
The Temporary Settlement Site Selection for Refugees Based on Analytic Network Process (ANP) In GIS Case Study: Uromiah City

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Abstract:

Locating the suitable sites designing the perfect place for refugee settlement with adequate shelter and integration and infrastructure are crucial in keeping with their aspirations in the early stages of life and reducing aid to refugees. Natural disasters such as floods earthquakes, hurricanes, droughts, landslides and landslides etc. including those that threaten life in urban areas, seriously. Uremia City with a population of 667,499 people, nearly 30 percent, lives in the old texture areas and informal settlements threatening; a total of 27 case of natural disasters it. Accordingly, it is necessary to prepare for resettlement of refugees. This research was carried out, based on location and description of Uremia City and all data in GIS environment and under an integrated database and then was Locate the using ANP method. The results of Locate the, verification temporary accommodation. The locations prioritized and then determine the area (total area equal to 561 acres) including 30 square meters of housing per person per 187,000 persons accommodation was provided for all locations within the city limits are based on the Master

Plan 1391.

Key words: Temporary Accommodation - location - Method AHP-City Oromiah

Introduction

Accommodation refugees as temporary it may be a bug scattered Accommodation, settlement aggregation of existing shelters or organized camps. Initial decisions on the location and layout provides refugee Accommodation reactions throughout life with long-term effects, on the protection and distribution of humanitarian aid (World Bank, 2009).

To provide suitable sites and shelter for refugees resettled in temporary status:

- Use longer term planning principles even when the refugee situation is expected to be only

Temporary (Behzadfar, 2012: 27).

- Decisions on site selection and camp planning are very difficult to reverse; therefore the search is done with the uncertainty of the localization techniques (Dadash pour, 2013: 12).

- Avoid the high population density in settlements and shelters.

- Avoid very large settlements be considered to establish camps for the displaced as a last resort.

- DPs Refugees are involved in all phases of design and construction of housing and shelter.

- The design of a bottom-up planning approach beginning with the smallest social units, preserving traditional social arrangements and structures as far as possible (Ash more, 2010: 363).

- Comprehensive plan to be prepared so that locating accommodation water and sewer systems and other services.

Providing a place to live is a natural consequence of the

supposed sanctuary. As a specified output, infrastructure and shelter in a camp will have a significant impact on the health and safety of persons (Kelly, 2011:18). These factors should be coordinated with other vital sectors included in the humanitarian response such as communication services, water, environmental sanitation, health, education, food distribution, logistics, etc. (Sehhat & parizadi,2011: 106). Most of the displaced operations much longer than the initial projections, so affordable and appropriate housing and infrastructure should be planned from the start. The expected lifespan of a camp will be affected. Upon site selection design and implementation of a camp housing the refugees.

- Protect lives and reduce costs.
- Minimize problems and correcting on the next steps.
- See the provision of facilities services and infrastructure simple and affordable.
- Ensure the maximum efficiency of land, resources and time.

Materials and Methods

Find a suitable location for defensive center special facilities industrial areas etc. to form various parameters such as shape area distance from main roads distance from population centers etc. with different weights a finding that may have an impact called the locate(Karsak, et al, 2002: 171-190).

GIS has a variety of capabilities including through a package of software programs provides the possibility to generate several models to make specific policy and planning. GIS program provides an opportunity for preparation and application software in organizations in matters of defense and passive defense. Available on the GIS system software such as ESRI ArcGIS geographic information to build a complete system that enables professional's available data, maps globes and models can be used efficiently in a system (Yuksel & Metin,

2007: 377).

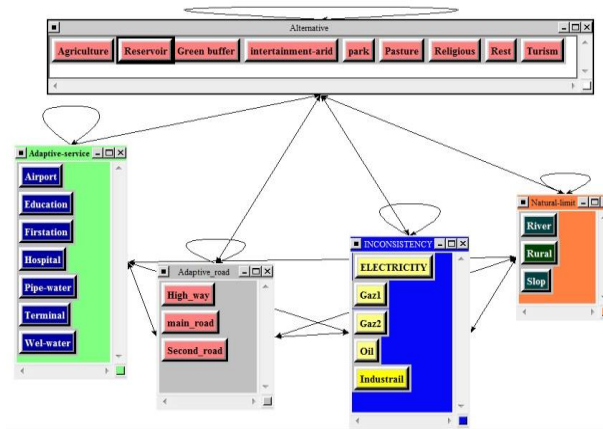
These systems in line with service oriented architecture SOA to support network-centric operations and is a strong basis for defense and intelligence agencies which provide measures crisis management comes into line with the best global emergence of methods for providing operational capabilities (Najafi, 2012:64).

