

## Considering the Conservation Status of Bamdej Wetland by Using Canada Model and American Rapid Assessment Methods

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**Abstract:** Bamdej Wetland with approximate area of 4000 hectare in longitude of 48° E and latitude of 31°N is situated in southern west of Iran and 40 kilometer distance from northern west of Ahvaz which is bordering Shavoor dam and Village farms in north, Tavana channel in South, bamdej village alongside Ahvaz-Andimeshk railway in east and Sadat Tavaher and Sayed Jasem villages in west. Shavoor Dam is in the river path of Shavoor which upon crossing divided into two branches, Nahr lashkar and Nahr khavoor. The aquatic habitat of it which constitutes the main part of wetland has provided appropriate and secure place to scatter the regional animals particularly local and oviparous birds due to dominant plants like cane and bulrush. Some parts among the wetland are without the above coverage and it constitutes an aquatic open place which is the proper place for feeding and resting aquatic animals especially birds of passage. This research with the aim of ecological evaluation in order to call Bamdej Wetland as conservation place has been accomplished by using amended model of Canada Environment Organization and rapid assessment; consequently through two models, Bamdej Wetland achieved title of conservation region.

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### Introduction

Wetlands are unique ecosystems and play a clear role in preventing desert expansion, mitigation of climate, survival and feeding underground aquifers, creating a habitat for birds and aquatics and other animals, maintaining deposits, recreation and tourism, erosion control and so on (Najari, 2003). It is of necessity to conserve these priceless ecosystems particularly wetlands which have dominant conservation or economic ecological roles. However, the wetlands are considered to be the back bone of ecological values, human's daily activities and source of transportation but based on their sensitivity and vulnerability, the all-inclusive information in the ground of their management and conservation is insufficient. Since land ecological evaluation could be considered as the core of environmental studies or even prevention and curing environmental crisis (Najari, 2003), and every land has its own applied capabilities (Darmi Asl- 2005) which according to the fact that using the land should be based on the natural talent of that land (Makhdoum, 2001), in this

research it was tried to proceed ecological evaluation of conserving function of the area based on Canada Environment Organization criterion with regarding to the ecological resources of the considered region in order to determine that whether the region has the required talent to be called as conservation area.

### The Research Generality

#### Stating the subject

With regarding to development growth process from 60 decade up to now in Khuzestan Province, and knowing that wetlands have the numerous values including various living values to feed aquatic, birds, domestic animals' consumption, herbal and economic values and soil stabilization, and the fact that their destruction process is increasing, conserving the wetlands with these high values are of necessity. However, a wetland is being evaluated through rapid assessment method and Canada amended model and consequently would achieve acceptable score, in one hand it resulted in promoting the rank and registering a wetland in the international societies and in the other hand it would compel local

organizations and responsible organization to apply peculiar management strategies which is effective in forwarding management goals of wetland, regeneration and improving the habitats, elimination of the current conflicts, preventing deconstruction and the upcoming conflicts, maintaining the features of ecological zone of the wetland.

### **Conserving the wetlands**

Today more than ever, the precious role of wetlands has been clarified to us and we have learned that by losing each wetland, quality and quantitative circumstances of surface and underground water in the environment would be disrupted and ecological, economic, and recreational values would be declined, although destructions, contamination, area deduction and draining the wetlands are increasing (Esmaeil Zadeh, 2002).

### **Introducing the studied area**

Bamdej Wetland with approximate area of 4000 hectare is located in the 40 kilometer northern west of Ahvaz. The main access road to Bamdej wetland is Ahvaz-Andimeshk road and there are sandy roads and asphalt roads grade 2 and 3 as bypaths as well. In the study area, various activities are being accomplished which is somehow related to the wetland including fishing and cane cutting. Also, there are services and manufacturing units like railway station, aviculture and so on.

### **Geographical location of Bamdej wetland**

Bamdej Wetland lies in longitude of 48° E and latitude of 31°N is situated in southern west of Iran and 40 kilometer distance from northern west of Ahvaz which is bordering Shavoor dam and Village farms in north, Tavana channel in South, bamdej village alongside Ahvaz-Andimeshk railway in east and Sadat Tavaher and Sayed Jasem villages in west (Afkhami, 2003)

### **Research Method**

#### First: Amended model of Canada Environment Organization

This method is taken from Canada Environment Organization and it is a detailed and long method in the field of evaluation the projects effects which has been accompanied with the amendments by Canada environment Organization and along with a guide

booklet has been put in their site. This method has been summarized in this research in order to evaluate the ecology of Bamdej Wetland and only part of it has been used which the full description of applied method is addressed as follow: This method is scoring based on three basic criteria (values): social-cultural value, manufacturing value of wetland, and life conserving value that each of them in turn is divided into several subgroups.

