A Risk Evaluation of Environmental Impact Assessment Using GRA Method

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Abstract

Environmental Impact Assessment (EIA) is a proposed project in the environment or an assessment of the potential impact of the project, including natural, social and economic aspects. EIA in more than half of the world's countries required in some form. EIAs than their original proponents expected had very little influence. This paper institutionalizes this disparity and provides methodological reasons and for more effective use of EIA in the future recommends ways. Extensive experience in Environmental Impact Assessment (EIA), As a future environmental management tool Its objectives extent to which this is achieved has generated considerable debate. It is measured in terms of EIA 'Performance', In particular, the discussion moves away from practical implementation issues, moving towards the most important Objectives of EIA and Its place in broader decision-making contexts. Relatively weak in planning decisions implemented by EIA Empirical studies have demonstrated the influence. The objective of this thesis is for solving Scale weights are about interval-valued GRA numbers MCDM problems with unknown information are an extension of the Gray Relational Analysis (GRA) method. Of the traditional GRA method basic idea, Determination of scale weights, basically some optimization models are established. Delhi, Ladakh, Jammu and Kashmir, Andaman and Nicobar, Chandigarh, Lakshadweep taken this alternative in this method and evaluation parameters is Terrestrial, Aquatic, Economics, Society, Culture, Air pollution, water pollution, Soil pollution, noise pollution, solid waste pollution. Traditional from this analysis Basic idea of GRA method Determines the long-range solution from the short-range and negative-best solution, but the comparison of these distances is not considered significant. As a result, Delhi has been ranked first; Similarly, Ladakh is ranked low. This paper showing, Delhi highest pollution in India.

Keywords: MCDM, Terrestrial, Aquatic, Economics, Society, Culture.

1. Introduction

Environmental Impact Assessment (EIA) over the past 60 years it has emerged as an important part of environmental management. Nature of environmental change caused by human activities, Consistent with recognition of scale and impacts. At that time, the changing needs of decision makers, EIA has evolved, changed, influenced by Experience of decision-making process and practice. Significant implications for people and communities and at a time when it is more important than ever to examine the effects of systems involving It is useful to study the natural environment and progress in the field. Accordingly, this article consists of two parts. The first is brief Origin and Development of EIA, Current status of application of EIA, Emergent impact assessment forms. The second part is EIA's Dealing with the current situation and shaping the future of EIA Before making some broad conclusions about prospects, theory development, practice and performance reflects recent trends in EIA in regions. Environmental Impact Assessment (EIA) can be significant affect the environment evaluating the potential outcomes of a major project (or other action). Before deciding whether or not to grant permission to proceed, it is a viable proposition It considers the implications It is a formal process. The EIA shall, among other things, describe the potential significant impacts EIA report should be published. Consult this assessment Public participation is also essential. The most immediate objective of EIA is Arising directly from these activities, for decision makers the potential of their actions is to provide an indication of environmental effects. It is only acceptable intended to ensure growth. (For this, revising development plans wherever necessary, EIA provides mechanisms for remediation of adverse impacts. Although the EIA led to the abandonment of some proposals, in reducing adverse environmental impacts Its focus is very strong.) Apart from these ', EIA has a policy of sustainability. It is increasingly embedded in the wider context, and its originality, which contributes to sustainable development patterns, rediscovers core purpose. Hence the origin of this article EIA Trying to reconsider and in the light of its founding objectives it seeks to consider the extent of its activity and influence. The extent to which EIA is institutionalized in many countries around the world To solve this problem, embedded Reform of EIA to achieve its basic objectives This also makes it a great time to consider whether you can contribute. Origin of EIA and The article begins by describing the principles, about its legislative beginnings specifically mentions the issue of EIA performance was discussed and about the extent of impact of EIA on the development plan Research results are reviewed. Finally, to improve the effectiveness of EIA approaches Possibilities are considered, especially with reference to its most important objectives, it is argued that ways of increasing the influence of EIA in development planning should be sought..

