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A Wetland Future for Iraq?

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Abstract

A national effort to draw attention to the importance and restoration of degraded Iraqi wetlands was initiated in 2004 with significant international interest and assistance. Overall, that enthusiasm focused on specific regions of Iraq and opened doors to consider all wetlands in Iraq. Over the next nine years, numerous projects to restore wetland habitat for fish and wildlife and for human use focused on the Chebayish and Hawizeh Marsh areas of southeastern Iraq. The Iraq Ministry of Environment, Iraq Ministry of Water Resources, and Nature Iraq have launched national biodiversity surveys and Key Biodiversity Areas assessments throughout the nation. A key milestone in 2007 was Iraq's accession to its first international environmental treaty, the Ramsar Convention on Wetlands. Iraq's first Ramsar Wetland of International Importance at Hawizeh Marsh, the Central Marshes National Park, and draft management plans for both areas were created. More progress on these projects and other national wetland initiatives has not been fully possible yet.

Two national initiatives to advance wetland conservation across Iraq should be pursued: (i) a national wetland policy that appeals to all the regions and peoples of Iraq; and (ii) a plan to expand the influence of the Ramsar Convention across Iraq. These efforts could support expansion of the number of Ramsar sites in Iraq as announced in Iraq's National Report to the Ramsar Convention in 2012. This paper discusses each of the issues noted here, drawing on examples in other jurisdictions. The development of the oil and gas deposits associated with the Hawizeh Ramsar site is also discussed.

1- Introduction

Much has been written to convince nations to become Contracting Parties to the Convention on Wetlands of International Importance. The treaty is more popularly called the "Ramsar Convention," being named after the city in Iran where this international treaty was first envisaged and put to paper in 1971. In recent years, the growth of Ramsar Convention member states has significantly increased ─ now with 168 Contracting Parties. This paper discusses some of the advantages and concerns member states face in joining this Convention including internal rationales used to name sites to the List of Wetlands of International Importance (now numbering almost 2200 sites worldwide and comprising over 205 million hectares, perhaps 10% of all the World's wetland area). The relevance of joining the Convention to Iraq and the competing needs for wetland conservation and oil and gas development in Iraq's first Ramsar site are also examined.

The text of the Convention and numerous policy-oriented, scientific and technical papers have delved into defining the legal and optional requirements that Ramsar Contracting Parties have agreed to since 1971. These requirements have few legally-enforceable, or in fact, ever-enforced requirements. The basics however do include their commitments to: (a) maintain the ecological character of the Ramsar sites they nominate for the List of Wetlands of International Importance; (b) create management plans for all their Ramsar sites; (c) accept wise use of wetland resources, establish nature reserves and establish training programs; (d) cooperate with bordering states especially for shared wetland systems; (e) file periodic national reports to the Convention; and (f) pay "dues" to the Convention Secretariat (based on a modified United Nations scale related to internationally accepted measures of national financial capacity) so it can operate.

Surprisingly, a significant number of nations do not pay dues regularly and don't get ejected as they can be refused "voting" privileges at Convention meetings every four years. Depressingly, over 80 to 90% of the budget of this treaty is funded out of annual dues from fewer than 25 nations. A few Ramsar sites are identified each year at a national level where countries have advised their need to invoke a rarely used provision of the text of the Convention to allow them to develop surface mining operations, harbours and the like by revision of Ramsar site boundaries. This involves excluding some of the area of the designated site for these new purposes of urgent national interest. This has traditionally created negative media coverage and public criticism from other nations. No country has

yet withdrawn from this treaty. However, Canada notably did renounce its membership in the Convention on Desertification in 2013, so it should be a concern that other nations might replicate for that convention and others such as Ramsar. Membership in the Ramsar Convention and its associated annual costs is a serious problem for many countries.

