Impact Analysis of Upgrading the Indicators of Resilience over Sustainability of Rural Settlements against Floods (Item: rural areas of Zarrindasht county)

Mohsen Shayan[1•], Abozar Paydar[2], Sajad Bazvand[3]

1. Ph.D. Student of Geography and Rural Planning, University of Sistan and Baluchestan, Zahedan, Iran
2. Professor and member of faculty of geography and rural planning, Sistan and Baluchestan University, Zahedan, Iran
3. Member of faculty member of Payam Noor University of Delfan, Lorestan, Delfan, Iran

(Received 15 September 2017 – Accept 09 November 2017)

Abstract

Flood is one of the most devastating natural disasters ever known in the world. Modern man is not yet fully able to harness this natural phenomenon. This is why people are looking for a solution to better reduce flood risks of flooding to reduce the amount of tolerance in face of the increase that today named as the resiliency. The aim of this study was to assess the resiliency of rural settlements against environmental hazards such as floods. The present study is analytic, in terms of purpose and methods of work. The study population included all heads of rural households in the city (7927 individuals), which 310 completed questionnaires are randomly completed among them. To analyze quantitative data of this study, single-sample t-test and regression analysis is used. T-test results show that social capital index with an average of 3.688 and economic indicators with an average of 2.501 have the lowest average among the indicators. The linear regression results show that the largest share and influence value among the indicators is the resiliency with 0.562 beta coefficient on social capital index, and the least amount of impact is a factor of economic indicators that is 0.093 beta coefficient.

Keywords: environmental hazards, floods, The resiliency, rural settlements, Zarrin Dasht county.

* Corresponding Author, Email: Mohsen.shayan@pgs.usb.ac.ir

Assessment of the Effects of Life Cycle of Power Plants on the Pressure of Citizens (Case Study: Tabriz Thermal Power Plant)

Ali Reza Soleimani*

Assistant Professor at geography and planning, University of Payam Nour

(Received 29 September 2017 –Accept 15 November 2017)

Abstract

The life cycle of thermal power plants is along with greenhouse gas emissions. Therefore, if the pollutants of the power plant and the role of each of these substances are not identified in the contamination of the air, it can seriously expose the physical and mental health of citizens to risks. Accordingly, the purpose of this study is to measure the contaminated materials of Tabriz thermal power plant and their effects on the air pollution of Tabriz metropolitan area as well as its effects over the psychological pressure of citizens. To measure the pollutants of the power plant the GWP100 method is used, and DASS21 and Marquam's Questionnaire are used to measure the spiritual and psychological pressures of citizens. The results showed that the most pollutant emissions from the Tabriz power plant are CO2 and NOx. The volume of these materials in cold seasons is more than warm seasons. Also, the findings of the effects of air pollution on spiritual and psychological pressures of citizens showed that the air pollution caused by the activity of the power plant greatly increases the spiritual and psychological pressure of the citizens. The feeling of change in everyday behavioral patterns, feelings of despair and despair in life, stress and psychological stress have been the highest correlation of 0.556, 0.511 and 0.503, respectively, which were in winter. The results of regression test showed that 29.32% of variance changes were due to air pollution caused by the life cycle of Tabriz power plant. In addition, the findings of this study showed that in the areas close to Tabriz thermal power plant, the amount of pollution and the amount of stress is higher than the distant regions. Due to the direction of winds that transfer the plant's greenhouse gases to the city of Tabriz, it is better to replace the power plant site within a short-term plan and replace the fuel of the power plant.

Keywords: Life Cycle (LCA), Greenhouse Gas, Air Pollution, Psychological Stress, Tabriz Metropolis

* Email: tanri2@yahoo.com

Optimizing of Schedule Time for Relay Transportation System in Hazard Condition Respect to Dividing Tasks between Centers and Capacity of Fleet (Case study: Qazvin City)

Mohammad Abdolshah[1*], Seyed Amir Mohammad Khatibi[2], Siamak Hosseini[3], Mohammad Ali Beheshtinia[4]

1. Assistant Professor, Department of Industrial Engineering, College of Engineering, Semnan Branch, Islamic Azad University, Semnan, Iran.
2. PHD Student, Faculty of Administrative Sciences and Economics, Isfahan University, Isfahan, Iran.
3. M.Sc. of Transportation Engineering, Faculty of Civil & Environmental Engineering, Tarbiat Modares University, Tehran, Iran.
4. Assistant professor, Material and Industrial Engineering Faculty, Semnan University, Semnan, Iran.

