Study for the Informal Settlement Supposed to Be Distributed by the Iraq Government for Poor People in Baghdad City - Republic of Iraq

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Abstract. This paper set forth the spatial suitability of the informal settlement supposed to be distributed by the Iraqis government to poor people. The Iraqi government identified 9 locations of informal settlement in Baghdad city and acceptance it as a reality as a help for them to getting home. In this paper I discovered the suitability of those locations which one will be suitable more than others for living. The analysis process was applied using the GIS environment – spatial analysis. According to the results, It has been identified as the most important measures to identify which one of these areas suitable for development for housing by using some criteria (Distance from the city center, Proximity from transport routes, Proximity of high voltage lines, locations from Railways, Location from oil and gas fields, the location from the river, the location from water services) and recommends the procedures to be carried out for the purpose of developing the informal settlement, so as to help decisions maker to select the more appropriate of those slums.

1. Introduction

The need of urban planning emerged after the negative effects of urban growth in the cities including slums which not included in the urban planning In areas deprived of public facilities and basic services [1][2], One of the main reasons for slums especially in Iraq is the high rate of poverty and the absence of the role of the authorities concerned to stop the growth of it before and after the war in 2003, the continues migration from rural to urban area in addition to the bad security conditions Encourage the concentration of population in Baghdad city. [3][4][5], the poor living conditions for the citizen of the informal settlement in Baghdad the lead the Iraqi Prime Minister's has made the resolution No. 254 in 2013 issued the ownership of the transgressors and the recognition of some slums to develop them and annex them to the residential areas in the city of Baghdad and try to provide services to the areas to be selected [6].

Hence, the idea of the paper came applying spatial suitability to assist in decision-maker to select the better location suggested by the Baghdad Municipality.

Al-Dulaimi points out in his book "urban planning" that the choosing the location that is suitable for housing may include some key points one of them is the location for water bodies for ease of water supply, and the proximity to road networks because it will achieve a high accessibility with other activities in any city [7].
The possibility of establishing urban communities depends on the existence of a strong economic base that will continue to develop these communities. Therefore, there should be no urban expansion in the sites of the existence of natural resources such as groundwater, mineral ores, salts, forests, rangelands, animals, fisheries and petroleum sites. Also, the various natural resources (beautiful scenery, tourist areas, geographical location, Natural Reserves, Other factors also influence the choice of the most suitable location, including land ownership, the possibility of supplying facilities and services and conflicts with other uses [8][9].

The spatial analysis help us for measuring the spatial relations between phenomena's, in order to ensure the interpretation and utilization of spatial relations, and to understand the reasons for the presence and distribution of the phenomena on the Earth's surface [10][11]. The advantage of using a spatial analysis methodology is that it assesses the degree of appropriateness and scalability of a site. It also has the ability to deduce predictions, as it highlights the potential of the site and the most prominent spatial phenomena in terms of its geographical location defined by specific spatial coordinates and the manner of distribution of these phenomena to the study area [12].

The main contribution of this paper as follow:
- Discussed the spatial suitability of the informal settlement supposed to be distributed by the Iraqis government to poor people.
- Remove all slums outside the Baghdad Municipality boundaries after careful study of this spatial location and suggest another location for new cities outside Baghdad Municipality boundaries.
- Discover the suitability of those locations which one will be suitable more than others for a living.

2. Goal, Tasks, Methods of Study

The goal of this work is to discuss the Analysis of the most important factors affecting the selection of sites and Study the spatial suitability of all proposed areas supposed to be distributed to poor people by the Iraqi government.

In order to get the goals, this article will including data collection, and build the database for land use by using the environment of Geographical information systems (GIS), then identifying criteria and derivation of the indicators of each criterion that used in the article.

The method that will be used in this article are based on analytical approach within the GIS environment of the selected criteria and choosing the better sites between these settlements and discuss the resulted by the maps and quantitative and descriptive indicators.

3. Experimental Part

Baghdad city is one of the Iraq provinces; it's the most important city because it is the capital of Iraq. Baghdad (Baghdad Municipality boundary) is located on both sides of the Tigris River in an astronomical location intersected by latitude (33°36’18”) north and longitude (44°23’9”) in the east [13]. The city represents 17.3% of the total area of the province of Baghdad, about (5113) km². Baghdad governorate represents (1.11%) of the total area of Iraq and consists of (36) administrative units (area), which constitute (9) districts, including 14 municipalities within the boundaries of the Municipality of Baghdad.[14],[15].
Figure 1a. Location of the province of Baghdad for the Republic of Iraq and its administrative districts;
b – The boundaries of Iraq province;
c- The boundaries of Baghdad Municipality from Baghdad province. [16]

The areas which are located in the Fig.2 are suggested from Mayoralty of Baghdad to distribute it to poor people as the Iraqi government orders, table (1) the information's of suggested areas in the real situation:
Depending on the literature review and the planning logic, seven layers were created for all the factors under study (Distance from the city center, Proximity from transport routes, Proximity of high voltage lines, locations from Railways, Location from oil and gas fields, the location from the river, and the location from water tanks) by using GIS, so the first stage was to work the distance to show the boundaries of the spacing around each layer of all the factors under study, then the second stage by making the Reclass we will standardize grade layers for all the factors which used in the first stage fig.3 So that the ranks are in all classes between 10 to 1 with the highest number considered the best.

Then the third stage we did a weighted overlay to get the final map (suitability map) with 5 categories:
- Sites with low suitability (red and blue)
- Sites with medium suitability (green)
- Sites with high suitability (brown and pink)

So we can noticed there are four locations are the most appropriate to be as a formal housing (Aldahnah, Kasr wa atash, Garrarah1,Garrarah2).

Then the spatial analysis was implemented by the GIS model so important with multidiscipline areas [18] (model builder- Arc Toolbox) for all the method of spatial suitability so any researcher can add more indicators which related with choosing the suitable location and run the model to get the results directly represented in a map, see Fig. 5 GIS model for the spatial analysis.
Figure 3. Reclass for the indicators (reclass for distance results).

A - Reclass for the location of amanat Baghdad boundary
B - Reclass for city center
C - Reclass for oil gas field
D - Reclass for high voltage lines
E - Reclass for railway
F - Reclass for road network
G - Reclass for water tanks
H - Reclass for river
Figure 4. The final map result for the weighted overlay (suitability map).

Figure 5. GIS model for the spatial analysis.
4. Conclusion
The results can be summarized based on the analysis of derivative indicators of the criteria that there are four suggested locations are better from the nine suggested locations, the spatial suitability analysis helps us to select these locations by using the analytical weight for the indicators under study in GIS environment, the researcher put the high weight for the proximity of to the city center and high weight for the location which will achieve the high accessibility and low weight when for the locations which achieve low accessibility this evaluation for all indicators, all that suggested locations are agriculture land in master plan despite our categorical refusal to overtake green areas that are considered the city's lungs but the acceptance of the relevant committees with urban planning lead us to study the spatial suitability of it, After choosing 4 areas out of 9 which will inevitably have harmful effects in the city besides pressure on the services we are moving to several proposals summarized by the following:

1- Remove all slums outside the Baghdad Municipality boundaries after careful study of this spatial location and suggest another location for new cities outside Baghdad Municipality boundaries which could accommodate all the units that would be built in these areas, and staying only the 4 areas showed in a suitability map which had the highest spatial suitability according to the indicators studied with the construction of vertical housing complexes to achieve high benefit from the land

2- The deal with the cities must be in a scientific study for current reality situation and future through the urban planners to examination the negative effects of the governmental decision and its effect on the city physically to achieve the social justice without harming the future of the cities.

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