سند تشریحی طرح حفاظت از تالاب های ایران

CIWP full description

«طرح حفاظت از تالاب های ایران»

تیر ۱۳۸۲

UNDP gef سازمان حفاظت محیط زیست

15 July 2003

PROJECT FULL DESCRIPTION

Project Number:	**PIMS 980**
Title:	Conservation of Iranian Wetlands
Duration:	7 years
Implementing Agency:	United Nations Development Programme (UNDP)
Executing Agency:	Department of Environment
Requesting Country:	Islamic Republic of Iran
GEF Focal Area:	Biodiversity
Operational Programme:	OP 2: Coastal, Marine and Freshwater Ecosystems
Strategic Priority:	SP 1: Strengthening Protected Area Systems (and some relevance to SP 2)

SUMMARY

The project's goal is to catalyse the sustainability of Iran's system of wetland protected areas (WPAs), thereby enhancing its effectiveness as a tool for conserving globally significant biodiversity. The project's objective is to systematically remove or substantially mitigate threats facing globally significant biodiversity and sustainability at two demonstration sites, while ensuring that the lessons learned through these demonstrations are absorbed within wetland protected area (WPA) management systems throughout Iran and most particularly at a set of target replication sites. Given that a range of similar threats, root causes and barriers face protected wetlands across Iran – particularly the tendency for key threats to originate within a wider watershed area outside of WPA boundaries – a demonstration of their removal will be of broad relevance and potential replicability.

The project will place substantial emphasis on demonstrating approaches to conservation, sustainable use and threat removal/mitigation at WPAs within the Lake Uromiyeh Ecological Zone (LUEZ). LUEZ, part of the Lake Uromiyeh Basin (LUB), includes Lake Uromiyeh itself, a c. 5,000 km^2 hypersaline lake and National Park in the highlands of northwestern Iran, together with various ecologically connected and smaller wetlands of international importance. Further support will go towards ensuring conservation and sustainable use of Lake Parishan, which is located within Arjan Protected Area in Shiraz Province in southern Iran. Finally, GEF support will ensure that lessons learned at project demonstration sites will flow through the wetland management system, thereby positively influencing management at WPAs throughout Iran.

COSTS AND FINANCING (US$):

GEF:

Project Brief	**$2,915,000**
PDF A	**$25,000**
Block-B Preparatory Funding	**$347,400**
Sub-total GEF:	**$3,287,400**

Co-financing:

Type / *Source*	Grant/Cash (Full Project)	In-kind support (Full Project)	In-kind support (PDF B)
Government (PDF-B)			$100,000
Government (IBRD-financed) (Irrigation Improvement Project – Environment Component) (PDF-B)			$200,000
Government	$9,115,000	$305,000	

Netherlands	$600,000		
Total	$ 9,715,000	$305,000	$300,000

SUB-TOTAL CO-FINANCING: **US$10,320,000**

Total Project Cost
(excluding Block A & B preparation cost): **US$12,935,000**
(including Block A & B preparation cost): **US$13,607,400**

ASSOCIATED FINANCING : Government investments in wastewater collection and treatment and erosion control: estimated at US$ 40 million

GEF FOCAL POINT ENDORSEMENT:

Name: Mr. Bozorgmehr Ziaran, Director General, International Economic and Specialised Affairs, Ministry of Foreign Affairs
Date: 18 June 2003

IMPLEMENTING AGENCY CONTACT:

Tehmina Akhtar, Regional Co-ordinator, Biodiversity & International Waters, UNDP-GEF, Tel: (212) 906-5460; Fax: (212) 906-6998.
E-mail: tehmina.akhtar@undp.org

List of acronyms

CBD	Convention on Biological Diversity
DoE	Department of Environment
EC-IIP	Environment Component – Irrigation Improvement Project
EIA	Environmental Impact Assessment
EHC	Environmental High Council
GEF	Global Environment Facility
IBA	Important Bird Area
IIP	Irrigation Improvement Project
LUB	Lake Uromiyeh Basin
LUBMA	Lake Uromiyeh Basin Management Authority
LUEZ	Lake Uromiyeh Ecological Zone
MFA	Ministry of Foreign Affairs
MoAJ	Ministry of Agricultural Jihad
MoRT	Ministry of Roads and Transportation
MPO	Management & Planning Organization
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-governmental Organisation
UNDP	United Nations Development Programme
WPA	Wetland Protected Area

1. COUNTRY OWNERSHIP

1.1 Country Eligibility

1. Iran ratified the Convention on Biological Diversity (CBD) on 11 June 1996 and is eligible for technical assistance from UNDP.