However, the Wise Use Principle and many other aspects of the voluntary elements of participation in the Ramsar Convention outline what measures a Contracting Party can do to ensure its compliance with the Convention's overall goals. There is also extensive interpretive guidance of selecting and designating wetlands for Ramsar status including ecological, social and cultural aspects. There is, however, little written experience demonstrating advantages to Ramsar Parties for being a member of this Convention. "What is in it for us?" is a frequently asked, but poorly answered, question. It is this aspect that I would like to examine in this paper. As I am talking to a national audience in Iraq, let me cast this with respect to that nation. Let me also indicate that I speak from no personal advantage, nor any particular political viewpoint.

SO WHAT DO THEY SAY IS IN IT FOR US?

For countries like Canada and the United States, there really is a limited set of "advantages" being involved in most international treaties. Ramsar is no exception. In such nations, many tools exist to be used for wetland conservation objectives far beyond the Ramsar Convention. But in many other less-developed nations, Ramsar is the "only game in town." Both countries have undertaken national surveys of Ramsar site managers (Environment Canada 2008; Gardner and Connolly 2009). In both cases, these advantages are now documented. They include significantly increased community commitment and support for the existence of local Ramsar sites; increased access to teaching and environmental conservation opportunities; increased use and application of scientific research at these sites including climate change, air quality, public recreation, wildlife, aquatic ecology and many other studies; increased access and receipt of research and management funding; and increased public visitation and appreciation of the sites themselves. More broadly, these two nations and many others generally had accepted a leadership role in the business of the Convention. This includes the concept of a family of nations that share expertise, policy experience (see Rubec et al. 1999), scientific results and interagency support and

funding for extra-territorial initiatives. Sadly, certainly in Canada's case, this voluntary leadership role has essentially disappeared. The bodies of the Convention such as its Standing Committee, the Scientific and Technical Research Panel, working groups, and panels of national focal points on several issues have also provided mechanisms and documents to support national efforts.

What the Convention seldom does, however, is provide direct cash support to projects, management or long-term conservation of sites particularly needed by countries with few resources nationally. The Convention does manage (and benefit from service fees for this effort) significant project funds from other sources but these lie outside the core budget of the Convention each year. Exceptions include small grants (usually less than 40,000 Swiss Francs) available through an application process that developing nations sometimes have succeeded in receiving. Very few such grants are possible each year. These grants have supported accession, development of management plans, and restoration efforts for sites ravaged by ecological disasters such as fire, hurricanes and drought.

What Have Individual Nations Done on Their Own to Use the Ramsar Convention to Their Own Advantage?

This is hard to measure quantitatively. However, the following examples are worth noting:

(a) In the run-up to the 1987 Third Meeting of the Contracting Parties to the Ramsar Convention (COP3), Canada nominated 12 Ramsar sites, one from each of its political jurisdictions (ten provinces and two territories). This was very much based upon a political incentive to demonstrate Canada's unified support for the treaty and its commitment to hosting the Third meeting. The sites brought forward were nominated by local and jurisdictional representative agencies. Regrettably, in the past decade, the federal government has essentially abandoned its support of most Ramsar interests in Canada and resulting in creation of only one new Ramsar site in that period. Canada's Ramsar network is now stuck at a total of 37 sites nationally.

(b) In the United Kingdom, some folks wonder why today there are a very large number (169 in the United Kingdom proper and another 25 in dependencies and overseas territories) of Ramsar sites for a relatively small nation. One reason is the country's general availability of national legislation for planning and environmental protection. A second is a strong, ongoing public ethic for

conservation. Creation of a Ramsar site in the United Kingdom is akin to protected status in that country. This is not at all true in many other countries.

(c) Mexico has indicated that wetlands are a critical issue in its efforts to ensure national security. With extensive rural to urban mobility brought on by drought in that nation over two decades, millions of its residents have flocked to unpopulated wetland areas, especially near the ocean coasts. Social and environmental insecurity issues have risen in these areas. Today, there are 139 Ramsar sites in Mexico, but 134 of those were established by several successive governments since only 2000. Like the United Kingdom, the federal government of Mexico has seen an advantage in advancing environmental conservation of wetlands through Ramsar designation. In a "first steps first" approach, they recognized that wetland management plans, staff and adequate resources will not always immediately follow establishment of Ramsar sites. But the sites are now "on the map" and provide a public focus for conservation and protection goals as well as management of the social issues created in their use by a huge transient population.

