

Investigation of Cultural and Social Consequences of the Construction of Hemmat Highway's Underpass

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Abstract

The main aim of this research is to understand the possible social effects caused by construction of an underpass in Hemmat highway. We attempted to investigate the negative and positive consequences of implementation of this construction plan. Literature review, observation, interview and survey assessment, and application of SPSS software were the general methods of data collection, instruments and techniques used in different steps of the study. Based on the impact matrix of the identified outcomes, proper points regarding the cumulative effects of the positive and negative impacts were defined. The final part of the study was detection, identification and assessment of potential impacts of the plan. Then, the initial impacts of the project as well as the indirect effects were defined and in separate matrices the characteristics of each of the winners and losers were drawn to determine the impact of the conceptual model. According to this model, construction activities based on the positive potential consequences can promote people satisfaction and increase in quality of work environment and based on the negative consequences can reduce client satisfaction and the quality of work environment for employees. Three scenarios (pessimistic, optimistic and realistic) were represented and after the identification and assessment of potential impacts, selection of important effects was performed by ranking and rating of each of the consequences. After the inference of important positive and negative consequences, a plan for management of the implications was presented and mitigation and compensation of negative and positive impacts of the project were proposed. Finally, construction activities were assessed to be relatively positive but not enough and it was necessary to complete, rehabilitate and renovate the old underpass by management and control of the consequences during implementation of the plan.

Key words: Social assessment, Hemmat settlements area, Hemmat bridge, Consequences, Underpass.

***Environmentally-Oriented Management of
Dimension Stone Industry
Case Study: Dimension Stone Industry of Isfahan Province***

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Abstract

Isfahan Province, which possesses 256 active dimension stone mines, produces almost 40% of Iran's raw stone. It also has 1550 stone-cutting plants which produce more than 50% of processed stone of the country. Therefore, this province is regarded as the axis of Iranian dimension stone industry. However, nearly 9 Mt. wastes of dimension stone are produced in the industry annually, while this amount is estimated to be about 18 Mt for the whole country. Discarding these wastes in nature will cause severe environmental problems such as negative geochemical effects on natural ecosystem, contamination of water, flora devastation and negative effects on regional ecosystems and animal life, landscape distortion, dispersion of dust and toxic substances in the atmosphere, soil deformation and finally noise pollution. These facts mean that we need a proper stone waste management. This management is introduced as a recommendation package containing three headlines. The first section deals with the reduction of produced wastes. This reduction can be achieved by primary studies before mining, applying new mining technologies and methods of enhancing the block quality prior to cutting and also employing modern technologies in stone-cutting plants. The second section introduces reuse of wastes by developing recycling units in cutting stone complexes. Finally, the third section elaborates on environmentally friendly dumping of residuals via the selection of appropriate dumping sites and using appropriate methods to minimize the reaction between wastes and natural ecosystems of the area. It is possible to have an environmentally friendly industry or even an industry without wastes, provided that this recommendation package is fully employed.

Keywords: Dimension stone, Wastes of stone industry, Management of the wastes, Geochemical effects of stone wastes

***Water Quality Assessment for the Rivers Karoon,
Dez and Karkheh, South West of Iran***

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Abstract

Rivers are regarded as the sources of water for various uses including agriculture, industry and drinking. Monitoring quality of these resources due to the recent drought and urban and rural developments is one of the important tasks in the field of environmental management. In this study, we undertook seasonal sampling in nine stations in the rivers Karoon, Karkheh, Dez over a period of one year starting from April 2011. We measured temperature, conductivity, dissolved oxygen, pH, turbidity, BOD, COD and etc. Data were analyzed using Piper and Schoeller diagrams and National Water Quality Index (NSFWQI). Based on the Piper diagram, all three rivers were low in sodium (potassium) - chloride. Also, analysis of parameters measured for NSFWQI showed that all the three rivers in the low rainfall season have an index of less than 50, indicating a poor water quality. In the high rainfall period, the index was more than 50, indicating a medium water quality. However, monitoring of physical, chemical and biological parameters as well as the national water quality index clearly showed the environmental impact of pollution sources entering the rivers.

Keywords: Water Quality Index, Pollution Control, Environment, Khuzestan province.

Opportunities and Challenges of Applying Ecological Footprint Concept in Environmental Planning in Iran

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Abstract

In order to achieve sustainable development, it is necessary to plan the way we exploit natural assets in the present and future generations towards causing less environmental consequences. Different indicators are applied for evaluating sustainability, of which the Ecological Footprint (EF) is one of the common approaches. EF indicates the amount of land needed for a defined population to fulfill their living needs, in terms of providing resources and digesting and absorbing wastes and pollutions. However, this sustainability indicator has shortcomings that make the estimations less real. Moreover, in a country like Iran, there are other special challenges in the application of this indicator. Some of the most important of these challenges are differences in spatial- temporal scales in resource availability assessment, in value of one unit of a specific resource in different parts of the country, instability in quality and quantity of resources and the regressive trend of the environment. Despite the mentioned challenges, the application of Ecological Footprint can still function as an indicator for evaluating the amount of environmental pressure in Iran, provided that it is calculated for different parts of the country separately. Considering these issues can help adjust this indicator for a more efficient application in Iran.

Key words: Ecological footprint, Sustainable development, Environmental capacity, Environmental pressure

***Mathematics in Natural Sciences and
Environmental Sciences***

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Abstract

There was a misleading belief among students of natural sciences on the application of mathematics in Iran. They often regarded mathematics as a hard science and difficult to cope with. Recent efforts of scientific associations and experts of mathematics and other sectors of sciences (e. g., natural sciences) in explaining the benefits from application of mathematics in various sciences have led to a better understanding of mathematics, particularly in environmental sciences. In this paper, the action and reaction of ecological characteristics (as components of our environment) have been compared with mathematical equations. Furthermore, application of mathematical models in observing and solving environmental problems has been numerated to some extent by showing some of my environmental models already in use in Iran.

Key words: Mathematics, Natural sciences, Environmental sciences, Modelling, Ecological action and reactions