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Planning Urban Greenways (Case Study: The Urban District 11 of Mashhad Metropolis)

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Extended abstract

1. Introduction

The international studies in the past years have focused on the high significance of nature for the welfare of urban people, and that alone suffices to show the urgent need for making the cities green. Taking into account all economic, social, and environmental issues, the greenway is capable of providing great help in sustainable development. To achieve such goals, planners suggest multi-purpose urban greenways that are capable of helping urban form, picnic spaces, recreational areas, places for physical fitness practice, protection of environment and biodiversity alongside economic development. Through greenways, high traffic places of the cities such as shopping and commercial centers, public transportation stations, recreation centers, schools, universities, parks, and beautiful landscapes of suburban areas are interconnected. According to the given issues, the approach of this study is to plan the urban greenway considering transportation and recreation based on urban man in Mashhad metropolis.

2. Theoretical Framework

Mashhad metropolis with geographical coordinates 59° 21' 36" E and 36° 10' 48" N is the capital of Khorassan Razavi Province, in the northeastern part of Iran. Mashhad has a varied, mild, cold, and semi-arid climate. It has hot summers and cold winters with high humidity. The urban zone under management and control of Municipality of District 11 was chosen as the study zone for this paper.

3. Methodology

The stages of recognizing and determining the most suitable sites inside the zone for the design of a network of urban greenways may be divided into 4 groups: recognition of goals, valuation of goals, node analysis, and connection analysis. Nine groups of places used by the citizens of the metropolis were chosen as the nine goals affecting the potentials of a given site for greenways planning in District 11 of Mashhad: (1) landscapes and green space, (2) sport compounds, (3) economic centers (chain stores and local malls), (4) schools, (5) universities, (6) recreation centers, (7) cultural centers (mosques, libraries), (8) public transport stations, and (9) residential compounds and population density of the sites

Valuation of the Goals: The goals were valued by AHP method and Expert Choice software (version 11).

Node Analysis: District 11 of Mashhad metropolis has 93 population zones with average population of 1858 souls, each assessed and weighted as a node (site) for passing and design of greenways.

Connection Analysis: In order to recognize the most suitable nodes for planning the greenways and prioritize the connection of weighted nodes, the gravity formula was employed here. The whole work was based on the gravity formula used for planning of greenways in previous studies (Kong, 2010, Linehan, 1995, Rudd, 2002)

4. Results & Discussion

Recognition of Goals: Inside the studied zone the total number of goals in the 9 named groups was 219.

Valuation of Goals: After analysis of the 9 groups of goals by AHP method, the final weight of each group was calculated with a discrepancy rate smaller than 1 (0.68). It is observed that the highest weight is devoted to landscapes and sport compounds. The next rank of is devoted to residential compounds. Public transportation stations show the lowest weight.

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Node Analysis: 93 nodes specified inside the studied district were weighted.

Connection Analysis: By means of gravity formula, the suitable sites for greenways planning inside the district were recognized. Finally, using this method in eleven regions of Mashhad metropolitan, suggested a greenway about 11.5 km length was suggested covering 46 percent of the detected urban spaces.

5. Conclusion & Suggestions

The number of goals identified in the studied district is about 219, among which the highest weights were devoted to landscapes and sport compounds, which were therefore very influential in the choice of nodes. On the other hand, since the highest weights were given by experts to landscapes and sport compounds, it seems that urban greenways focused on outdoor relief, recreation, and sports with the purpose of promoting citizen health were given more weight by experts

The next rank of was occupied by residential compounds and population density of the sites, that shows the high significance of providing citizens with on-foot access to required urban centers and services

from their homes in the minds of urban planning experts.

On the other hand, giving the lowest weight to public transportation stations proves that the urban planning experts do not look at urban greenways as complementary for the urban transportation networks. They have a rather independent view of the greenways as a separate network for a different kind of urban transport, a perspective that stresses the urgent need for planning of urban greenways in metropolitan areas.

In view of that goal (improvement of the quality of life for urban man) the valuation of each node is based on the needs and requirements of urban life, such as education, recreation, entertainment, economy, transport, etc.

Finally, it seems the use of this method is totally suitable to metropolitan areas lacking natural elements among their artificial urban textures and at the same time requiring change in the urban form and creation of connections and interactions between walking man and the urban spaces.

Key Words: Clean transportation, Urban greenways, GIS, Analytic hierarchy process (AHP).

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