(d) In the United States of America, 32 Ramsar sites now exist with about half in National Wildlife Refuges or National Parks. This reflects that country's efforts to proceed expeditiously first on federal lands without thus needing state or local support. But in recent years, successive federal administrations have found such support helpful in further expanding the national network of Ramsar sites.

(e) In Uganda, 12 Ramsar sites exist in this relatively small nation. However, 11 of these were established since 2004 when they introduced a strongly motivated National Wetlands Program and Policy. This has greatly engaged local communities, reduced tensions and increased security.

Ecological Pressures and Pluses

In 2007, managers of 68% of Canada's Ramsar sites thought that the designation helps to maintain the ecological character of the site by: (i) communicating a higher level of importance; (ii) influencing land use planning, development decisions and environmental assessment; and (iii) improving management through greater attention and a long-term focus on ecological health. Ramsar site managers identified the two most valuable benefits of site designation as: protection of the site and surrounding area, and public awareness of the value of Ramsar site designation to community building and local economic development. All of these factors have some direct or indirect positive ecological effects. Similar results have been seen in the results from other surveys of Ramsar site

designations in the United States, Mexico and Africa (see below).

Economic Issues

The existence of Ramsar Sites has been demonstrated to have economic advantages through three published surveys of Ramsar Site Managers. These were completed in Canada, the United States and broadly across Africa (Environment Canada 2008; Gardner and Connolly 2009; Gardner et al. 2009). All three surveys demonstrated the overall and ongoing national benefits for investment in dues to this Convention. An additional national management survey has also been undertaken in Mexico. In Canada's case, the survey was undertaken specifically to counter a senior management belief that membership in Ramsar was not worth the cost. Managers wanted to know if it was really worth that cost to continue to be a Contracting Party. The Government of Canada annually reviews its international commitments in efforts to reduce spending.

Governments in tougher economic times and with extensive budget pressures have often questioned being good environmental citizens unless a demonstrated economic return for dues to international treaties is also shown to exist. The surveys noted above generated information that showed the economic benefits of being engaged in such a treaty may not always be obvious or direct, but were positive. In most cases, returns of economic importance have included greater tourism locally around Ramsar sites; greater benefits for waterfowl investments; increased research and management grants; and increased contributions to local environmental organizations (as discussed earlier in this paper).

Can Ramsar designation have negative effects? Apparently so. In several southern Asia nations including India, local managers have noted their reluctance to see the creation of more Ramsar sites with no new resources to assist them in undertaking the many new commitments this entails. Quite interestingly, this same message has been heard by me from local site managers in countries as diverse as Canada, the Bahamas and Mexico.

In Iraq's case, a great deal of concern exists surrounding the designation of just one Ramsar site so far. But what a site it is. The highly threatened Hawizeh Marsh in Iraq ─ linking directly to the Al Azim Marsh in Iran (not a Ramsar site) ─ has been the subject of concerted efforts to allocate more water to this aquatic system. Once one of the key wetlands in southwest Asia, it has been highly degraded since 1990 (Partow 2001). In 2004 an internationally-supported effort was initiated to try to restore this marshland, ravaged not only by government politically-directed drainage, but also by years of

drought and poor water management. Early successes in reflooding the marshes have been reduced by: an extended period of drought in the whole Tigris-Euphrates Basin; hydro-electric and agricultural irrigation dam and dyke construction in Iraq and neighbouring states (Turkey, Syria and Iran); and regional military conflicts. The ongoing damage to Hawizeh Marsh led to the inclusion by Iraq of this Ramsar site on the Convention's Montreux List of ecologically threatened sites in April 2010. A very good review of the history of water issues and wetland conservation efforts in Iraq has recently been published by Alwash (2013).