(Received 30 July 2017- Accept 29November 2017)

Abstract

Avoidance of turning natural disasters to natural tragedies requires upraising in capacitance of management and planning in Hazard management. Into this purpose, seconds and minutes should be considered as an essential limitation to save lives in such natural catastrophes in the process of serving. To this end, planning for the optimal use of available time of relief system in these cases, will lead to increased backup capabilities, assistance in the shortest possible time, and the appropriate allocation of resources to the required people. In this regard, the present study tries to provide a model for distributing relief tasks in different regions of a city, between hospitals and relief centers, and considering the relief funds assigned to them for relief, and use of real distances in different parts of the city of Qazvin. These centers, will focus on optimizing the time needed to transfer injured people in crisis situations to hospitals, in a three-stage supply chain, and, in order to achieve these goals, consider the capacity of the fleet in the problem. Degree of complexity of the problem is NP-hard. Therefore, finding an optimal solution in a reasonable time is impossible by using accurate methods. In This paper, a dynamic genetic algorithm has been employed in which contains chromosomes with variable structure in order to solve the problem. In addition, for evaluation of results accuracy from this algorithm, it compare with result from random search method. Results show genetic algorithm is more reliable and demonstrate the improvement of average results with increase of relay vehicle and capacity of them; also the deterioration of average results with growth of injured people.

Keywords: Crisis Management, Optimum Scheduling, Supply Chain, Dynamic Genetic Algorithm, Capacity of Fleet.

* Corresponding Author, Email: M.abdolshah@semnaniau.ac.ir

Waste Disposal Site Selection Optimization using Geographic Information System and Analytical Hierarchy Process (Case Study: Miankuh District in Ardal County)

Seyed Askandar Seidai[1•], Nasim Hossinzadeh[2]

1. Associate professor of rural planning, University of Isfahan
2. M.A. Geography and rural planning, University of Isfahan

(Received 18 September 2017 – Accept 15 November 2017)

Abstract

The waste pollution is the source of many environmental problems. These pollutions affect water, air, and soil resources. In additional, they destroy landscapes, and cause outbreak of disease. Therefore, placement of solid waste landfill is a policy for resolving such problems. In this research, we are going to find appropriate places for landfill in the Ardal region. This region is important due to its potentials for water resources and natural landscape. Assessment of capability and suitability is a necessary act to facilitate the pursuit of this goal. Multi-criteria evaluation (MCE) method is one of the spatial analytical methods that can assist in evaluating land. The research method in this research is descriptive-analytical and quantitative. Through surveys, field surveys and database analysis and mapping have been performed using quantitative evaluation techniques. In this paper, Geographical Information system (GIS) is used for evaluation of natural potential of Land and to produce output maps. Analytical Hierarchy Process (AHP) method is used for weighting the criteria, and Weighted Linear Combination (WLC) method is performed for combining of maps. The geo data base, and maps, which were used in this study contain DEM, river, spring, wells, soil, land use, forest, energy transfer (gas, electric power line), population settlement, and geology. In addition, we used AHP and geo-statically methods. The results show that the distance from population settlements, forest, land use and water resources are important for selecting the places of solid waste disposal in Ardal region. Also, five regions were classified for landfill. These classes are very suitable (8.71 km2), suitable (9.63 km2), relatively good (25.96 km2), and unsuitable (693.35km2). Therefore, rural management must consider these conditions for solid waste landfill in Ardal region.

Keywords: Solid waste, Location, AHP, Ardal region.