1.2 Country Drivenness

2. The project's objectives, strategies, and activities are consistent with key national and sector development plans, policies, and strategies as outlined in paragraphs 33-36 below. In addition, **Table 1** below highlights specific linkages between the project and the National Biodiversity Strategy and Action Plan (NBSAP).

Table 1: Linkages between Project and NBSAP

	NBSAP strategic area	**Project linkage**
1	*Public awareness and participation*: establishment of formal and informal training networks involving the private sector and non-governmental organisations to strengthen conservation activities and move biodiversity into the mainstream of communities. In this context, DoE in 1998 established a Participation Bureau to provide legal counseling and logistical support to environmental NGOs.	The project will work with DoE's Participation Bureau to raise public awareness and encourage participation in activities at demonstration sites. It will also support capacity building and participation of NGOs through the creation of an NGO Forum and possibly a new umbrella NGO in the Lake Uromiyeh Basin.
2	*Biodiversity information systems*: Specific actions include data collection, studies and research on biodiversity, better use of traditional knowledge and the establishment of biodiversity labs and research institutes.	The project will build capacities within DoE Tehran to collect, manage and disseminate information on the biodiversity of wetland protected areas.
3	*Sustainable use*: Actions include: develop sustainable use indicators; environmentally sound management of agriculture and fisheries; laws and regulations for eco-tourism.	The project will encourage environmentally sustainable behaviour in the agriculture and fisheries sectors. It will provide support for the creation of visitor management plans and related support for ecotourism.
4	*Integrated biodiversity conservation*: Actions include: establishment of co-ordinating committees for conservation of biodiversity; enhanced support for protected areas; programs for protecting endangered species.	The project will provide in-depth support for various activities within this NBSAP strategic area.

1.3 Endorsement

3. The project has been endorsed by the GEF Operational Focal Point in a letter dated 18 June 2003 (see **Annex 2**).

2. PROGRAM & POLICY CONFORMITY

2.1 Program Designation & Conformity

4. The project's emphasis on strengthening protected area management and on demonstrating the integration of biodiversity conservation criteria into water resource management within the surrounding productive landscape is consistent with the objectives of Operational Program 2, Coastal, Marine and Freshwater Ecosystems. The project follows an ecosystem approach based on identification of the driving forces controlling the status and trends of biodiversity in the project area. It incorporates the main OP objectives of conservation and sustainable use, works within areas of priority national interest and emphasises the importance of replication. Outputs reflect those called for in the OP, including: improved PA management; removal or mitigation of key threats by addressing their underlying causes; integration of biodiversity within sector policy; enhancement of sustainable use, and; institutional strengthening.

5. The GEF has recently approved a set of Strategic Priorities to guide its support under GEF III and design of this project has taken account of these Priorities. The project's design has been modified to be consistent with Strategic Priority I, i.e., Catalysing Sustainability for Protected Areas. It will achieve this goal by demonstrating sustainable approaches to management at wetland protected areas (WPAs) within the two sites, by promoting replication and by strengthening overall WPA management structures.[1] The project supports key objectives under this priority, as follows:

(i) *Developing capacity for long-term sustainability*: with emphasis on institutional, managerial and individual capacities at Uromiyeh and Arjan National Parks.[2] In addition, the project will include activities that will synthesize lessons learned for policy and regulatory formulation regarding the protected area system as a whole at the national level.

(ii) *Local communities and community-based organizations* will play an important role in project implementation, as well as benefitting from the development of alternative sustainable livelihoods, including the dissemination of methods for sustainable use of economically important natural resources.