ELEMENTS OF A NATIONAL WETLAND CONSERVATION INITIATIVE FOR IRAQ

Since 2003, Iraq has taken significant steps to develop a national program focusing on biodiversity assessment including surveys of key biodiversity areas. This has included studies to help restore the southern marshes of Iraq as well as to assess the status of key sites in other regions of the nation. Creation of the Hawizeh Marsh Ramsar Site in 2007 and the Central Marshes National Park in 2013 are parts of this overall initiative. The rationale remains that these biologically-rich areas of Iraq are key areas for enabling the restoration of the natural capital that is essential to human well-being of local people and future economic and social security in Iraq. For example, the establishment of secure, safe water supplies in the southern marshes of Iraq is essential to local communities, national fisheries stocks, wildlife populations reestablishment, livestock production and natural resources use from the marshes throughout Iraq.

The total land and water area of Iraq is about 44 million hectares. While wetlands exist in many forms throughout Iraq, the freshwater marshes in southern Iraq are the best known. And yet there still remains inadequate data on wetland distribution in many parts of the nation. IUCN and Wetlands International (Scott 1995) provided some data for 33 wetland sites plus major reservoirs throughout Iraq that could qualify as future Ramsar sites. These total 1.38 million hectares of wetlands, or about 3.1% of Iraq's total area. Some 82% of those listed wetland sites were identified in the south, in the regions of Amara to Basrah and the Delta/Gulf. The United Nations Environment Program (Partow 2001) estimated that the total area of Iraq wetlands in southern Iraq covered 1.5 to 2.0 million hectares prior to wetland drainage and was reduced by 90% by the Saddam Hussein Regime through the 1990s to 2003 period. However, overall, little data on most other wetlands in Iraq except for this southern area seem to have been compiled.

Facilitated Action

Since 2003, some of the new wetland initiatives in Iraq that have come to fruition include:

- Rapid assessment of Key Biodiversity Area sites in the southern marshes and in Kurdistan to assess and make recommendations for their ongoing management (2006 to 2012).
- Establishment of temporary satellite-based monitoring and inventory of habitat types in the areas of the Hammar Marsh, Central Marsh and Hawizeh Marsh (2006).
- Social and economic assessments of many aspects of human use and communities in these marshes regions, for example assessment of the status of water buffalo.
- Training courses for Iraqis in environmental survey and assessment from 2005 to 2011.
- Developing a Management Plan and implementation of pilot projects for a proposed National Park in the Central Marshes area in 2008 and declaration of this Park in 2013.
- Iraqi participation in international environmental agreements including the Convention on Biological Diversity (CBD) and Convention on Wetlands (Ramsar). Iraq acceded to the Ramsar Convention and designated its first Wetland of International Importance at the Hawizeh Marsh in October 2007.
- Development of a Management Plan for the Hawizeh Marsh Ramsar Site from 2007 to 2009.

In the last nine years, national wetland initiatives has been led by Iraqi government ministries (particularly the Ministry of Water Resources and the Ministry of Environment) with support by Nature Iraq and international non-government organizations (such as BirdLife International). Such efforts expanded incrementally since 2005 to include a view that all biologically rich areas, not just the southern marshes, are critical to the future of Iraq. They are seen as pivotal areas for the economic stabilization of Iraq as their resources (water, fish, wildlife, people, communities and oil, gas and minerals) are critical to Iraq's future. With this in mind, over the next years it is important that Iraqis continue those efforts with the leadership of the Government of Iraq.

Wetland Inventory

A series of initiatives related to wetland inventory are feasible now, with low cost and high benefit. These include:

(a) Summarization of the state of knowledge from past and recent wetland inventory efforts, including integration of digital data sets and mapping information conducted by UNEP, Nature Iraq and others

from 2006 to 2009 for the Hammar, Central and Hawizeh Marsh areas.

