

Environmental Impact Assessment of Azaran Nir Spa Tourist Village

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Abstract: This study was carried out for the purpose of surveying environmental effects of Azaran tourism complex of Nir establishment. This tourism complex is located in approximate area of 50 hectare at distance of about 2 kilometers of southeast of Nir city in Ardabil province in northwest of Iran. For making quantitative, the environmental effects of project has used the measuring checklist with defining positive, negative, short-term and long-term effects, in order of effect intensity, importance and extent of project sub actions. For survey of environmental effects of Azaran tourism complex of Nir establishment to analysis two options of execution and non-execution of project has used the expanded matrix of Leopold in title of Saratuga. In this four parts matrix has surveyed period, intensity, extent and importance of effects. The results of surveying environmental effects of project showed that project effects in constructional phase equal +483 and -473 and in operation phase equal +799, -198 that the sum of positive effects of plan in 2 phase equal +1282 and -671 and algebraic sum of these numbers equal +611. This result shows high ratio of positive effects to negative effects and generally shows the being positive of project accomplishment. The survey of quantitative results of surveying process of environmental effects of Azaran tourism village project of Nir express this fact that due to accomplish of project along applying rules of environment management will cause bricking up of region in economical, social case and tourism development of Nir region. Among disputable exit pollutants such ac sewage via construction the wastewater treatment and the other probable effects in water, air and soil parts on the basis of presented instructions is preventable easily. Thus this study shows that environment impact assessment in order to estimate and prevent the effects of project activities necessary in establishment of development projects.

Key words: Environmental management • Tourism development • Saratuga matrix • Ardabil • Iran

INTRODUCTION

Traveling the nature is a responsible environmental meeting to relatively virgin natural regions and its purpose is enjoyment of nature. In spite of abundant advantages of tourism industry, if its development won't be with policy making and planning adapted on environmental looking and with emphasizing on stability of development, it can cause abundant negative effects on environment [1]. So that in addition to ruin and decrease of nature quality, natural and artificial appearances and decreasing of land attraction for tourists will cause harmful effects in health of native people finally and consequently stable development process of this industry will become involved delay and disorder too [2].

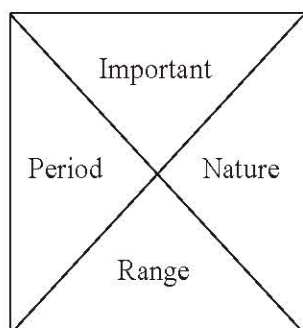
In present century after passing many years that were along with ruining of environmental by human, it has detected that development without planning won't be possible. So one of the important and basic tools for achieving to purposes of stable development, is surveying environmental effects of development plans [3]. Survey of environmental effects process, first of all, has based for helping to correct planning for stable development [4] and purpose of doing that is abstaining from any high expenses mistakes in develop development planning and control of pollution and protection of sources and in all is a management method for protection of environment [5]. Survey of development effects on environment is an important technique for being assured from that probable effect of development projects

on environment has recognized and counted perfectly [6]. Survey of environmental effects takes an action for recognizing and systematic surveying of results and projects effects, programs and plans and physical, biological and cultural-economical-social components [7, 8].

For using tourism industry as one of financial sources in economical cycle in stable way, doing the general studies for achieving to a compiled program and defining essential polices in agreeable development with environment is necessary. For this purpose the present study aims to predict environmental effects of tourism project of Azaran of Nir and prevent of its harmful effects on region environment, based on surveying pattern of environmental impact assessment of Iran environment protection organization in the year 2010.