Due to the limitations of open space and green area as potential sites for temporary housing; criteria for site selection using different methods and weighted criteria most are selected for final places. One of the methods of weighting criteria is called the AHP. In this method the eigenvalues and then overlaying method for making layers (using the software ARC GIS) criteria, have the highest effectiveness and applicability conditions of the selected areas are out on the most desired criteria, are considered as safe areas for temporary accommodation (Tuzkaya & Bahadir, 2007:14). Dependencies should be linearly from top to bottom and vice versa (Cheng and Heng, 2007:278-287). If the mutual dependence of the weights, AHP method weight scales, weighing options and alternatives is also dependent on the weight of the criteria, the out-of-state hierarchy and form a nonlinear system or network or with the feedback system in which case, for the measurement of trace elements, cannot be used hierarchical rules and formulas. In this case, the elements should be used to calculate the weights of networks theory. In view of the famous super matrix known as analytic network process (ANP). Transforming into an attractive tool, the decision has been to better understand the problem, because it overcomes the limitations of hierarchical structures. Such systems can be provided by a directional network (Dia graph). In which on one level a cluster may also take effect and affect directly or indirectly by the addition to (or elements) and level (or clusters). In fact AHP is a link of two parts: The first part contains a set of criteria and sub-criteria of networked control or hierarchical that controls the interactions

and interrelations and the second is a network of investment preferences and influence among the elements and clusters (Albu, 2010: 25). Although the process of network analysis and analytic hierarchy process priorities are taken with paired comparisons there are differences among them (Momeni, 2010: 352). The first difference is that AHP is a special case of analytic network process the analytic network process, considering the dependence of the cluster (inner dependence) and between the clusters (Rahnomayee, eat& al, 2011: 55). The second difference is that the nonlinear structural analysis of the network (Kiani& Salari, 2013: 26). A general model analytic hierarchy process decision-making framework that considers the relational and hierarchical one-way between the surfaces. Instead analytic network process does not require this strictly hierarchical and vertical structure (Yuksel, eat& al, 2007: 177).

Materials Research

Factors temporary accommodation operation and to identify different damaging elements of urban land use were examined and the layers required in the previous section that included 18 different layers the extraction of the scale and position of GIS environment was corrected by a spatial database for the layers specified threshold then the software Supper Decision ANP model in five clusters were prepared as follows.

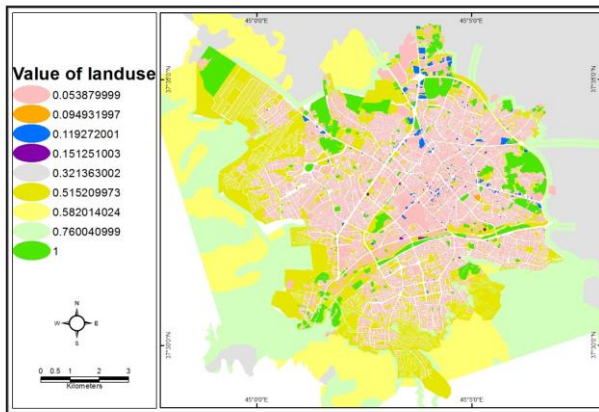


The first cluster under Alternative is included Uromiah city and Uromiah shielding range city privacy policy. These functions are actually places that eventually will deploy them on involuntary resettlement. The first priority in designing emergency shelter spaces in parks and green spaces and forest, there are minimum requirements with regard to the possibility of multipurpose use of these spaces and the maintenance and operation of the by the municipalities. Be considered and in times of crisis and in times of emergency shelter site as normal as resorts, land of Uromiah in nine classes, classification and valuation was included in the city limits and Privacy shielding. Thus the value of investments from low to high accommodation that adds value to the user is described below for each class:

Row	Title	Type of land uses	ANP values
1	Park	parks and green spaces - Gardens and agricultural areas within the city limits	1
2	Green buffer	Green zone conservation - Deleterious Forests and rangelands	0.819282
3	Pasture	Privacy in dry land areas- Pasture privacy city	0.789282
4	Entertainment – Arid	Sports - Recreation - Cultural - wasteland	0.51521
5	Agriculture	Irrigated agriculture and horticulture, urban space	0.311363
6	Tourism	Tourism and entertainment Centers	0.136533

7	Reservoir	Transport 2 - Warehouse	0.118533
8	Religious	Religious institutions and religious site - educational	0.102533
9	Rest	Commercial - administrative - city services - Health - Military and Police - urban facilities and equipment - Workshop - Industrial - Residential	0.008976

One of the main issues involved in locating, identifying areas of risk and appropriate, in order to achieve the desired goal. Therefore, urban parks, open green spaces and urban wasteland and unused are suitable for the location. The other hand, all the parks or vacant land according to the area are not suitable, hence, parks and vacant land with an area of over one acre or more (due to planned values) have chosen will be the location. ANP exit plan is as follows.

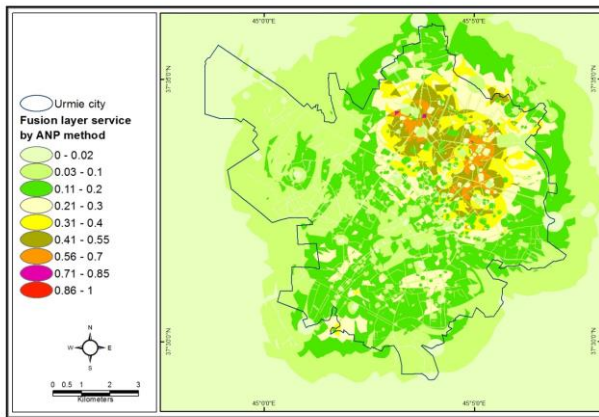


Adaptive service

Accurate assessment of water needs to be prerequisite for site selection. Access to sufficient quantities of water during all the years of practice, is one of the most important and the most difficult to measure. After entering the information in the GIS maps were layered.

Row	Layers	Description	ANP values
1	Airport	Airport	0.211166
2	Education	Educational Centers	0.0570798
3	Fire station	Firehouse	0.220546
4	Hospital	Medical centers and hospitals	0.160932
5	Pipe water	Water distribution network	0.11898
6	Well water	The wells Water	0.231736
7	Terminal	Input ports and terminals	0.0886104

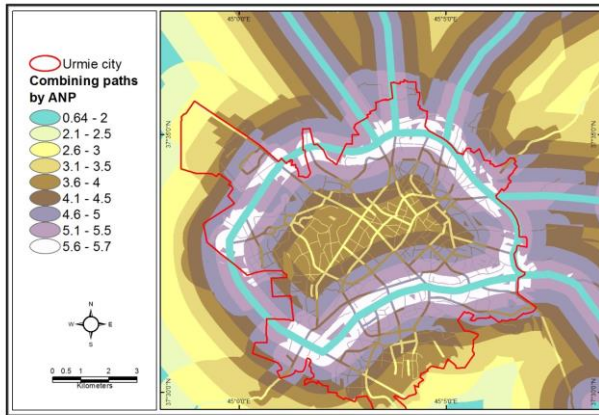
After access to water are priority services such as fire-fighting and medical centers.



Communication network (Adaptive Road)

In this section maps of highways, major and minor roads according to their importance coefficient compared together and also based on the rating itself combine and map output is presented as a map Access and the following

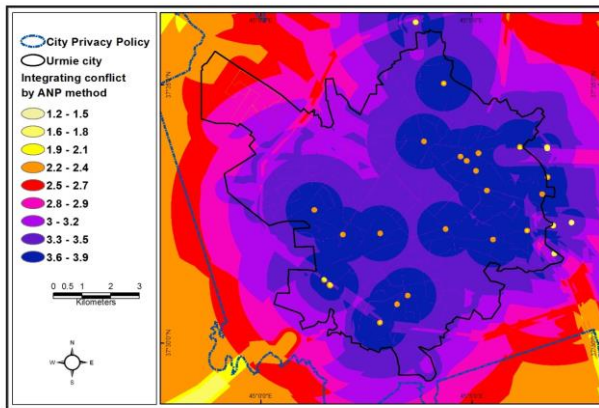
Row	Layers	Description	ANP values
1	High way	Highway	.535841
2	Main Road	Main Road classy	.145579
3	Second Road	The main quadratic	.0611937



Incompatibilities' land uses

In this section, have been incorporated into the layer of fuel electricity transmission, gas transmission, gas distribution, electrical industries according to the terms and amount of distance the land, involuntary resettlement sites in each of the individually respected and given the importance coefficient when compared together network analysis (ANP) obtained.