(b) Enhancement of an interagency remote sensing team to develop wetland inventory and monitoring needs, building on existing remote sensing work on wetlands to date in Iraq. The focus must remain on developing expertise, gathering and housing the relevant biological data and technology transferring this to the national level. I suggest:

- Gather all digital map and data from various sources to capture what maps and classification systems are in use. Create a digital database of wetland information that could be extended to all ecosystem types.
- Plan more regional and national Wetland Technical Workshops with experts on wetland inventory to assess the state of knowledge and state of readiness for management of the resource.
- Prepare an Iraq Wetland Classification System, based on field experience and mapping projects to date.
- Complete inventory of all the wetlands and key habitat areas of Iraq not yet mapped. Previous incremental pieces of work may have already mapped over 60% of all wetlands of Iraq. That work should extend to all the land and water surface area of Iraq including its marine zone.
- Target key areas for detailed repeat monitoring. These sites include Important Bird Areas, Key Biodiversity Areas and future potential Ramsar Convention wetland sites of international importance.

A National Wetland Policy

Iraq should create a National Wetland Policy Statement. It would outline the Government's vision of the importance of wetlands and its commitments to achieve conservation of wetlands across the nation. It need not be a long document, but would benefit from guidelines created by the Ramsar Convention (Rubec et al. 1999) and national wetland policies developed in other nations (Rubec 2002).

A Wetland Conservation Network

While Iraq now has one Ramsar site and has announced it will soon be nominating four additional sites, what is the plan to do more? While the publication by Scott (1995) laid out a tentative list of many other possible Ramsar sites in Iraq, is that the only way to proceed? Should Iraq simply start ticking of which of those sites eventually get nominated for a conservation objective? I hope not. Instead, I suggest a very different approach.

In Canada's case, after several decades we finally decided to set priorities and not continue to proceed randomly. A National Ramsar Strategic Plan was created (Rubec and Kerr-Upal 1996). We identified a set of objectives to expand the existing list of Ramsar sites. It was hoped that future sites should be created: (a) where community

interest and voluntary support existed; (b) on sites of ecological as well as social or cultural importance; (c) on all the wetland types of the nation not just coastal waterfowl and migratory bird areas; and (d) in geographic areas not yet included in the network. We identified specific gaps in these categories.

I think this could give guidance to countries like Iraq. Yes please create new Ramsar sites in more of the southern marshes critical to birds. But look across the country. Consider the examples cited earlier in this paper as to how countries have used Ramsar designation as a national tool (such as Canada, United Kingdom, Uganda, the United States of America and Mexico). This could include creating more Ramsar sites representative of Iraq's full suite of brackish coastal marshes, salt-water marine areas, mountain wetlands, oases, seasonal wetlands and river shores. It could include one in every governorate; it could include sites suggested by the cultural diversity of the nation; and so on. Merely emulating the lists created decades ago for waterfowl conservation objectives is worthwhile but not the only path forward.

AN OIL AND GAS FUTURE

Iraq's first Ramsar site, Hawizeh Marsh, is facing an uncertain future with both strong needs for habitat conservation and for oil and gas development. Can the ecological character of Hawizeh Marsh be maintained as committed to by the Government of Iraq in 2007 in its accession to the Ramsar Convention? Iraq has already signalled its concern for the ecological character of the Hawizeh Marsh by listing it under Ramsar's Montreux Record. This site is underlain by a globally significant oil and gas deposit (including the Majnoon Oil Field in Iraq and in bordering areas of Iran). Can oil and gas development proceed for deposits lying below this Ramsar site? The answer to both questions can be yes if the will and financial commitments of the Iraqi agencies involved is well thought-out.

