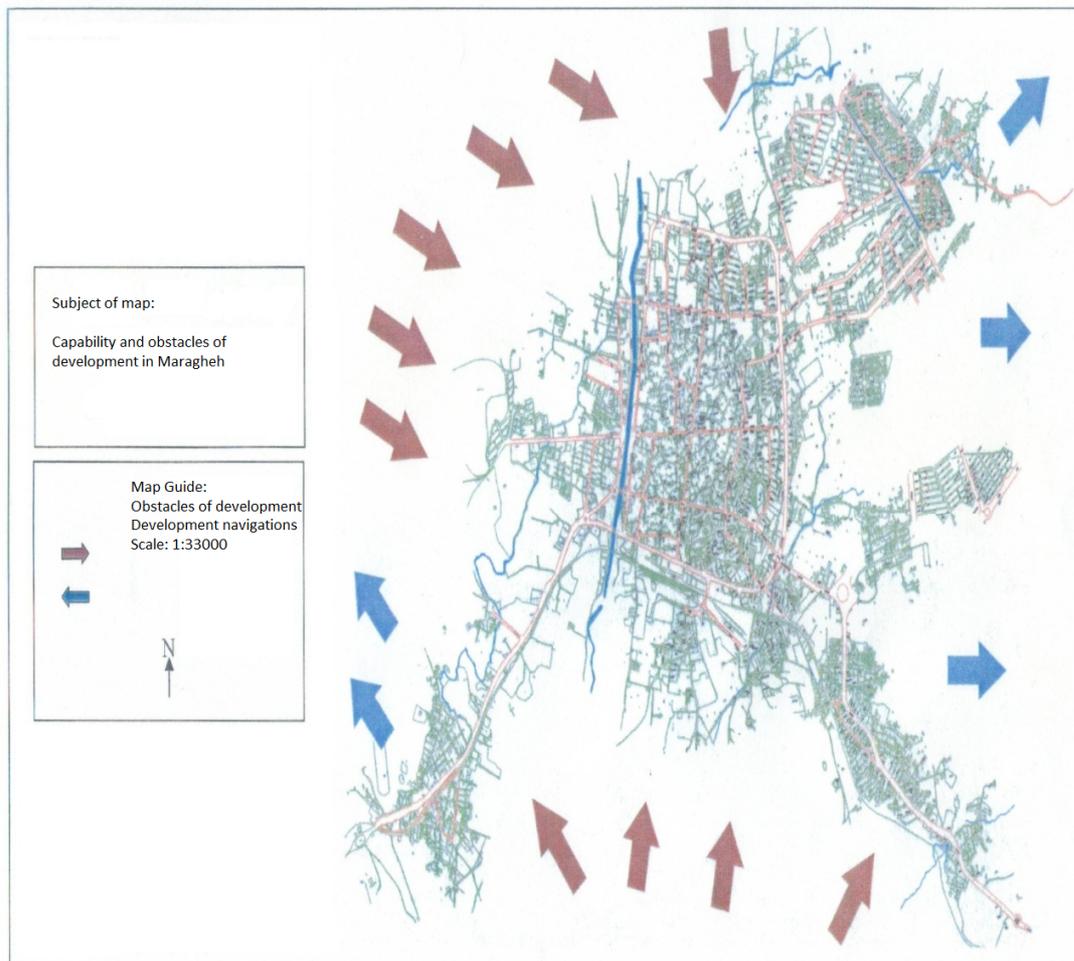
Map 1: Political division of East Azerbaijan and Maragheh

The Analysis and Findings:

The most important obstacles to the development of the city are gardens, farms, and villages near the city that are the most important factors limiting the growth of the city. Northern, northwest, southeast, southwest and parts of the East. In addition, Hill Observatory in West City, quarry and railway installations in the south of the city, the river and the surrounding mountains as well as the Safi Chai River in the West are the limiting factors of pedagogic process (see Map 4). Continuous growth of the obstacles mentioned is not possible

Semi-detached and development focused on barren lands East of the city (south of town, Asr) and sporadically in parts of South and

West Hill Observatory maximum of 100 hectares of drylands are not possible. (Zista Consulting Engineers, 1988: 19-427) Detached growth in the north and northwest and northeast of the mountain (poor topography) up to tens of kilometers from the city is not in the city's East Industrial Park Road Hashtrood distance away because of the pollution caused by urban development is not possible. Only suitable region for detached development is near the town Mehrjahad cluster development and other suitable place for the development of the city within the central tissue that can be considered with increasing density of destructive areas for future development



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Map 2) Capability and obstacles of development in Maragheh

Weather forecast in Maragheh city's population to 2026:

To do this it is necessary base population of a year to be determined. For next year, affections, etc. need to predict base population of year.

Population is two common methods:

1) Mathematical Method

This method is thought to be relatively simple population dynamics described by mathematical formulas. Accordingly, this method is sometimes called formulaic approach [10]. The mathematical method is one of the ways by which to predict the

future of pay and the relationship is expressed:

$$P_{t+n} = P_t(1+r)^n \dots\dots\dots (1)$$

In which, P_{t+n} population in the second census of 1405, P_t population census of 2011, n 15, r the distance between the two censuses, the annual population growth rate is be calculated.

Annual population growth rate between the two censuses is calculated using the following equation:

$$r = n \sqrt[n]{\frac{P_{t+n}}{P_t}} - 1 \times 100 \dots\dots\dots$$

In which, n and equal distance between the two census 15 years, P_{t+n} and P_t 2011 and 1996 censuses of population figures, respectively.

Based on the results of population and housing censuses in 1996 and 2011, the population of the city of Maragheh 132,318 and 163,859 respectively in the period under report.