2. Environmental impact assessment

Environmental Impact Assessment (EIA) is for the future is an exercise. Much of the hard work involved in EIA, of use to development decision makers Explores Information distribution channels Alternative Futures. Of course, to develop knowledge of cause and effect, will be used in subsequent evaluations a systematic study of past developments is essential. Additionally, environmental impact predictions are empirical to be strong for current, so they are roughly correct hopefully they will start in place. However, all decisions are about the future uncertain choices. About the potential environmental effects of development alternatives As EIA aims to inform decision makers, Impact analysts by definition are open to manipulative thought processes. EIA is the assessment of human activities on the environment is Evaluation. It is a process of analyzing and evaluating impacts. Consistent with social welfare and environmental protection its aim is to guarantee sustainable development. As a useful tool of environmental planning and management EIA has proven itself. A plan, construction or caused by other human activities to identify and assess environmental changes Its use includes the use of attributes. Also, to the affected community to be notified in advance; its members make decisions Participate in the process. EIA is a precautionary Technology prevents the loss of natural resources key to unifying the concepts; it is consistent in decision making the main objective of development. Adoption and use of EIA by country or region's institutional setting And that it depends on the political environment Needless to say. Impact assessment practice around the world is at the project level dominated by its use, Special emphasis is placed In major projects. Unfortunately, notwithstanding the above considerations, All countries plan or not introducing a Development Control Act. This can have significant environmental impacts proposed projects require routine use of EIA. The World Bank Group fills this gap partially addressed; it also guides funding decisions for key programs in developing countries Developed safety Policies including environmental and social assessment procedures. However, as major program funding from the In the 1990s the World Bank Group shrank significantly, Bank's safeguards including arrangements for EIA It became clear that there was a risk of neglect: Without environmental and social assessment Many big projects are progressing. As they get funding from other sources. Private sector financial institutions and bilateral lending institutions – when making their own financial decisions the solution is to encourage other major funders follow similar requirements for environmental and social assessment.

3. Gray Relational Analysis (GRA)

The method of Gray Relational Analysis (GRA) first developed by Deng and is successful used to solve various MCTM problems. GRA's performance of all alternatives first must be translated into a relative order. This step is gray relative is called creation. According to these sequences, a great destination the sequence is penalized. Then, for all comparison sequences the gray correlation coefficient between the best target sequences is calculated. Finally, this gray communication Based on the coefficients, for better target order between each comparison sequence Gray correlation degree is calculated. Translated from an alternative a comparative sequence between the ideal target line and itself High levels of gray contact, that alternative are the best choice. We solve MCDM problems We propose an extended GRA method, where quantitative values are in the form of linguistic variables as interval values are expressed and information about quantitative weights is not known. Are expressed as interval values of traditional GRA Based on the basic idea, some optimization models to determine criterion weights have been established. A comparative sequence translated from a substitution then, for the computational Extended for MCDM Steps of GRA method, Sort the alternatives and select the preferred one Interval-valued triangular fuzzy estimate are presented. Summarize the GRA method Introducing Interval-valued with unknown weights describes MCDM problems The GRA method was developed to solve of the proposed method To explain compatibility, For a software company Select Computer Analysis Engineer a numerical example including the application is investigated. Gray Relational Analysis (GRA) in general Used in Asia. It is an impact assessment model, It is based on the degree of relationship between two orders Measures the degree of similarity or difference. The purpose of GRA is the study of factors affecting systems. It is independent and correlated data based on finding relationships in series. Using GRA, GRC (Gray Correlation Coefficient) is used to estimate Reference series and relationships between series.

4. Analysis and Discussion

Table 1 - Alternative

A1	Delhi
A2	Ladakh
A3	Jammu and Kashmir
A4	Andaman and Nicobar
A5	Lakshadweep
A6	Chandigarh

Table 1 shown that the several of alternatives Delhi, Ladakh, Jammu and Kashmir, Andaman and Nicobar, Chandigarh, Lakshadweep.