In this method, a series of applied questions for every value is presented and the evaluator is obliged to answer in order to call the area as conservation wetland. There are four options to answer the questions:

First option: the answer is positive. That is the proof of criterion. In the other words, existence of criterion is being approved through positive answer. Second option: the answer is possibly. The data possibly exist but they are not approved. Third option: the answer is lack of information. The situation refers to the criterion but the data to prove them is not available. Forth option: the answer is negative. By this the existence of criterion is refused. Actually, the given answers to each value approve presence or lack of criterion. After answering to the questions, the table is drawing and the questions are put in the first column in order to determine the importance level of it in 5 options (national, provincial, regional, local, and venial) beside criterion existence.

National: the importance level of the asked value is national level. Provincial: the importance level of a value is provincial. Regional: the importance level of a value is regional level. Local: the importance level of a value is local value. Venial: the criteria importance level is trivial and could be disregarded.

In this method, since the number of questions is not equal in every secondary value, in order to calculate score of each secondary value from the total scores, all the achieved scores are turned into percentage. Then secondary values are prioritized based on the achieved scores. Also, due to the negativity of some of the questions, they are reversed and being scored. With regard to the matter that in Canada amended model, each answer consists of two sections of importance level of criteria and criteria existence proof; Therefore table 1 was drawn in order to quantify the method and based on the answers, the score range (0-4) is considered that turned this

method into quantitative type. For instance, a question 'Would the wetland help capability of using surface waters?' and with positive answer and regional importance level, it raised 2 score based on the following table. The results are totally mentioned in table 1 which the value and importance of wetland in understandable by considering this results and scores.

Table 1- Quantification of Canada Amended Model

Answer	Score
Yes – national importance level	4
Yes- Provincial importance level	3
Yes- regional importance level	2
Yes, local importance level	1
No	0

### Second Method: Rapid assessment of a wetland

The second method used in this research is rapid assessment of the wetland. Today this method is considered as an effective and efficient method to ecological evaluation of the wetlands in many parts of the world. It could be referred to economy of time and cost as one of the advantages of this method, so that in a short time with less cost, the required answer is acquired by using this method. To use this method some changes were applied which is presented completely. The purpose of using rapid assessment is

to be informed that whether this method works on Iran wetlands or not and is it possible to evaluate the considered wetland and classify other wetlands accordingly?

The base of this method is forms which are filled by evaluator with the aim of wetland classification and the evaluator is obliged to answer each question in the form completely. Field research of the area, review the texts and knowledge of effective factors in the region is necessary before answering to the questions.

The purpose of filling up ecological rapid assessment forms is putting the considered wetland in one of the categories 1, 2 and 3 which is stated by environment conservation agency of America, Ohio. It consists of four main parts which is stated in several formats.

### Results

After texts review and field researches of Bamdej Wetland and doing researches and searching information database, the results of two methods of amended model and rapid assessment are acquired as follow:

After answering the questions and completing the related tables, the final sum is stated in table 2.

Table 2- final sum of answers

	Presence or lack of criteria				Importance level of criteria					qualification	Score %	Operation explanation
	Y	L	P	C	N	P	R	L	NE			
											% 72	Life keeping value
Hydrologic value	4	0	0	2	3	1	0	0	0	15	67	
Bio-geo-chemical value	4	0	1	0	1	3	0	0	0	13	80	
Habitat value	8	0	0	2	6	1	1	0	0	29	80	
Ecological value	4	0	1	1	1	1	2	0	0	11	67	
											%83	Socio cultural value
Beauty value	3	0	0	1	0	3	0	0	0	9	75	
Recreational value	4	0	0	1	2	1	1	0	0	13	80	
Education and public	3	0	0	1	2	1		0	0	11	75	
Social and public status	5	0	0	1	2	1	2	0	0	17	83	
Cultural features value	4	0	0	0	0	1	2	1	0	8	100	
											%53	Manufacturing value of wetland
Agricultural value	4	0	0	1	0	0	2	2	0	6	80	
Renewable resources	2	0	0	2	1	1	0	0	0	7	50	
Non-renewable	0	0	0	2	0	0	0	0	2	0	0	
Recreational and	1	0	0	2	1	0	0	0	2	4	34	
Urban value	3	0	0	2	0	2	1	0	2	8	40	
sum	49	0	2	18	19	16	11	3	0	0	0	

Final conclusion: after answering the questions asked in Canada amended model, it is determined that from the total of 69 questions, 49 questions (71%) have approved the existence of criteria and all are in the importance level of national, provincial, local or regional. Therefore, according to the scoring

procedure of this method which are presented at the section of material and methods, Bamdej Wetland has the worthiness to achieve conservation area title. The following diagrams indicate the value comparison of the wetland based on proving criteria existence.

