

Environmental Management System for Marshlands Iraq

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Abstract— Due to the climatic changes that have been taking place in Iraq, especially in the southern regions, there is a difficulty in sending data from branch offices to main offices in a timely manner. This paper attempts to design a system that will allow branch offices and main offices to exchange information efficiently through electronic means. Consequently, this will make it easier for managers to make decisions at the right time and without any delay.

Keywords— Marshlands; EMS; Sharing Information; Information and communication Technology;

I. INTRODUCTION

The Iraqi Marshlands constitute the largest wetland ecosystem in the Middle East and are of environmental and socio-cultural significance. Located in the areas surrounding the confluence of the Euphrates and Tigris Rivers in the Governorates of Basrah, Missan and Thi-Qar in southern Iraq, the Iraqi Marshlands consist of interconnected wetland systems of the Central Marsh, Al-Hammar Marsh, and Al-Hwaizeh Marsh (29°55' to 32°45' N and 45°25' to 48°30' E).

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The area is connected to the Gulf by the Shatt Al-Arab River [1 -2]. As illustrated in Figure 1, the marshes were fed and sustained by the spring snowmelt. In the spring, the rivers would become engorged with excess water that rushed downstream, creating seasonal “flood waves” in the deltaic floodplain formed by the marshes of Southern Iraq. These flood waves were essential to maintaining an extensive network of shallow interconnected lakes and back swamps that formed these massive wetlands. In marshes, they are the permanent habitat for millions of birds and a flyway for millions more migrating between Siberia and Africa [3].

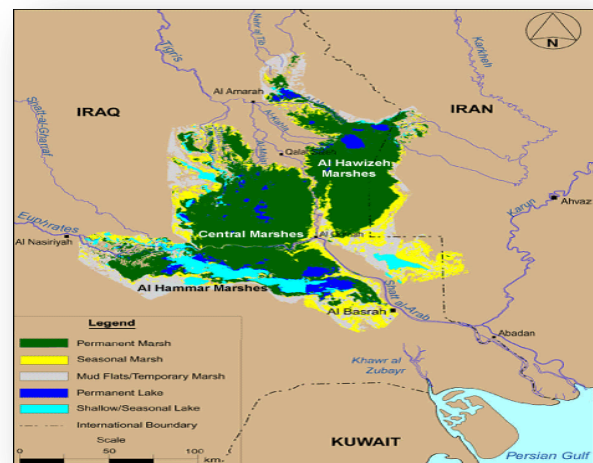


Figure 1: Map explains Marshlands in Iraq.

Throughout the years, the Iraqi Marshlands have been extensively damaged. Numerous engineering structures including more than 30 dams have been built along the Tigris and Euphrates Rivers over the past 100 years to control the water flow for irrigation, public water supply, and hydroelectric power generation [4]. While these dams have contributed to the reduction of available water for the Marshlands, the destruction of the marshes is primarily attributable to the extensive drainage structures built during the 1990s for the purpose of drying out the area. Initiatives were also carried out to divert water for irrigation, to build

railways and other transport infrastructure by filling wetland areas, and to build canals and dykes to control flows, thus limiting the number of water release points to the wetland system and reducing the overall flow. Other aims may have been to tighten security and control by destroying natural landscapes that provided hiding places, and to force emigration. These actions led to the systematic shrinkage of the Marshlands and damage to the ecosystems as well as to the livelihood of the residents. *Fig 2:*

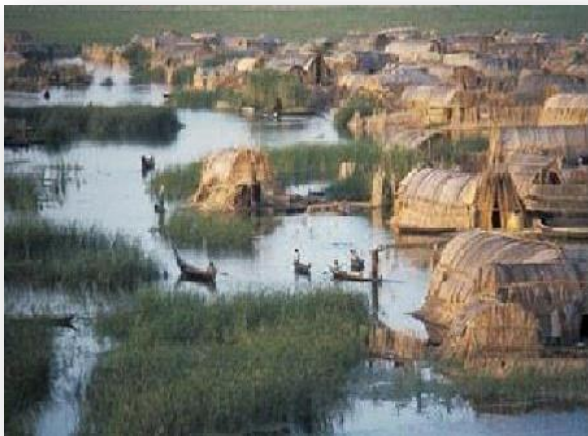


Fig1: Map explains Marshlands in Iraq.

As a result of these changes, there is a need for a periodic follow-up process and the traditional ways of sending data and in following-up changes have become stressful and expensive. Information and Communication Technology (ICT) enables us to record, store, process, retrieve, and transmit information. It encompasses modern technologies, such as computers, telecommunications, facsimile and microelectronics [5]. In addition, Rodger and Khosrow-Pour [6] referred that ICT supports activities involving the creation, storage, manipulation and communication of information, together with the related methods, management, and application.

II. PROBLEM STATEMENT

During the three-year period under observation, significant and rapid environmental change has taken place in the Iraqi marshlands. Indeed, after over a decade of precipitous decline, the marshlands had dwindled to less than seven per cent of their 1973, a new phase of active and widespread inundation began in the spring of 2003. During this critical and dynamic phase, it became increasingly evident that systematically monitoring environmental change was paramount to gaining a better scientific understanding of the recovery process and to assisting

decision-makers to plan and implement appropriate rehabilitation measures [7-8].