Table 2 -Evaluation parameters

C1	Terrestrial
C2	Aquatic
C3	Economics
C4	Society
C5	Culture
C6	Air pollution
C7	Water pollution
C8	Soil pollution
C9	Noise pollution
C10	Solid waste pollution

Table 2 shown that the several of evaluation parameters .

Table 3- Data set

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	23.24	27.42	17.42	39.53	15.42	29.15	22.05	43.12	29.18	45.13
A2	29.12	39.40	12.46	42.97	58.43	33.69	27.30	42.13	24.60	56.43
A3	43.12	35.42	24.08	22.58	36.12	26.13	22.13	45.43	27.96	36.12
A4	34.75	27.43	25.16	28.28	32.14	28.73	24.13	23.10	32.13	25.43
A5	28.13	33.33	27.12	36.41	43.12	19.43	29.43	17.59	36.25	34.12
A6	23.14	29.43	31.08	25.12	48.15	18.43	27.13	18.89	34.12	37.56

Table 3 shown that the several of data set for Delhi, Ladakh, Jammu and Kashmir, Andaman and Nicobar, Chandigarh, Lakshadweep. The values are given above the tabulation. These data set shown values about union Pradesh effect pollution. Figure 1 is show in data set graph.
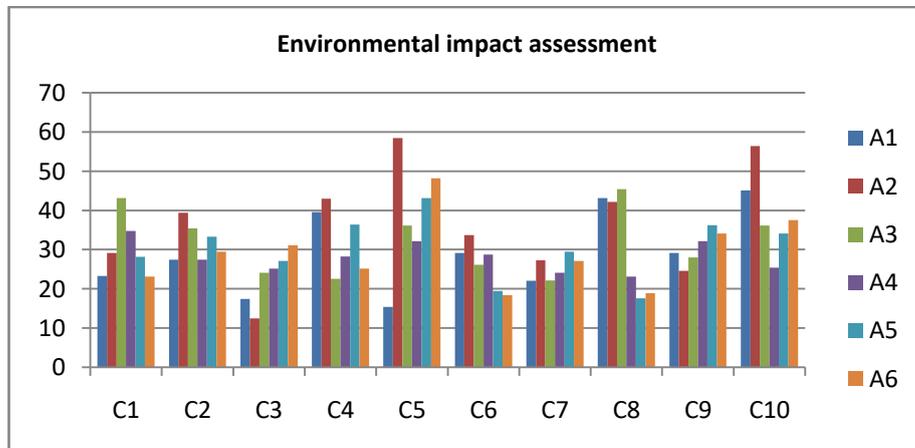

Figure 1 - Environmental impact assessment

Table 4 - Normalized Data

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	0.9950	1.0000	0.7336	0.1687	1.0000	0.2975	1.0000	0.0830	0.6069	0.3645
A2	0.7007	0.0000	1.0000	0.0000	0.0000	0.0000	0.2886	0.1185	1.0000	0.0000
A3	0.0000	0.3322	0.3759	1.0000	0.5187	0.4954	0.9892	0.0000	0.7116	0.6552
A4	0.4189	0.9992	0.3179	0.7205	0.6113	0.3250	0.7182	0.8021	0.3536	1.0000
A5	0.7503	0.5067	0.2127	0.3217	0.3560	0.9345	0.0000	1.0000	0.0000	0.7197
A6	1.0000	0.8322	0.0000	0.8754	0.2390	1.0000	0.3117	0.9533	0.1828	0.6087