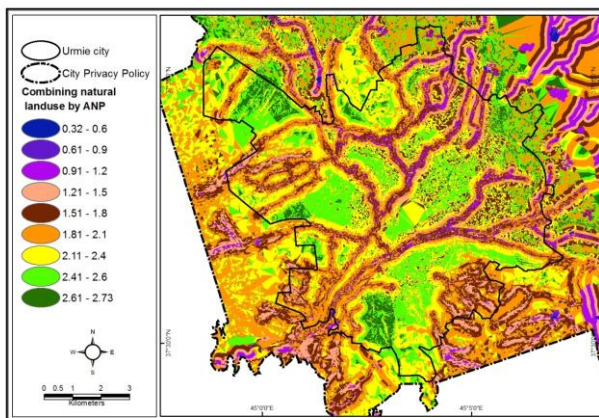
Row	Layers	Description	ANP values
1	Electricity	High-voltage power lines	.0641979
2	Gaz1	Gas pipeline	.0882411
3	Gaz2	Gas distribution network	.0856791
4	Oil	Fueling Station	.289377
5	Industrial	Industrial area	.067626



Natural Factors (Natural limit)

In this part of the gradient layer surface water elevation and distance from rural settlements, considering the importance of each factor and principles combined with layers and tables along with ANP values in the output map the map as natural factors the following is presented.

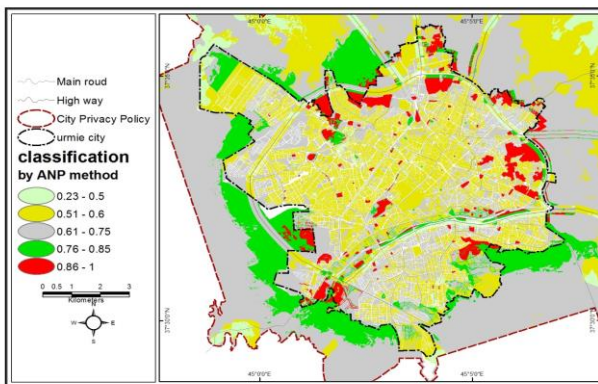
Row	Layers	Description	ANP values
1	River	Surface waters and rivers.	0.373573
2	Rural	Rural residential areas	.241846
3	Slope	Slope Region	.284582



The results of location

This was done by combining five layers (clusters adaptations, conflicts, and access to alternative and natural factors) in the ANP model diagram and table below:

Row	Layers	ANP values
1	Adaptations	.74482
2	Access	.636615
3	Inconsistencies	.648139
4	Natural Factors	.319382
5	Alternatives	1



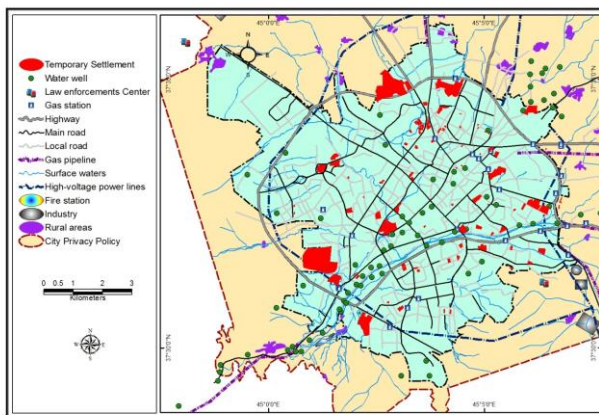
Field measurement locations

Three separate areas locate the following:

- 1 - Range Uromiah
- 2 - area of shielding, Uromiah

According to the map of urban density and range of services, according to which areas are extracted from the privacy basin shielding, due to the remoteness from urban settlements and other services are placed in further priorities.

Accordingly, sites and locations outside of the city of Uromiah within the scope of the verification localization and correction factors with respect to the field and converted into vector layers and finally was achieved following map



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