In my own country, at least three similar wetland site examples exist. In the next ten years, these places will likely all see significant oil and gas development with economic benefits and only minor environmental impact, if wisdom prevails. These sites are:

(a) Kendall Island Migratory Bird Sanctuary (MBS): This area is located in Canada's Subarctic Mackenzie River Delta of the Northwest Territories bordering the Bering Sea and the Arctic Ocean. The MBS is a 609 km^2 site with a series of much larger habitats in the Delta for over 70,000 migratory waterfowl, but it also has two vast gas deposits. Numerous potential hydrocarbon extraction sites are proposed in the proximity of, or on, this island. It is estimated that 4.8 million cu

(136,000 cubic meters) of natural gas exists here. Two anchor field facilities, gathering pipes and support infrastructure are proposed to supply 50% of the volume of gas that would be transported by a Mackenzie Valley Pipeline that is not yet constructed, but has been proposed for over 25 years. Exploratory drilling and seismic activity research have been completed.

(b) Long Point National Wildlife Area (NWA): The Long Point NWA is found in Ontario in southern Canada, on the northern shore of Lake Erie, one of North America's Great Lakes shared with the United States. It is a long sandspit peninsula, protected through its partial designations as the NWA, an MBS and several private conservation properties — being the home of some of our rarest migratory bird habitats and a key area for spring and fall migrations. It is also proposed as a major development site for hydro-carbon extraction.

(c) Sable Island National Park Reserve: Some 300 km southeast of Halifax, Nova Scotia in Canada's off-shore areas of the Atlantic Ocean, lies the low-lying, windswept Sable Island. It was recently set aside as Canada's latest National Park Reserve (e.g. our first step towards formalization of a national park). The island is only inhabited by rotating staff maintaining a key weather station and hundreds of wild horses, seals and other endangered species. It also lies over a major oil and gas deposit.

These sites share a common problem: the desire to both: (a) exploit significant oil and gas resources beneficial to the Canadian and North American energy market; and (b) protect a highly important, ecologically-significant place. The solution to all three cases is to set aside many traditional approaches to site development that can be very detrimental to surface conditions. The commitment needed would allow development using successfully demonstrated, much less intrusive technologies.

Let's look at three of those (as suggested by University of Wisconsin, 2013):

Lateral Drilling: Lateral drilling (also called "horizontal drilling") is indicated as greatly reducing (by up to 90%) the number of wells required to be sunk for a large oil or gas deposit. Some 3000 to 4000 such wells are being drilled each year globally, allowing easier access to shallower horizontal deposits. So this idea is not exactly new and there is a lot of experience available. Individual well costs and technology are higher, but the total financial cost is highly advantageous. Fewer overall wells results in major reduction in costs.

Bendible Flexible Pipes: Such piping and different drill bits now are used in association with lateral drilling technology,

allowing faster and easier access to many oil and gas deposits.

- Gas to Liquid: New technology is allowing conversion of gas such as methane to liquid product. This results in cost-effective pipeline or tanker methods for shipping this natural gas to markets.

Could these be applied to the Hawizeh Marsh case? I think yes. This does have a higher cost per well in Canada and would also have an incrementally higher cost than historically common practices used in Iraq. In my visit to Iraq in October 2013, it was noted that most new oil and gas wells in southern Iraq are using lateral drilling technology. This is very encouraging but now important to codify as a technical requirement. As noted earlier, international scorn of other nations usually arises when governments have tried to permit destructive development in Ramsar sites. Is this a desirable outcome in Iraq? I hope not. But it would likely occur with traditional drilling technologies in Iraq. Iraqi decision-makers appear to understand the opportunities in being both good environmental managers and smart economic visionaries. The best result is protection of this and future Ramsar sites in Iraq with sub-surface drilling using the latest technology. With world oil prices currently hovering above $100/barrel for Texas Light Sweet Crude Oil, one might be encouraged by the wisdom of marginally-reducing overall profitability per well for sound site management and greater overall profits.