In addition, in less than one year since the start of the re-flooding from May 2003 to March 2004, more than 20 per cent of the 1973 marshland area had been inundated. By May 2005, almost 50 per cent of the former marshes had been flooded, but this level gradually declined with the high evaporation rates of the hot summer months.

According to Thi qar province [9], this change in the water level and the lack of speed in sending the information to main centers led to the death of many livestock and fish. It also led to the migration the people from the marshes to the city, thus leading to the lack of agriculture. Furthermore, the governor of Dhi-Qar in 2012 pointed out that the problems that the province is facing have multiplied because of the lack of mechanisms or techniques in finding out what is happening in the marshlands.

Unfortunately, even after the evolution of ICT, staff members in branch offices still face obstacles in the process of transferring data to the main office. These obstacles include the weather, unsafe roads, and political instability. As shown in *Fig 2*, branch offices have computers and an Internet connection, but there is a gap in the process of sending data, where the traditional ways of data and information exchange are used. Therefore, the study seeks to fill this gap.

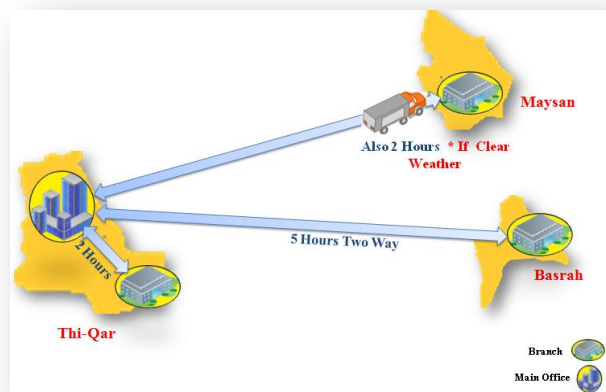


Fig 2: Illustrates the Method Used to Transfer Data between Branches and Main Office.

III. EMS FOR MARSHLANDS IRAQ

The purpose of this paper is to design Environmental Management System for Marshlands Iraq, which will be

used to record and send information about the marshes from the branch offices to the main offices and vice versa.

According to Glood [10], there is a need to provide channels that transmit data between organizations in rural areas and the main center. Therefore, this proposal seeks to design a system that will assist the stakeholders of Telecenter (Branches and Main Office) to reduce the time and effort in sending information from rural areas to main offices and vice versa.

Fig3. illustrates the EMS for Marshlands Iraq,. As aforementioned, the purpose of this system is to allow efficient sharing of data between branch offices and main offices. In addition, showing the data for changes in the region in the form of a diagram facilitates comparison with previous data and allows offices to take crisis measures immediately.

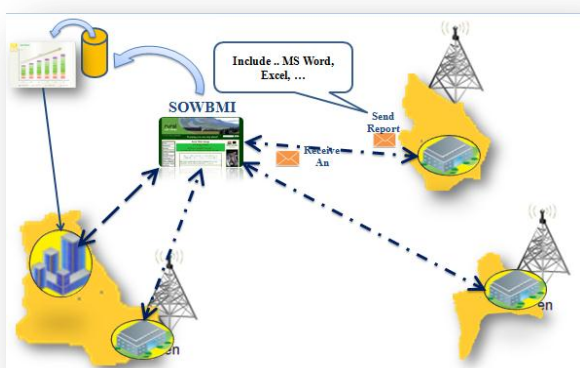


Fig 3: Method of sending data using the EMSMI system.

IV. SCOPE OF THE STUDY

The main function of this project is to provide technical cooperation among sub-centers and the main centers located in Nasiriyah, Mesan, and Basra. At the same time, the system will be able to provide some information and solutions about the problems faced by any of the branches or the main center. Furthermore, this system will be designed by Asp.net and C#, and Sql Server as Database to store the information will be used. Figure 3 shows the proposed system to assist the stakeholders of Telecenter (branches and main office) to reduce the time and effort to send information from rural areas to main office and vice versa.

V. SIGNIFICANCE OF THE STUDY

The system will enable the proposed Environmental Management System for Marshlands Iraqi responsible for

dealing with all the problems and the management of all centers successfully. The proposed system will be available for use 24 hours a day, 7 days a week for easy navigation by the administrator. It will also provide current information and updated information about the marshes of Iraq at any place and at any time, which enables the administrator located in the main centers to track updates on the water level in the marshes and the proportion of the pollution produced, and consequently take precautions promptly, thus lessening the damage.

VI. CONCLUSION

Environmental Management System for Marshlands Iraqi is a very important part of any organization that works in Marshlands as it is a tool to control the problems that are taking place in the marshes. The system makes it easier to find the best possible solutions in times crises, reduces the high costs of exchanging information between offices, and helps save a lot of time. The objective of this proposal is to establish Water Management System for Marshlands Iraqi to send important information on the water level from sub-centers to the main centers regularly and rapidly as well as monitor changes in the environment.

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