6. The project will also contribute to Strategic Priority II – Mainstreaming biodiversity in production systems. As wetland sites within closed drainage basins, the demonstration protected areas are subject to substantial pressures from economic activites within their drainage basins. It is thus essential under the circumstances to work closely with relevant economic sectors, particularly agriculture and fisheries, to ensure that conservation and development occur in an integrated, mutually beneficial manner within a broader, watershed-level landscape.

[1] The project brief uses the term 'wetland protected area (WPA)' to refer to 36 nationally and/or internationally (Ramsar) protected areas which consist entirely or to an important degree, of wetlands. The project's focus is therefore not on the PA system as a whole, but rather on this important sub-set of PAs. See para. 26 and Annex 6 below for details on the overall WPA system.

[2] Lake Parishan is located within Arjan National Park and will be the site of project demonstration activities.

2.2 Project Design

2.2.1 Sector issues, root causes, threats, barriers, etc., affecting global environment

Environmental baseline

7. The Islamic Republic of Iran's more than 1.6 million km^2 of land and water support a rich and varied diversity of life. Biogeographically, much of the country lies in the Palearctic realm, although areas of the southwest and southeast support fauna characteristic of the Afro-tropical and Indo-Malayan sub-tropical realms, respectively. Iran is considered to be a bridge between four major plant geographical regions—Irano-Turanian, Euro-Siberian, Saharo-Arabian and Sudanian. This position at the confluence of various faunal and floral regions has bestowed upon the country important levels of biological diversity. Thus, for example, in addition to being a speciation centre of Holarctic desert flora, Iran supports some 8,200 plant species nationally, almost 2,500 of which are endemic. Studies have confirmed the presence of more than 500 species of birds, 160 species of mammals and 164 species of reptiles (26 of which are endemic).

8. Surprisingly perhaps for a country dominated by arid and semi-arid regions—over 60% of its land is classified as such—Iran possesses a large number and wide variety of wetlands. Over 1,000 have been identified thus far.[3] These range from the inlets and marshes of the Caspian lowlands to the natural inland delta of Sistan in eastern Iran; from the vast salt lakes of the central plateau to the Mesopotamian deltas at the head of the Persian Gulf; and from the lakes of the Turkman steppes to the tidal mangroves and mudflats of the Persian Gulf coast.

9. Iran's wetlands may be grouped into the following seven major systems:

- wetlands of the south Caspian lowlands in Gilan and Mazandaran Provinces in the north;
- wetlands of the Uromiyeh Basin in Azarbaijan Province in the northwest;
- wetlands of central Fars Province in the southern Zagros mountains;
- wetlands along the Persian Gulf and Gulf of Oman coasts in the south;
- wetlands of the Sistan Basin on the border with Afghanistan in the east;
- wetlands of North Zagros, in Kermanshah and Kurdistan Provinces, and;
- wetlands of Khuzestan Province in the southwest.

10. Iran's wetlands are of tremendous national, regional and global significance. According to a definitive study on wetlands of the Middle East, Iran supports 63 wetlands that meet one or more Ramsar criteria for international importance.[4] This figure represents nearly 40% of the 160 wetlands of international importance identified within 13 countries surveyed throughout the Middle East. Recent studies by Iran's Department of Environment (DoE) have resulted in an increase in the estimated number of wetlands of international significance to 76. Many of these correspond with the more than 105 Important Bird Area (IBAs) identified.[5] Without a doubt, the global biodiversity significance of Iran's wetlands remains unparalleled in the Middle East. It is equally clear, however, that this biological heritage is under increasingly serious threat.

[3] Personal communication with Prof. Mohammad Mahdavi, University of Teheran, August 2000.
[4] Scott, Derek. 1995. Directory of Wetlands of the Middle East. Wetlands International. Reference is to criteria defined under the Convention on Wetlands (Ramsar, Iran, 1971) based on which a wetland may be eligible for inclusion on the Ramsar List of Wetlands of International Importance.
[5] Evans, M.I., Ed. 1994. Important Bird Areas in the Middle East. Birdlife International.