MATERIALS AND METHODS

For study the environmental impact assessment of establishment of tourism village of Azaran of Nir, first of all, has prepared a checklist for each of physical, biological and economical-social environment of execution. On this basing in tables of checklist comparing between 2 options of execution and non-execution has done that can prize matrix table. In this research for surveying of effects has used Saratoga matrix that presented for the first time in Boston of the USA. Saratoga matrix includes columns. In inserted index in vertical column of matrix, located activities and in horizontal column located environmental parameters. Each cell of this matrix divided into 4 parts including period, nature, city limit and importance that show different effects of activities. Following shape presents a sample of Saratoga matrix cells:



In this method after distinguishing the collection of activities arising from project activities in lines and columns of matrix, in each matrix cell that is equivalent with an activity and an environmental parameter, the collection of related effect specifications will determine and load. In this method, weight of each counted effects and in its own classification locates in Saratoga matrix. The way of project effects impression on environmental components based on effect nature express desirability and non-desirability of effect and they have distinguished in minus (-) and positive (+) from. Effect's period, is an indicator for determining time period of effecting project activity on environmental parameters. Giving a privilege to effect's period has done, on the basis of time period of effecting related activities with project and 3 weights from one to three. Effect importance is a scale to show the intensity and weakness of project sub activities effect on environment that has been defined based on coefficient one. So, effects receive coefficient of 0.25, 0.5 and 1 orderly with the importance of low, middle and high. The range of descriptive index can specify the limits of effect of project activities. Effect index of project activities has been defined in ray, immediate, direct and indirect in order 1, 3 and 5. In Table 1 mentioned information has been shown briefly.

RESULTS AND DISCUSSION

Study Area: Azaran tourism spa to estimated survey 50 acre that has been placed in 38 00 08 to 38 01 16 altitudes and 48 01 08 to 48 01 44 longitude far from of 2 kilometers from south-eastern in Ardabil province in the north-west of Iran.

Activities of Project: Main function has been considered at the first design and the region classification of Azaran tourism spa include: Fundamental plants, residential plans water therapy plants, art, cultural and sport places, reception and commercial complex, administrative buildings, public streets, roads and parking lots and green places and parks. The major process of activity and operation in all parts of project are in residential and recreational and athletic activities. The most important feature of the Azaran tourism spa in comparison with other similar projects is the ability of using Saghezchi warm mineral water and anticipating of water therapy spaces in this complex. In Table 2 estimated has been presented.

Table 1: Index and coefficient concerning it with matrix Saratoga cells

	Index	Coefficient
Nature of effect	Positive	+
	Negative	-
Time of effect	Short-term	1
	Medium	2
	Long-term	3
Importance of effect	Low	0.25
	Average	0.5
	High	1
Range of effect	Immediate	1
	Direct	3
	Indirect	5

Table 2: Total functional divisions of Azaran tourism village

Name of function	Functional and operational spaces	Allocated Land (hectare)	Percentage of hole land
Residential	Hotel with 90 rooms modern	25	50
	Hotel with 80 rooms traditional		
	Hotels' parking		
	Villas		
	Hotel apartments and hotels		
Water therapy	Pool	1.2	2.4
	Water therapy clinic		
Commercial	Commercial complex and bank	0.9	1.4
	Restaurants and saloons		1.8
Services officials	Services and official buildings	0.3	0.6
	Management and fire station		
Athletic	Indoors gyms	4	8
	Outdoors sports		
Cultural artistic educational	Chapel	0.6	2/1
	Theater-cinema		
	Conference saloons		
Recreational	Streams-children games	5	10
Communicational	Side walks and roads	5	10
Green places	Jungles-pards	11.3	22.6
Total		50	100

Table 3: Total estimated effect of Azaran tourism village constructional stage

Environment		Physic-o-chemical	Biological	Social and economical	Total
Result	Positive	-	-	9	9
	Negative	8	4	3	15
Occurrence probability	Definite	5	4	10	19
	Probable	3	-	2	5
Time of effect	Long term	2	4	4	10
	Short term	6	-	8	14
Intensity	High	-	2	2	4
	Medium	-	-	2	2
	Low	8	2	8	18
Importance	High	-	-	6	6
	Medium	-	-	1	1
	Low	8	4	5	17
Range of effect	Study area	8	4	2	14
	Direct limit	-	-	3	3
	Indirect limit	-	-	7	7