Responsible Social Licence

Another factor of importance in Iraq's case, as demonstrated globally, is the concept of Responsible Social Licence. Is it justifiable to generate oil or gas profit at the expense of destroying the livelihood of local people? Some governments apparently think so. Examples include palm oil plantation developments in southeast Asia, and large hydroelectric developments in many parts of the world. But this is recognized as an undesirable outcome in many nations.

Can a portion of the profit margin be specially directed to the benefit of local people most affected by a new development? The answer of course is yes. A progressive approach has been seen in several nations where local people are guaranteed: (i) an active role in decision-making; (ii) to be partners in the development ensuring benefits such as job creation; and (iii) to receive written and legally-enforceable Local Peoples Benefit Agreements. In Canada's case, this often has involved agreements with local indigenous (we say "aboriginal") landowners and users. It has included: long-term guarantees for jobs in the development; funding of culturally, spiritually and economically important

benefits to local communities; and significant financial investments in local infrastructure. These investments include job training, hospitals, housing, schools, veterinary facilities and electricity.

THE HAWIZEH MARSH MANAGEMENT PLAN

A draft Hawizeh Marsh Management Plan completed early in 2009 (Nature Iraq and Iraq National Marshes and Wetlands Committee 2009) could be used to help define the future. It focuses on 13 management issues identified in a series on ministerial, interministerial and public stakeholder meetings held in 2007 and 2008. These issues are:

Management of the Environment:

1. Conservation of Natural Heritage
2. Environmental Monitoring and Protected Areas

Management of Water Issues:

3. Water Quality and Quantity Management
4. Sustainable Development and Infrastructure Planning (Bridges, Roads, Dykes)

Management of Cultural and Social Issues:

5. Maintaining Cultural Heritage
6. Promoting a Land Tenure System
7. Creating a Legislative, Policy and Planning Framework
8. Managing Border Issues with Iran
9. Understanding Stakeholder Demands, Involvement and Needs

Management of Economic Opportunities:

10. Managing Agricultural Development and Impacts
11. Fisheries Restoration and Development
12. Facilitating Oil Development
13. Consideration of Future Tourism Opportunities

The Management Plan completed in January 2009 for Hawizeh Marsh lays out 93 initiatives towards implementation of the Plan under the above management issues. Several "First Step Projects" are proposed:

- Develop a Hawizeh Marsh Risk Management Assessment to address all current threats to the Hawizeh Marsh taking into account water and natural resources users, and planned and future impacts (such as oil exploration, fisheries and agricultural expansion, agricultural irrigation, cultural and traditional uses, tourism and transboundary flows with Iran).
- Complete the Installation of the Hydrological Monitoring Equipment procured by Nature Iraq within the New Eden Project in 2007, one station to be placed on the Kassarah River and one on the Swaib River.
- Create a Land Use Planning Framework and digital map base of Hawizeh Marsh to include information such as: delineation of community development areas, wildlife and fish protection or special management zones, agricultural lands, border security areas,

hazard lands and waters such as mine fields and water management units.

- Consult Iran on the creation of a Hawizeh─Al Azim Marshes Joint Management Commission for the transboundary marshes to promote shared responsibility and improved management of the Iran-Iraq border wetland resources.
- Establish a Hawizeh Marsh Stakeholder Advisory Committee or similar citizen policy group that represents the broad range of interests of the community.
- Undertake a Survey of the State of Hawizeh Agriculture on the borders of the Marsh, highlighting soil and water conditions, including the impact of salinization. This survey should describe the potential for agriculture production integrated and compatible with the marshes environment.
- Organize training and education Sessions on Sustainable Hunting and Fishing Practices with local communities to discourage the use of unsustainable harvesting practices (such as fishing with electro-shocking, explosives and poison). This should be translated into local community-based initiatives and investments in local fish and wildlife associations with guidelines or regulations as needed.
- Ensure that Protection of the Ecological Character of the Hawizeh Marsh, a Ramsar Convention treaty requirement, is fully considered in environmental assessments of the introduction of oil and gas development including the use of modern lateral drilling techniques to minimize environmental impacts.
- Continue, and expand as appropriate, a rigorous Hawizeh Marsh Strategic Monitoring Program on the hydrology, water quality, biota, soils and sediments for the Marsh. Monitoring of hydrology should include: (a) continuous records of water levels over time in several locations; (b) accounting of surface inflows and outflows; and (c) long-term, real time monitoring of water elevation at two separate locations within Hawizeh Marsh, one in the northern part and one in the southern part of the Marsh.
- Undertake studies to design a Hawizeh Marsh Cultural Heritage Centre in the Hawizeh Marsh area to encourage the collection of cultural artifacts, language dialects, photographs, music, art, and books; to encourage Iraqi and international media research and interest on the unique cultural heritage of this region; and to instill pride of local peoples in this area's heritage.