11. Iran's wetlands represent vital staging and wintering areas for millions of migratory waterfowl using the West Siberian-Caspian-East African and Central Siberian-Indus-South Asian flyways, and also support large breeding populations of many species. Several million waterfowl utilize the wetlands as wintering habitat, while perhaps as many birds again use the wetlands as staging areas on their way to and from wintering areas further to the southwest or southeast. Iran's wetlands are very important for seven species of birds listed as globally threatened in IUCN's List of Threatened Animals, i.e., Pygmy Cormorant (*Phalacrocorax pygmaeus*), Dalmatian Pelican (*Pelecanus crispus*), Lesser White-fronted Goose (*Anser erythropus*), Marbled Teal (*Marmaronetta angustirostris*), White-headed Duck (*Oxyura leucocephala*), White-tailed Eagle (*Haliaeetus albicilla*) and Siberian Crane (*Grus leucogeranus*). Four more threatened species, which formerly occurred in significant numbers, but are now only scarce passage migrants or vagrants, are Red-breasted Goose (*Branta ruficollis*), Pallas' Sea-Eagle (*Haliaeetus leucoryphus*), Sociable Plover (*Chettusia gregaria*) and Slender-billed Curlew (*Numenius tenuirostris*).[6]

12. Following a careful review of the global biodiversity significance and other characteristics of all 76 wetlands of international significance,[7] two wetlands were selected as demonstration sites for the present project. The selected demonstration sites are described below.

13. Lake Uromiyeh and satellite WPAs: The Lake Uromiyeh Basin (LUB) is a 51,876 km^2 closed drainage basin located in the uplands of northwestern Iran. Some 33,500 km^2 of the basin consists of mountainous areas, reaching a maximum elevation of 3,608 metres. LUB's area is distributed amongst three provinces: West Azarbaijan (51%), East Azarbaijan (39%) and Kurdistan (10%). Some 1,500 species of vascular plants have been recorded within the LUB, distributed among 85 families and representing about 15% of the total number of flora species found in Iran.[8] At least 290 of these species are recognized as ecologically important (rare and/or endemic). Most of this plant diversity is found within the meadow and grassland vegetation of the mountainous areas, which represent one of 234 sites of global plant importance defined by IUCN / WWF's Centres of Plant Diversity project.[9]

14. The Lake Uromiyeh Ecological Zone (LUEZ, see **Map 1**), as defined by a recent comprehensive study of the area,[10] is located roughly at the centre of the LUB. It is some 12,500 km^2 in area, and includes the Lake itself as well as 28 surrounding, ecologically-connected wetlands.[11]

15. While the activities being supported by the project will involve actions throughout the LUB, the majority of such activities, and the area of biodiversity concern for the project, is the LUEZ. In particular, the southern portion of the Lake itself, together with 1-2 of the satellite wetlands,[12] will be of special interest due to their importance for biodiversity.

16. Lake Uromiyeh, located between East and West Azarbaijan, is considered one of the world's premier examples of a deep (5-8 m) hypersaline lake. It is by far the largest inland lake in Iran and is the largest permanent salt lake in the Middle East.[13] The roughly 5,000-6,000 km^2 lake, which represents LUB's lowest point of elevation at approximately 1,276 m. above sea level, acts as a 'sink' for inflows of water, sediments and nutrients from throughout the basin, as well as a moderator of climate for the area.

[6] This paragraph based on Scott 1995.
[7] See Annex 7 for information on the site selection process.
[8] Ibid.
[9] Heywood & Davis, 1994.
[10] Yekom Consulting Engineers. 2002. *Management Plan for the Lake Uromiyeh Ecosystem.* Report 4 of the EC-IIP Environmental Management Project for Lake Uromiyeh.
[11] Ministry of Jihad-e-Agriculture, Islamic Republic of Iran. July 2002. *Report 1: The Natural Environment of the Lake Uromiyeh Wetland Ecosystem.* Draft.
[12] These will be wetlands selected for restoration during the initial period of the project following further assessment of all of the satellite wetlands.
[13] Unlike most other salt lakes in Iran, the Middle East and North Africa, Lake Uromiyeh does not dry out in summer.