Table 4: Total estimated effect of Azaran tourism village operation stage

Environment		Physic-o-chemical	Biological	Social and economical	Total
Result	Positive	1	3	17	21
	Negative	4	3	1	8
Occurrence probability	Definite	5	3	18	26
	Probable	-	-	3	3
Time of effect	Long term	4	6	18	28
	Short term	-	-	-	1
Intensity	High	1	-	-	12
	Medium	1	2	9	6
	Low	-	-	6	11
Importance	High	4	4	3	16
	Medium	1	2	13	3
	Low	-	-	3	10
Range of effect	Study area	4	4	2	8
	Direct limit	3	4	1	8
	Indirect limit	1	2	5	8

Positive and Negative Consequences of Project: For estimating of environmental effect we use the simple checklist-questionnaire and Saratoga matrix for announced technical and situational alternative that was given by employers in Tables 3 and 4 all probable effects of Azaran tourism spa project on natural impressible scales in stage of construction and operation stages were collected.

According to data was given in table we can conclude that:

- In a level of construction we can say about 24 impressible scales according to given data in Table 3:
- The conclusion of effect on environmental factors in 9 cases are positive and in 15 cases in negative.
- The occurrence of this in 19 cases is definite and 5 cases are probable.
- The time of effect in 10 cases is long term and in 14 cases is short term.
- The importance of effect is anticipated in 6 cases in high, in 1 case is average, 17 cases is low
- Range of effect in 14 cases is in immediate limit of project, 3 cases is direct effect limit, 7 cases are in indirect effect limit of project.

In operation stage from all impressible factors we can conclude based on Table 4:

- The conclusion of effect on different environment in 21 cases is positive and in 8 cases is negative and in 5 cases is neutral.
- The kinds of event occurrence on 34 factors were evaluated, in 26 cases are definite and in 3 cases are probable and 5 cases were estimated unlike.
- The time of effect in 29 cases is impressible in 16 cases is long term and in 1 case is short term.

- The intensity of effect on 29 impressible factors was estimated in 12 cases severe in 6 cases average and in 11 cases low.
- The importance of 29 impressible factors were estimated that important in 16 cases, some how important in 3 cases and less important in 0 cases.
- The range of effect on 29 impressible factors are immediate limit of project in 8 cases, direct effect limit of project in 8 cases and indirect effect limit project in 13 cases.

Evaluation of Cases: According to data that was given in chart 5, scale of evaluation was selected based on estimated sub activities effects on environmental based on environmental. Features of environmental (from intensity, importance, time, range of effect aspects) and changing of scales that each activity can create some condition in environmental and decrease its standards. In some cases that there is no standard some percent change in environmental parameters and in some cases effect on some sensitive environmental factors and in another case and in other level some special judgment was considered. Mathematical collection of values and scores were able to determine the positive and negative effect of project that we can determine better alternative by comparing.

Table 5 that is a comparison of positive and negative effects can confirm that positive effects of this project are more than negative effects.

Environmental Pollutants of Project and Planning of Decreasing the Bad Effects: In table 6 has summarized the most important positive and negative effects of sub activities of tourism village project of Azaran of Nir in constructional phase and in table 7 has summarized the most important positive and negative effects of sub activities of tourism village project of Azaron of Nir in operation phase and requirement actions for decreasing their bad effects.

Table 5: Final results of total positive and negative effects productions of surveyed matrix of project establishment

Phases	Constructional		Operation	
	+	-	+	-
Type of effects Environments				
Physical-chemical	126	216	72	127
Biological-ecological	38	186	59	40
Economical-social-cultural	319	71	668	32
Sum	483	473	799	198
Sum total	+		1282	
	-		671	
Algebraic sum positive and negative effects			611	
Ratio of positive effects to negative effects			1.9	

Table 6: The most important negative effects of tourism village establishment in Azaran of Nir in constructional phase and arrangements of decreasing them