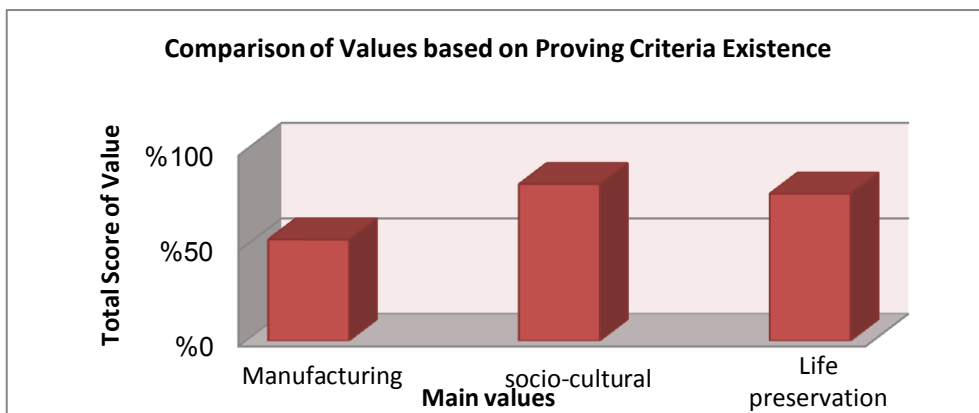


Diagram No.1 Comparison of values based on Proving Criteria Existence

As indicated in diagram No.1, the main value of

socio-cultural has the highest scores among other values.

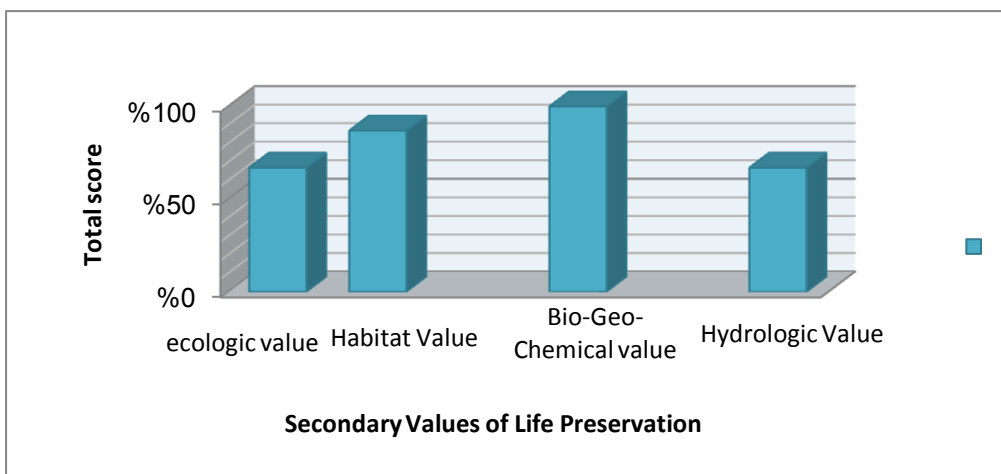


Diagram No.2 Comparison of secondary values of life conservation based on proving criteria existence

Diagram No.2 considers the comparisons of secondary values of life conservation which is a main

value and indicates that bio-geo-chemical value has achieved the highest scores based on criteria proof.