The lake, along with its shores and its more than 100 small, mountainous islands, constitute Iran's largest and probably most important National Park, with an area of 463,600 ha. The area is both a Ramsar site as well as a Unesco Biosphere Reserve.

17. Lake Uromiyeh's ecosystem is a rather simple one. Due to its high salinity, the lake does not support plant or fish life. Its primary producers are dense communities of green and blue-green algae. The high level of production of these algae supports a single, endemic species of brine shrimp, *Artemia urmiana*. *A. urmiana* thrives in the absence of any fish species within the lake, providing a rich food source for many of the bird species which congregate in internationally important numbers at the Lake.

18. Historically the most important among these bird species has been the globally threatened Greater Flamingo (*Phoenicopterus ruber*) which is found year-round on the lake but typically in greatest numbers during its breeding season. Up to 100,000 flamingos have been recorded at the Lake. Flamingos breed in colonies, and Lake Uromiyeh is their only regular breeding site in Iran. A recent report described it as being "the most important breeding site (over 10,000 pairs) for this species in Eurasia."[14] The flamingo breeding colony is located on the low islands and extensive muddy beaches on Ashk and Doghuzlar Islands in the southern part of the lake. Lake Uromiyeh's flamingos are totally dependent on *A. urmiana* as their food source.

19. Unfortunately, no flamingo breeding has taken place at the site since 1998, probably due to rising salinity levels in the Lake, which have led in turn to sharply reduced *Artemia* populations and drying out around the breeding islands.[15] Attempts to initiate harvests of *A. urmiana* may also have contributed to this result.

20. A second important species that breeds at the lake is the globally threatened white pelican (*Pelecanus onocrotalus*). Up to 500 breeding pairs of this migratory species have been counted on the Doghuzlar Islands during their breeding season, after which they migrate to winter in north-east Africa. Unlike the flamingos, pelicans are fish eaters and thus are obliged to take their meals away from the lake, at nearby freshwater wetlands (see below).

21. At least five other species of waterfowl breed at the lake, many of them on the lake's many small islands.[16] In addition, large numbers of migratory shorebirds and *Anas querquedula* use the extensive mudflats surrounding the lake as an autumn staging area. An aerial survey conducted in August 2001 counted some 150,000 waterbirds in the area.

22. Some 12,500 km^2 of plains surround the lake, within which are found 28 ecologically inter-connected wetlands. Of these, 16 are considered 'critical sites'[17] and are already under some type of national and/or international protection. These include 4 Ramsar sites, 8 Important Bird Areas (IBAs), 8 No Hunting Areas (NHAs) and 7 Nationally Important Bird Areas (NIBAs).[18] About 546 plant species, 32 species of mammals, 212 species of birds, 33 species of reptiles, 7 species of amphibians and 26 fish species have been identified within this ecological zone. There are important ecological connections among the Lake, its terrestrial habitats (the islands) and these nearby wetlands. In addition to the bird

[14] Yekom, 2002. Breeding pairs in 1977 were estimated at some 11,000 pairs. From 1991-1998, the estimated annual number of breeding pairs ranged from about 2,500 to nearly 6,000.
[15] These conditions are described in detail in the threats analysis (see below).
[16] These islands support other significant biodiversity. Several of the islands, notably Ashk and Kaboodan, support almost pristine stands of Azarbaijan pistachio (*Pistacia atlantica*), almost certainly the only such stands remaining in Iran. The same islands also support significant populations of two globally threatened mammal species, the Persian fallow deer (*Cervus dama mesopotamica)* and Armenian wild sheep (*Ovis orientalis gmelini*), which is listed by IUCN as vulnerable.
[17] Yekom 2002.
[18] Some of the sites have multiple designations.

species mentioned above, eight other bird species identified as globally threatened have been recorded within the ecological zone.[19] These are: *Pelecanus crispus, Phalacrocorax pygmeus, Anser erythropus, Branta ruficollis, Oxyura leucocephala, Marmaronetta angustirostris, Aythya nyroca, Vanellus gregarious, Otis tarda, Falco vesperitinus* and *Falco naumanni.*

23. Parishan Lake: Located in the southern Zagros Mountains of Fars Province, Parishan Lake is a shallow but permanent lake, having a maximum area of 4,200 ha. Its waters are oligotrophic and vary from brackish to saline, largely depending on quantities of freshwater inflow. It is located at an altitude of 853 meters within a 29,000 ha. enclosed drainage basin. The lake is surrounded by eutrophic marshes, reedbeds and halophytic vegetation.

