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Physical Development Modeling and Determination of Optimal Location for the Settlement of Sardasht Population over the Horizon of 1400 using Delphi and the Boolean Logic Methods in the GIS Environment

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1- Introduction

Population growth in urban areas and limitations of development potentials are the problems that in many parts of the existing population (including Sardasht) takes the future horizons' residents to the shade and significantly limits the providing of public services and vital resources and suitable residence in the distant horizons. The article deals with this issue and its goal is to determine an appropriate pattern of physical development for cities especially mountain towns. The considered case in this article is to develop physical models for Sardasht using advanced model in the GIS environment in response to research question "Where is the best place for physical development and settlement of Sardasht population in terms and conditions of urban-building?" whose answer has been discussed in this paper.

2- Theoretical Bases

Cities as living organisms grow constantly in terms of anatomy and become more complicated in terms of structure. Following this physical growth; economic, social and cultural conditions change gradually. Formation and appearance changes of urban-tissue and its development in the adherence of natural, social, economic and political factors will show itself in two aspects of inside and outside development. Outer development is also performed in three forms; detached development with the possibility of connecting to the city, detached development with no possibility of connecting to the city and attached development.

3- Discussion

First because of the necessity to identify and determine the optimal location for the settlement of Sardasht population, the analysis of social, economic, environmental and physical features of the city are considered. Findings indicate that geographical space of the city in terms of natural-environmental conditions will not have the potential of settlement of the population, according to the expected population growth of (1.4) over the horizon of 1400. On the one hand, because of the city being surrounded by natural and geomorphologic effects and on the other hand, because of severe deficiencies of the city in terms of user capitation, the equipment, installations, facilities and services and most importantly shelter (housing) to the horizon of 1400, the city deals with serious restrictions. So, outer development of the city is justified in the future. Therefore human and natural

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indices in physical development of the city are determined and an area of about 670 hectares (1 km radius) of spaces that are attached to city boundary in different directions are evaluated and analyzed in the form of information layers in geographic information systems (GIS) using Boolean and Delphi models.

4- Conclusion

One of the major problems of most cities of the country has been the lack of proper orientation and science of physical development of them and " disregard of urban-building principles or inability to use all the principles; lack of powerful and appropriate environmental analysis tools for consultants and using traditional methods, social, economic and legal considerations" have been the most important factors in this area. This paper has a major difference with previous studies, i.e. by providing and using Boolean and Delphi models and combining the results of these two models in determining the final choice (the best place for future development of cities) can provide a very good platform for planners and consultants of the city development plans. Sardasht is modeled as the case of using natural and human indices and the area of about 30 hectares in two parts (Southeast and west) is designated as proper for the physical development of the city.

5- Suggestions

Using Boolean and Delphi models and combining the results of these two models in determining directions and optimal location of physical development by the planners and advisors of urban development plans.

For Sardasht; transmission of inconsistent uses to the outside of the city, supportive and corrective contrivances in dealing with the informal settlement phenomenon, creating a green belt or green protective ring around the city boundary, legislation and specific regulations, control of ownership of the lands surrounding the city, local correction and logical changes of access networks inside the tissue, providing supportive housing, rental housing and institutional building and making grounds for more investment by the private sector, giving low-interest loans and connected development of the city in the medium term horizon and detached development in the long-term horizon are the most vital needs.

Keywords: modeling, optimal location, population resettlement, physical development, sardasht