Table 4 shown that the normalized data for Delhi, Ladakh, Jammu and Kashmir, Andaman and Nicobar, Chandigarh, Lakshadweep. These values are calculated using by formulas
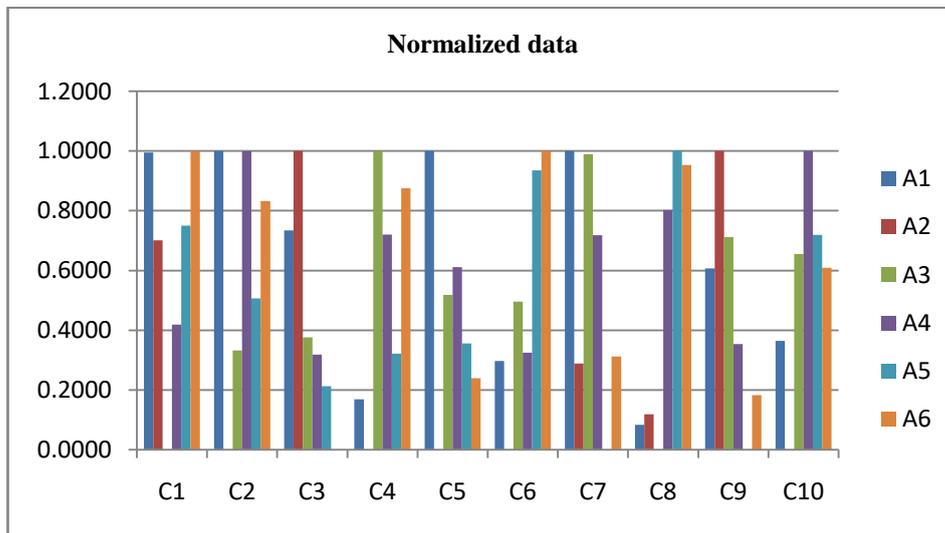
Figure 2 - Normalized data

Table 5- Deviation sequence

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	0.0050	0.0000	0.2664	0.8313	0.0000	0.7025	0.0000	0.9170	0.3931	0.6355
A2	0.2993	1.0000	0.0000	1.0000	1.0000	1.0000	0.7114	0.8815	0.0000	1.0000
A3	1.0000	0.6678	0.6241	0.0000	0.4813	0.5046	0.0108	1.0000	0.2884	0.3448
A4	0.5811	0.0008	0.6821	0.2795	0.3887	0.6750	0.2818	0.1979	0.6464	0.0000
A5	0.2497	0.4933	0.7873	0.6783	0.6440	0.0655	1.0000	0.0000	1.0000	0.2803
A6	0.0000	0.1678	1.0000	0.1246	0.7610	0.0000	0.6883	0.0467	0.8172	0.3913

Table 5 shown that the deviation sequence values. Is calculated that the formulas.

Table 6 - Grey relation coefficient

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	0.9901	1.0000	0.6524	0.3756	1.0000	0.4158	1.0000	0.3529	0.5598	0.4403
A2	0.6255	0.3333	1.0000	0.3333	0.3333	0.3333	0.4128	0.3619	1.0000	0.3333
A3	0.3333	0.4282	0.4448	1.0000	0.5095	0.4977	0.9788	0.3333	0.6342	0.5918
A4	0.4625	0.9983	0.4230	0.6414	0.5626	0.4255	0.6395	0.7164	0.4362	1.0000
A5	0.6669	0.5034	0.3884	0.4243	0.4370	0.8841	0.3333	1.0000	0.3333	0.6408
A6	1.0000	0.7488	0.3333	0.8005	0.3965	1.0000	0.4208	0.9146	0.3796	0.5610

Table 6 A zeta value is constant and the values of 0.5. Table 6 is given for a grey relation coefficient.