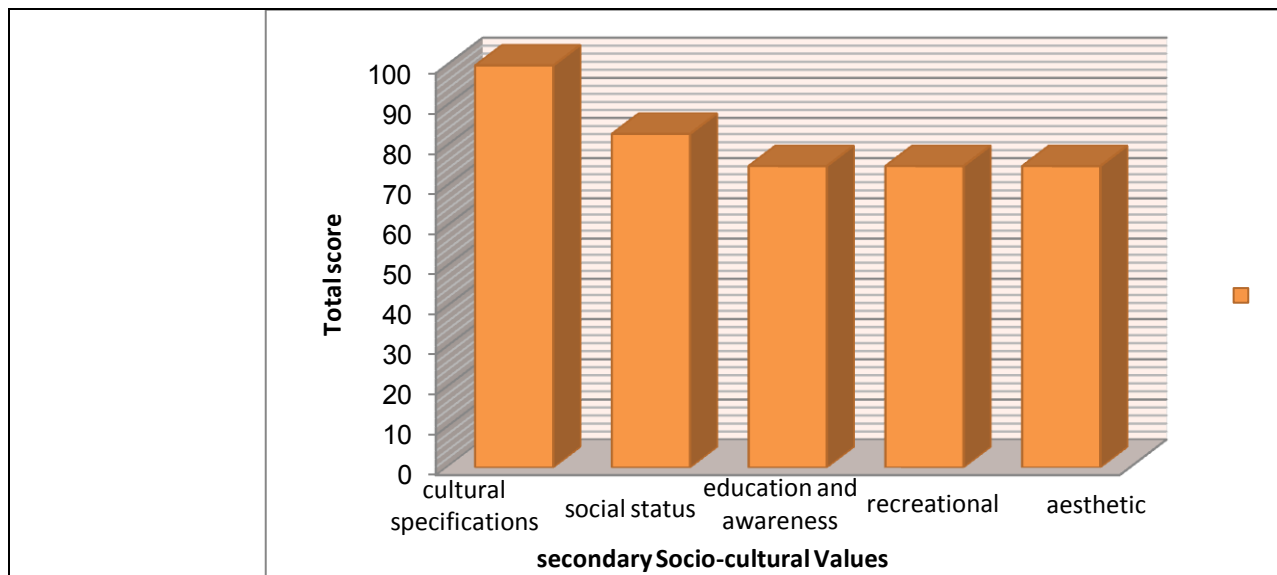


Diagram No.3 Comparison of secondary socio-cultural value based on proving criteria existence

Diagram No.3 considers the secondary socio-cultural values based on proving criteria existence and it is

determined that cultural specifications have the highest score.

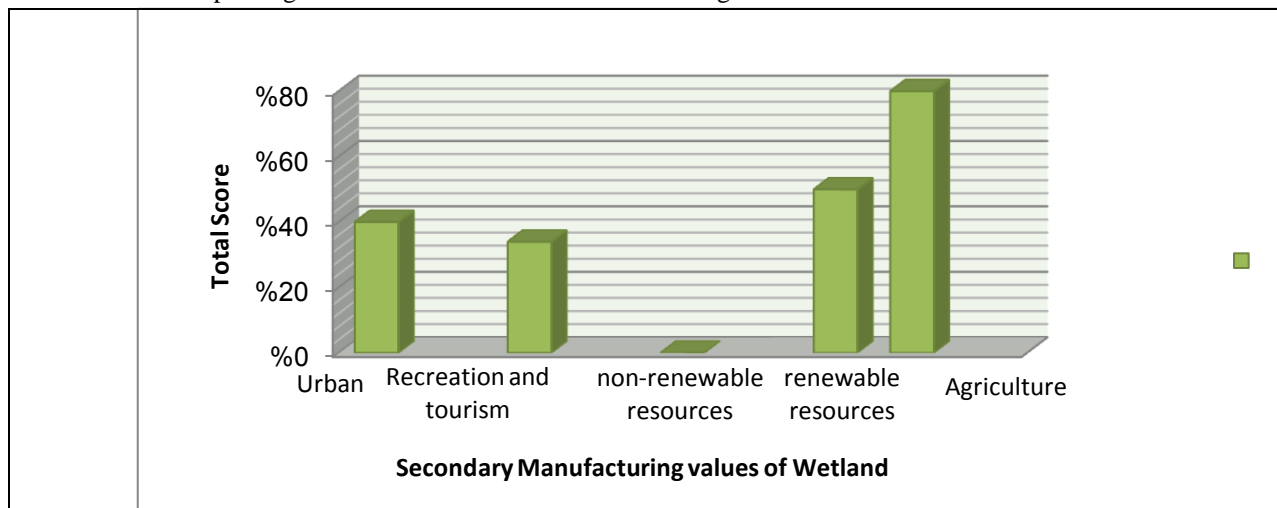


Diagram No.4 Comparison of secondary manufacturing values of wetland based on proving criteria existence

Diagram No.4 considers the comparison of secondary manufacturing values of the wetland based on proving criteria existence which secondary agriculture value has achieved the highest score and non-renewable resources value has received the least score.