* Corresponding Author, Email: s.seidaiy@geo.ui.ac.ir

Evaluation of Media Managers Awareness on Earthquakes and their Management

Farrokh Parsizadeh[1], Parvaneh Pishnamazi[2*], Akbar Nasrollahi[3]

1. Assistant Profess,or International Inst. of Earthquake Engineering and Seismology (IIEES)
2. Researcher in Risk management research center, International Institute of Earthquake Engineering & Seismology (IIEES)
3. Faculty member of Islamic Azad University, Central Tehran branch

(Received 9 November 2017 –Accept 13/December 2017)

Abstract

Media have an important and decisive role when an earthquake disaster happens due to the nature of news distribution. Because of this, they have influences on risk management and national security to identify people's need, in attraction of communities' donations and cooperation in order to provide rapid and accurate information, prevent rumors, social problems and disorganizations. In fact, messages of media, in addition to their informative role on audiences, play a decisive role on quality of risk management process, reduce disaster effects and prevent other potential and secondary disasters caused by earthquakes. On the other hand, media plays an active and effective role in risk management process. First, it depends on the reliability of media organization and knowledge of their managers during an earthquake disaster. So, it is required to pay more attention to awareness, prioritization, and operational capabilities of media managers which have an undeniable impact on the optimal role of media .

Materials and methods: In this study we focus on evaluating knowledge level of media managers of earthquakes phenomena and its consequences. It is based on social communication theories, mass media and principles of management science, as well as risk management, organization, new structure and decree in the country by drawing probable threats, and explaining the role of media managers and media messages.

Keywords: Media Organization, Media Manager, Earthquake, Natural Hazards, Risk Management.

* Corresponding Author, Email: p_pishnamazi@yahoo.com

Investigation of the Efficiency of Object-based Aerial Digital Images Processing Methods for Identifying and Estimating of Earthquake Damaging Impacts in Varzaghan City

Golzar Einali[1], Bakhtiar Feizizadeh[2*], Mohamad Hossein Rezaei Moghdam[3]

1. Master of Science (MSc) in Remote Sensing and GIS, University of Tabriz, Iran
2. Assistant Professor and Faculty Member of Remote Sensing and GIS Department, Tabriz University, Iran
3. Professor and member of faculty of geomorphology group of Tabriz University, Iran

(Received 9 September 2017 – Accept 31 December 2017)

Introduction

Iran is known as one of the most susceptible countries in earthquakes hazard. Therefore, estimating of the damaged area, in context of earthquake hazard, provides valuable information for risk management. In this regard, the collapsed buildings and the degree of damage in the affected areas, and the type of damage caused by each building leads to assess the caused damage immediately. Technically speaking, this is part of the essential information for successful relief and rescue after an earthquake and reconstruction in disaster areas. In recent years, remote sensing technology has been used as a means of collecting information in crisis management in a large-scale disaster. Therefore, the remote sensing based damage assessment is an efficient technology for obtaining information from damaged buildings at short intervals, at a low cost, and with a vast field of view in urban areas. It has been widely using for assessing earthquake damage and monitoring the damaged buildings. The main objective of this research is to apply object based image analysis (OBIA) for damage detection and mapping in Varzaghan City.

Methods: On August 21, 2012, two earthquakes with a low distance of 6.4 and 6.3 magnitudes occurred, in 60 kilometers northeast of Tabriz. That earthquake caused the loss of 327 inhabitants, severe destruction of more than 20 villages and many buildings in both cities of Ahar and Varzaghan. The present study presents a basic object pattern for identifying the damaging effects of the earthquake that has been exploited using digital aerial photography and OBIA techniques. In this research, various satellite image object-based processing techniques have been tested and used to introduce to the most important spatial, geometric and spectral indices in the identification of damaged areas. At first, segmentation in two scales of 60 and 100 is performed using multi-resolution segmentation technique. We also used equal weight for all bands. The

* Corresponding Author, Email: Feizizadeh@tabrizu.ac.ir

coefficient of compression was 0.5, and the coefficient was about 1/0. In doing so, 11 algorithms were applied for destructive detection.
Results: The results of the algorithms were compared and verified. We compared the capability of 11 algorithms. The results with 5 meters buffer scale indicated that all algorithms covers the correctness of over 90%. In the scale buffer of 10 meters, the results indicate the accuracy of 93.93 percent. According to results, the geometric and rounded shapes with 96.07% and elliptic with 92.12% represent the highest efficiency. Depending on the destructive areas extracted, shown on separate maps for each indicator, buildings destroyed in the old city's texture on the edge of the river, the core of the town of Varzagan has been concentrated. Basically, it has residential, livestock and storage facilities for keeping livestock forage. New or almost new materials with industrial, residential and other uses are not damaged. Results of this research are important for risk management, and can be used for rapid monitoring of damaged area and zones after earthquake hazards.

Keywords: Object Based Image Analysis, Damage Assessment, Earthquake hazard, Varzagan City