24. Both Lake Parishan and the related wetland of Dasht-e Arjan are extremely important for waterfowl of various species.[20] They have been called "outstanding examples of freshwater and brackish to saline wetlands characteristic of the highlands of western Iran."[21] Both wetlands support a very diverse flora and fauna, helping to maintain the ecological and genetic diversity of the region. They support at least five threatened species of birds in appreciable numbers as part of their extremely diverse wetland fauna and flora. These are: *Pelecanus crispus*, *Marmaronetta angustirostris*, *Aythya nyroca*, *Oxyura leucocephala* and *Aquila heliaca*.

25. Marbled teal *Marmaronetta angustirostris* breeds at Lake Parishan and large numbers winter there. Together, the wetlands support over 1% of the regional wintering populations of *Pelecanus onocrotalus, Phoenicopterus ruber*, 11 species of ducks (*Anatidae*), *Fulica atra*, *Grus grus*, and *Larus ridibundus*. Wintering raptors include the white-tailed eagle *Haliaeetus albicilla*, marsh harrier *Circus aeruginosus*, imperial eagle *Aquila heliaca*, saker *Falco cherrug* and barbary falcon *Falco pelegrinoides*. During breeding season, large colonies of herons (*Ardeidae*) and ibises (*Threskiornithidae*) are found at the lake, together with over 1% of the regional populations for *Plegadis falcinellus* and *Platalea leucorodia*.[22]

26. While the majority of project activities will take place at the above demonstration sites, the project as a whole aims to improve management at all of the 36 WPAs throughout Iran.[23] These include 26 sites which enjoy some form of protection at national level (National Parks, Wildlife Refuges, Protected Areas, No Hunting Areas and Limited Hunting Areas), along with 10 sites that are not protected nationally but that are protected internationally under the Ramsar Convention. Demonstration work will take place at five of the above wetlands, including three of Lake Uromiyeh's satellite wetland sites. The remaining 31 WPAs have been termed "target replication sites"; the only criterion for inclusion in this set is that a site should be nationally and/or internationally protected. Of these 31 target replication sites, approximately 5-10 sites will be chosen as "in-depth replication sites," where additional work will be done. Criteria for selection of these sites will be finalized during the project's inception phase, but will certainly include global biodiversity significance and the transferability of lessons from the demonstration sites.

[19] Yekom, 2003. See Annex 6 for additional details.
[20] Dasht-e Arjan and Lake Parishan are managed jointly. However, the recent drought in Iran has led to a drying up of Dasht-e Arjan for much of the year and there is little in the way of management activity taking place. Should climatic conditions change during the course of the project, it might be feasible to expand work at the site to incorporate support for Dasht-e Arjan.
[21] Scott, 1995.
[22] Wetlands International and Ramsar Sites Database. *A Directory of wetlands of International Importance*. See www.wetlands.org/RDB/Ramsar_Dir/IranIslamicRep/ir002DO2.htm
[23] See **Annex 6** for basic information on these sites.

Socio-economic baseline

27. The socio-economic patterns at Iran's wetlands are naturally quite varied, as is the extent to which local communities are dependent upon, and therefore ascribe value to, their respective wetlands. Direct economic benefits, such as fish stocks, water and grazing, are recognised and valued, but indirect benefits are generally under-appreciated – probably due to a lack of awareness. Patterns of resource use at many sites demonstrate a significant rise in exploitation levels over the last ten to twenty years, and in many cases resource use may have reached unsustainable levels.