**Results of rapid assessment method**

**Basic information**

Bamdej Wetland by achieving 80 score lies in category 3.

Table 3. Quantitative classification of Bamdej Wetland

Total Scores	category
0-29/9	1
30-34/9	1 or 2 ash
35-44/9	2 amended
45-59/9	2
60-64/9	2 or 3
65-100	*3

**Comparison of ecological evaluation methods of Bamdej Wetland with SWOT method**

In this phase, all weak and strong points, threats and opportunities of both methods are written and scored which based on the scores, the strategies to remove the weak points and threats are presented and they are rescored.

#### **Comparison of both methods Strategies for ecological evaluation of Bamdej Wetland**

As seen in the following table, publishing a guide booklet in Canada amended model and addition and variety of criteria in rapid assessment method have achieved the highest scores.

Table 4. Comparison both methods strategies for ecological evaluation of Bamdej Wetland

<b>Strategy for Canada Amended Model of Bamdej Wetland</b>	<b>Score</b>
Reversing the questions in order to consider the negative parameters in the questions	5/45
More considering of threatening factors	5/87
Publishing a guide booklet	5/59
<b>Strategies for Rapis Assessment Method of Bamdej Wetland</b>	<b>Score</b>
Increase and variety of values and crieria	6
Educating the method for students to have complete knowledge of method	5/43
Using method in researches due to not time consuming	5/56

#### **Discussion and Conclusion**

Compilation of criteria and values of wetlands and coastal areas is considered as a rational and customary approach in creating grounds for achieving the title of conservation area in the coastal area of the country. But according to text review, these criteria and valuation has not been applied for Bamdej Wetland yet. The methods used in this research are accomplished with the aim of rationalizing of selection process and facilitation in identifying ecological factors of Bamdej Wetland. And also this research would be considered as a scientific credit to choose the wetland as a conservation area and the level and title of this wetland befits with the importance of ecological

resources and all the rolling social and economic circumstances in the region. Another purpose of this research is the comparison of performances of two existing methods and choosing one as a better model in ecological evaluation of Bamdej Wetland which is considered in this section.

#### **Comparison of rapid assessment method and Canada amended model**

According to the study and applying each of these methods in this research and scoring their criteria, it is determined that hydrological and habitat factors enjoys especial importance in both methods. So that, habitat value in Canada amended assessment model achieved the high score in view of proof and level of criteria importance and many questions has been devoted to this value. Also in rapid assessment method, it is discussed in subjects of changes, expansion and disruption, safe places for the types in risk of threat or decline and so on. In this research, habitat criterion in both methods achieved high score which is indicative of high value of Bamdej Wetland. Social status value in Canada amended model achieved the highest score in main value of socio-cultural and in total values as well after cultural specifications value. Also, it has the most questions which are indicative of high value of social status of whole wetland and the importance of this matter in Bamdej Wetland. In order to choose a better method to ecological evaluation of Bamdej Wetland, SWOT model was used. This model compared these two methods and addressed the weak and strong points and threat and opportunities of each method.

#### **Differences between two methods**

Some of the differences are as follow:

- 1- The presented questions in both qualitative and quantitative section of rapid assessment were ecological and despite the amended model, parts of social-economical values have not been mentioned and have been disregarded.
- 2- Rapid assessment method, has been considered society and herbal coverage as a main and fundamental part, while in the amended model, this process has not been accomplished.

- 3- The special concern of the Canada amended model has been toward human and creational activities, functional and educational values, aesthetic parameter and mammals' criterion, while these values have been disregarded in rapid assessment method.
- 4- Rapid assessment method are evaluated mainly based on six measurements, while amended model are mostly evaluated based on qualitative measurement and the evaluator's opinion is more involved.

### Final conclusion

After text consideration and field inspection of the wetland and implementation of each of the existing methods and determining higher values of these ecosystem from ecological, economical, social, creational aspects and so on through scoring the criteria in both methods, it was determined that since conformity of criteria in both used methods overlaps in this research, thus Bamdej wetland is achieved the title of conservation area in both methods. With regard to the acquired digits of tables (IFE) and (EFE) which are related to each method, both models were aggressive but American rapid assessment method of Ohio Wetland achieved more scores that Canada amended model. Therefore, it is indicated that rapid assessment method of wetlands is more preferred than Canada amended model for ecological evaluation of Bamdej Wetland.

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