Annual population growth rate to calculate the distance between two censuses. Then, based on the calculated annual growth rate,

population Shhrmraghh for 1405 predict. If annual population growth rate between the two censuses does not change, then how long will double the population of the Maragha.

The annual growth rate of Maragheh:

$$r = \left(\sqrt[15]{\frac{163859}{132318}} - 1 \right) \times 100 = 1.38$$

Predicted population of Maragheh by the year 1405:

$P_{1405} = 201258.67$

Used to development:

Maragheh city due to the mountainous location has many obstacles to their development. It is due to the gardens and vineyards, mountains, river and rail facilities around is faced with the lack of space. Only in parts of East and Southeast and West Hill Observatory has moorland for future development.

Region 1 is considered as the center of town that the high percentage of license and what the intended number and far more floor area in Region 1 shows the growth and endogenous urban development in Maragheh.

By the subtraction of predicted population from base population, added population can be achieved

Based population (2011) – protected population (1405) = added population

Added population N 37400 = 163859-201259

Over the next 15 years the population of 37400 people have been added to the topics

mentioned in the family is here, we calculate household size

The average family dimension:

The average family dimension is the average number of people in the household and the total number of households is calculated by dividing the number of inhabitants.

Population

$$\text{The average family dimension} = \frac{\text{Population}}{\text{The number of house hold}}$$

$$3.43 = \frac{163859}{47772}$$

Predicting the Number of the Required Houses until 2026

Then through obtained household size that is 3.43 the number of the needed houses until 2026 is obtained. The added population (37400) is divided by household size to 3.43, the required houses are obtained that equal to 10904 by addition of a shortage of housing units in 2011 (14690 = 10904 + 3786), 14690 houses or residential units are needed.

The estimated need for land for housing in Maragheh:

The area view of residential unit

Then we use the following formula facade group

In this way, to provide housing units in the city of Maragheh in using the Table Group of residential land in the area to determine the group is facing among these groups (Ziyari, 2002: 131).

In this classification, such as buildings with an area of less than 50 meters, 50 to 99 m, 100 to 149 subway so that in the second phase of the residential units were calculated for each group and each group that has the highest percentage of total housing units the city ranked as the front group is selected.

Facade of the method used to find groups (Pourmohammadi, 2000: 109):

$$M_0 = L_0 + \frac{(F_0 - F_{-1})}{(F_0 - F_{-1}) + (F_0 - F_{+1})} xi$$

The area view of residential units = M_0

Low Bank Group view = L_0

Frequency in view = F_0

Frequency in the group pre-view = F_{-1}

Frequency in the group post-view = F_{+1}

Distance classes (groups) = i

Table 2 residential units in terms of floor area in Maragheh in 2011

Percent	Frequency	The area of residential buildings (m ²)	Column
4/42	1503	Below 50	1
17/04	5790	50-99	2
22/21	7543	100-149	2
22/64	7676	150-199	4
18/72	6359	200-249	5
7/37	2505	250-299	6
7/60	2584	Higher than 300 m	7
100	33960	Total	

$$M_0 = L_0 + \frac{(F_0 - F_{-1})}{(F_0 - F_{-1}) + (F_0 - F_{+1})} xi$$

The area view of residential units = M_0

Low Bank Group view = L_0 149

Frequency in view = F_0 22.64

Frequency in the group pre-view = F_{-1} 22.21

Frequency in the group post-view = F_{+1} 18.72

Distance classes (groups) = i 50

$$M_0 = 154$$

Total area of residential units needed

Now, it is possible to calculate the required area of the residential unit by specifying the view area of housing, you should multiply the area of building view (154 m²) to the required residential units that 226.2260 hectares is obtained.

The area of building view × the required residential units = Total needed area of residential units

$$154 \times 14690 = 226.2260 \text{ hectares}$$

CONCLUSION

This paper aims to achieve the appropriate model of housing space due to the natural, social, economic and cultural condition of Maragheh that by use of theories and models for predicting population and housing try to present the housing development plan for 1405.

Maragheh in terms of its geographical location is facing with a lot of obstacles and constraints for its future development, lack of vacant lands within the inner city, slope, existence of agricultural lands and gardens around, obstacles such as railway and Observatory Hill, this city because of exhaustion housing can be met with the lack of space. Totally, at the end of 1405 to 14690 residential units need to be built as a result of the total area of 226.2260 hectares.

Sustainable Urban and maintaining gardens and vineyards of the city and conserve land and energy, housing development model with short-time and cluster housing with two or three-floor buildings can be the best option for Maragheh. Because this model prevents the destruction of agricultural lands and orchards, it also prevents the uncontrolled expansion of the horizontal city, and Maragheh could be a good model in terms of the economic, social, and cultural characteristics. City development in line with the objectives of the spatial development of housing for the compact city with small housing and satellite towns with short distance from the main town, can be the most efficient model to achieve sustainable urban development and the creation of a peaceful and lush environment for its residents.

The model of housing development in line with the sustainable development of the city and maintaining gardens and vineyards, can be dense development with a short-order houses and housing clusters where three or four families live together in a two or three-floor buildings. While this model is also used as a model of urban growth to prevent agricultural lands and gardens, in terms of socio-economic and cultural of Maragheh.

Providing guidelines and suggestions:

- Detached development and smart growth urban in the south east areas of Vali Asr town and scattered areas in the South and West.
- Increasing the density of destructive units to increase the housing capacity of the central structure.
- Support the reconstruction of old houses in order to increase their density
- Preventing illegal construction in the marginalization.
- Preventing the separation of components in large-scale (of city) in order to make greater use of residential space.

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