28. Uromiyeh Lake: The population of the LUEZ was estimated in 1996 at some 592,000 people. An estimated 73,000 of these live within the immediate vicinity of the Lake itself.[24] The main town is the provincial capital of Uromiyeh. Local populations at Uromiyeh Lake have little socio-economic interaction with the lake, due to the limited resources of this hypersaline water body. Aside from the commercial harvesting of *artemia*, some small-scale salt extraction and limited tourism and recreation activities, local populations around the lake have little relationship with the lake. Local communities living around the lake – even villages immediately adjacent to the shore – do not see the lake as a significant part of their potential resource base. The indirect benefits of the lake (e.g. as a tourism resource or as a micro-climate moderator) are either seen as incidental or more often are not perceived at all.

29. Parishan Lake: Lake Parishan is located to the south-east of the town of Khazeroon. The lake is encircled by approximately 13 villages, although the major population concentrations are at the western end (bordering Khazeroon town) and along the southern fringe.

30. The villages of Parishan are largely agricultural, with crops including wheat, barley and various vegetables. Agriculture in the area is dependent on water pumped from the lake or its water table, and water is sometimes supplied to villagers further away via an irrigation canal. Sheep and cattle are also kept.

31. Some of the relatively wealthier villages (which can afford the equipment) fish during the winter months to supplement agricultural and livestock incomes. Villagers have formed a fisheries cooperative to manage their activities.

32. Boats are also used for recreation and local transportation, and hunting of water birds – while illegal – is a widely acknowledged dietary supplement for poorer villagers. Thus the lake plays a fairly central role in the livelihoods of the local villagers, and their awareness of its importance is correspondingly high.

Legal and policy baseline

33. In addition to receiving support from the Constitution,[25] the legal basis for environmental protection efforts in Iran, including conservation of biodiversity, is mainly found in the Environmental Protection and Enhancement Act (1974). Except for some minor changes to reflect the new structure of Government, the Act has not changed since the establishment of the Islamic Republic in 1979. This Act, *inter alia*, established and provided authority to the main institutional actors responsible for

[24] Yekom, 2003, volume 2.

[25] Article 50 of the Constitution of the Islamic Republic of Iran states: "In the Islamic Republic of Iran, the protection of the environment, in which the present and future generations must lead an ever improving community life, is a public obligation. Therefore, all activities, economic or otherwise, which may necessitate pollution or damage to the environment, are forbidden."

environmental protection as well as defining four categories of protected areas (see below, protected area management and regulatory baseline).

34. Apart from Article 50 of the Constitution, there has not been any major new legislation dealing with biodiversity since the establishment of the Islamic Republic in 1979. However, some existing legislation has been amended. Other relevant legislation includes the Game and Fish Law (1967, amended in 1975 and 1996), the Water Distribution Act (1982) and, under the Water Distribution Act, the Executive By-Law on the Prevention of Water Pollution. These laws provide the Department of Environment (DoE) with substantial authority to help ensure sustainable development through co-ordination and oversight of sectoral ministries.[26]

35. Policy formulation and implementation by the Government of the Islamic Republic of Iran has been guided by a series of Five-Year Development Plans. Iran's Second National Socio-Economic Development Plan (1994-2000) initiated a requirement for Environmental Impact Analysis (EIA) for major development projects, while addressing issues of sustainability in the industrial, mining and energy sectors. The Third National Socio-Economic Development Plan (2000-2005) places further emphasis on environmental issues. In particular, two major paragraphs (104 and 105) as well as several sub-paragraphs, address environmental issues such as sustainable use of natural resources, environmental liability, EIA, etc.

36. With support from UNDP-GEF, Iran has been implementing a National Biodiversity Strategy and Action Plan (NBSAP) project. As a result of this project, four strategies have been developed for conservation of biodiversity, each of which is associated with a number of planned actions:[27]

Institutional baseline

37. A number of Iranian institutions have responsibilities in the area of wetland protected area management. These include both sectoral and inter-sectoral bodies operating at national and provincial levels. Those most relevant to the project are highlighted below.