Table 7 - GRA values

A1	0.6787
A2	0.5067
A3	0.5752
A4	0.6305
A5	0.5612
A6	0.6555

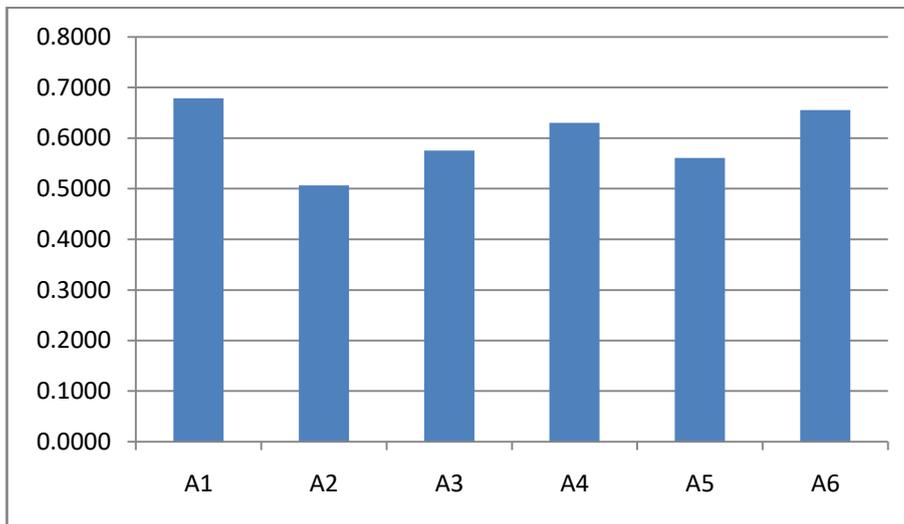Table 7 Obtained by using formulas to calculated the GRG values, the result of the method was shown above.

Figure 3 - shown that the graph about GRA values.

Table 8. Rank

A1	Delhi	1
A2	Ladakh	6
A3	Jammu and Kashmir	4
A4	Andaman and Nicobar	3
A5	Lakshadweep	5
A6	Chandigarh	2

Table 8 shown that the values about the rank. Delhi is first ranking and Chandigarh is second values so Delhi is high pollution. Figure 4 shown in ranking.
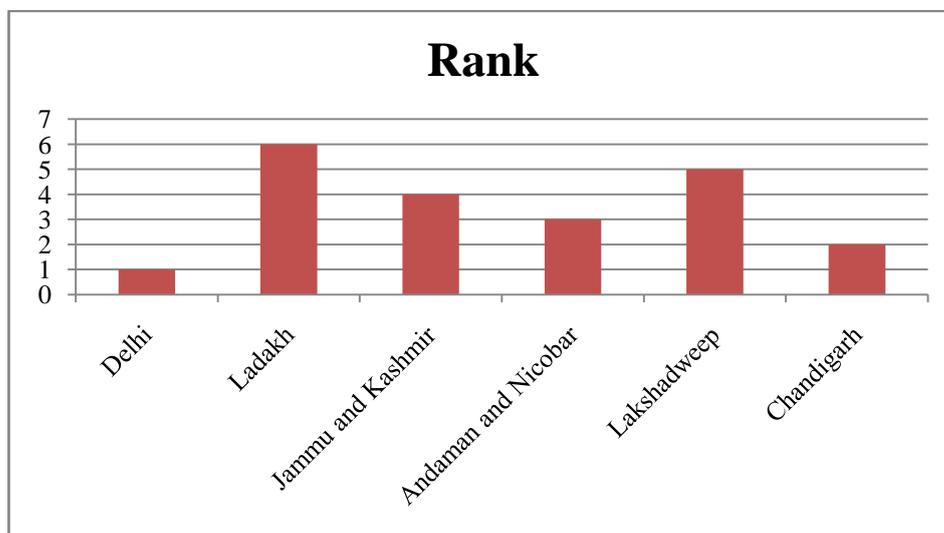

Figure 4 - Shown that the graph about rank.

5. Conclusion

Social, political, economic and environmental factors simultaneously taking into account, Identify environmental impacts of development projects, by predicting and evaluating EIA for better decision making provides the basis. If executed successfully, everyone involved in the planning process will benefit. Different sizes, Differences in input parameters, comparably accurate in the absence of data, elements include subjective and qualitative factors Decision making on environmental issues Can be complicated. Concept of MCDM packages for handling fuzzy statistics in a way, it often best represents reality. Integrated into Context of Urban Industrial Planning Based on the MCDM approach The objective of this study is to propose an EIA methodology. Criterion weights are prepared by GRA process in the proposed system. MCDM outranking method GRA by various urban industrial districts Used to assess environmental impact. From the result it is seen that Delhi is got the first rank where as is the ladakh is having the lowest rank. This paper showing, Delhi highest pollution in India.

6. References

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