In the discussions about Management Plans for the Hawizeh Marsh Ramsar Site and the Central Marsh National Park to the west in the Chebayish area, the importance of local marsh people's culture was highlighted.

Recommendations in both draft management plans include the need for tangible recognition of cultural and historical values, artifacts, religious traditions, institutions and sites. The promotion of these valuable human assets in the face of major development is very important. For example, the need to allocate resources for creation of local historical records through a new museum, recording traditional music, lore and storytelling all were identified.

CONCLUSIONS

Simply stated, wetlands are essential to the future economic, social and cultural security of Iraq. There is a significant opportunity to allow expansion of a national initiative to advance knowledge of their location, characteristics and economic as well as ecological importance. A national wetland classification system, mapping surveys and digital data bases are needed. These could support creation of a national network of additional Ramsar sites forming a primary tier of conserved wetlands in Iraq. This can draw on knowledge of these wetlands' geography, ecological types and values. In border wetlands such as found at the Hawizeh-Al Azim Marshes, the future of economic development in sectors such as oil and gas and easing of border tensions with Iran will be tied to a balanced approach. This will involve both environmental conservation and the best technological solutions available. The case of Hawizeh Marsh is important. It is where the oil will hit the road first. Can conservation and oil and gas development co-exist? It is possible, but it would have to be a conscious decision and commitment by the Government of Iraq as part of a national wetland plan.

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Clayton Rubec has a wide range of policy and science program leadership, expertise and experience from positions over 38 years with the Canada Department of Environment, Ducks Unlimited Canada, the North American Wetlands Conservation Council (Canada), the Canadian International Development Agency, the University of Waterloo and the Centre for Environmental Stewardship and Conservation. He has acted as a senior consultant and advisor on environmental conservation and institutional capacity building programs for several provincial, national and foreign governments drawing on his international and Canadian career experience. In Iraq, he has assisted the Iraq National Marshes and Wetlands Committee

and Nature Iraq to advance inter-ministerial environmental conservation initiatives, develop policy documents, and assist the national government to engage in the Ramsar Convention on Wetlands. He assisted in developing national wetland management courses used in Canada, Iraq and Mexico and has led and organized many international workshops and conferences. He has been a guest lecturer at over 30 universities, an invited presenter at many symposia, and a panelist, conflict resolution facilitator and conference chair. In 2000, he chaired and led hosting of the largest ever non-government science and policy meeting on wetlands management, the INTECOL VI Millennium Wetlands Conference, with several thousand participants from 65 nations.

Nationally, he has led the creation and implementation of new wildlife and habitat conservation programs using innovative taxation measures, ecological land survey and remote sensing technology, and national science coordination. Under the Ramsar Convention, he led initiatives to produce Technical Guidance reports on several subjects, and chaired international task forces. He was a frequent representative from 1990 to 2008 at meetings of the Ramsar Standing Committee and the Conferences of the Contracting Parties. He has travelled to 45 nations and authored or co-authored in excess of 210 reports and papers. Clayton lives in Ottawa, Canada. He has B.Sc and M.Sc. degrees and related post-graduate training. He has received several national and international awards for his work and leadership.