Type of action	Type of negative effect and factors	Suggested method for decreasing bad effects
Movement o the cars carrying the construction materials in a dusty road	Dust spreading and effecting on quality of air in operations restricted area	- Sprinkling of dust roads - With surrounding and leveling roads come to end the bad effects
Activities of half-heavy machinery (loader, grader, ...)	Sound spreading and effecting on acoustic level in restricted area	The effect is temporary and ignorable and also effect will cut with ending the related operations
Temporary excretion of human sewage of worker temporary construction camping in absorbent pit	Penetrating of sewage in underground waters and effecting on their quality	Primary filtration of human sewage with septic tank establishment
Earth filling and surfacing, passages and streets establishment	Changing of running to seed and pressing surface soil, effecting on texture and ability of soil and irrevocable form in without separation restricted area.	Bad effects will decrease in operation phase with soil correction and establishment of green space roughly

Table 7: The most important negative effects of tourism village establishment in Azaran of Nir in operation phase and arrangements of decreasing them

Type of action	Type of negative effect and factors	Suggested method for decreasing bad effects
The probability of penetrating surface waters of rainfall to Bluk Chai and Blikhli Chai rivers	The probability of river pollution and effect on water quality	- Establishment of collecting net of surface waters - conservation of river's water quality in suggested stations
Activity of warm mineral water pools	Recycling the exit waste water and reuse it	Continual sampling and monitoring of recovered water quality
Production of solid waste	Soil pollution	Solid waste recycling
Wastewater from sewage treatment system	The probability of surface waters pollution	Wastewater monitoring and observance of environmental standards

In determining of conservation indicator and the methods of effects decreasing and plan arranging, have taken into consideration the factors that have had the most negative effects. For doing requirement actions for decreasing and prevention of negative effects of project activities needs to establish an organization as environmental office in site of project. So to this purpose, establishment of environmental office for tourism complex of Azaran in Nir has taken into consideration and has suggested.

CONCLUSION

Surveying quantitative results that are obtained from surveying environmental effects of tourism village of Azaran project process shows this fact that with execution and operation of project along with observance and applying the rules of environmental management will

cause economical-social briskness and development. Among this probable pollutions arising from project activities on the basis of predicted preparations and the instructions that presented in this field are preventable. So project execution option with observance of environmental considerations, surveys optimum and superior option and, precondition of this option are applying the environmental considerations in project execution. Thus this study shows that environment impact assessment in order to estimate and prevent the effects of project activities necessary in establishment of development projects.

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REFERENCES

1. Monavari, M., 2002. Guide for Tourism Environmental Impact Assessment Studies. The Department of the Environment, Iran.
2. Werner, G., 1992. Environmental Impact Assessment in Asia: Lessons from the past decade. In A.K. Biswas and Agarwal, S(eds). Environmental Impact Assessment for developing countries, UK, Oxford: Butter worth-Heinemann.
3. Dabiri, F. and M. Kiyani, 2007. Survey of Prevention Law in Environmental Impact Assessment in Iran and Many Industrial Country. Environ. Sci. Technol., 9(4): 34-41.
4. Fataei, E. and H. Sheikhjabbari, 2005. Study of Environmental Impact Assessment of the 2nd Industrial Township of Ardabil. Environ. Sci., 3: 17-25.
5. Hunt, D. and J. Catherine, 1995. Environmental Management Systems Principles and Practices. Published by McGraw-Hill Book Company. England, pp: 208- 216.
6. Shariat, S.M. and S.M. Monavari, 1996. Environmental Impact Assessment. Tehran: Department of environment.
7. Alam, J.B., A.A.M. Ahmed, G.M. Munna and A.A.M. Ahmed, 2010. Environmental Impact Assessment of Oil and Gas sector: a Case Study of Magurchara Gas Field. J. Soil Sci. Environ. Management, 1(5): 86-91.
8. Canter, L.W., 1996. Environmental Impact Assessment Methodology. McGraw- Hill Book Company, Baltimore USA., 112.