38. *Department of Environment (DoE)*: Primary responsibility for management of protected area wetlands lies with the Department of Environment (DoE). At national level, DoE consists of four Divisions, each under the direct control of the Vice President of the Republic, who is also the Head of DOE. Key responsibilities in the area of wetland protected area management lie with *the Natural Environment and Biodiversity Division*, which includes, *inter alia*, the following Bureaux:

- The Bureau for Wildlife and Aquatics, which has responsibility for research and conservation of wildlife and fisheries throughout the protected areas system of Iran. It includes an ornithology unit.
- The Bureau for Habitat and Protected Areas, which has two sub-divisions, one of which is for inland wetland habitats and protected areas. This sub-division has a wetland unit that acts as DoE technical focal point for the Ramsar Convention.

39. Remaining divisions of DoE include:

[26] For example, Article 26 of the Executive By-law under the Game and Fish Law of 1967 states that "To the extent possible, Ministries, government institutes and other government affiliated organisations are required to take into consideration matters recommended by [DoE] in schemes related to dam and canal construction, changing direction or diversion of rivers, bridge construction, felling forest trees, leasing public rangelands, pest control and other similar actions that are detrimental to the preservation of wildlife."

[27] See **Table** 1 above. The strategies and associated actions were endorsed by the National Committee on Sustainable Development on 15 May 2001.

- *The Education and Planning Division*, which includes a Bureau of Public Participation responsible for NGO liaison.
- *The Human Environment Division* includes a Bureau of EIA, which is responsible for directing the EIA process on the eight designated types of large development projects for which EIA is a prerequisite, e.g., oil refinery development, marine structures, landfills, etc. There is also a Bureau for Water and Soil Pollution.
- *Staff & Parliamentary Affairs Division* includes a Bureau of Legislation and Parliamentary Affairs.

40. At sub-national level, the Department of Environment maintains offices in each provincial capital. Under the direction of a Director-General, these offices are responsible, *inter alia*, for management of all protected areas within the province, with support from DoE Tehran.

41. *Co-ordination and oversight bodies*: The following bodies operate at the national level and are designed to play inter-sectoral co-ordination and oversight roles in, *inter alia*, wetland protected area management:

- Environmental High Council: The Environmental High Council (EHC), which was established by the 1974 Environmental Protection and Enhancement Act (see above), has responsibility for making key government decisions on the environment. The EHC is chaired by the President of the Republic and includes, *inter alia*, the Ministers of Agriculture and Jihad, Construction, Industries, Interior, Housing and Urban Development, Health and Medical Education, as well as the Director of the Management and Planning Organisation (MPO) and the Director of DOE (who also serves as secretary to the EHC).

- Water High Council: The Water High Council was established in order to support co-ordinated decision-making related to the provision, distribution and usage of water in Iran. It is chaired by the President of the Republic and its members include the Minister of Energy, Minister of Agriculture and Jihad, Minister of Interior, the Director of the Management and Planning Organization, the Director of DoE and associated experts.

- National Committee for Sustainable Development, Ramsar Sub-Committee: The National Committee for Sustainable Development, for which DoE also acts as Secretariat, reports directly to the Environmental High Council. The Ramsar sub-committee, which was established in 1999, is one of nine dealing with specialized environmental issues. It has nine sub-committees, one of which deals specifically with the Ramsar Convention.[28] DoE is represented by the Head of the Bureau for Habitats and Protected Areas, who acts as the sub-committee's Secretary. The Committee is responsible for the preparation of new Ramsar site designations and will be involved in the establishment of a regional wetlands center in Ramsar as agreed by CoP 8.

- Commission on Agriculture and Natural Resources: The Legislative branch, made up of the elected Deputies of the Islamic Consultative Assembly, has 22 Specialised Commissions which mainly, though not entirely, parallel the breakdown of responsibilities among the 22 Government Ministries. There is no Specialised Commission dealing with environmental matters, including

[28] Member institutions of the Ramsar sub-committee are: DoE (Secretary of sub-committee), Ministry of Foreign Affairs, Ministry of Agriculture, Ministry of Construction Jihad, Ministry of Higher Education, Fisheries Company of Iran (Shilat), Ministry of Higher Education and the Planning and Management Organisation.

wetland and protected area management issues; the Commission on Agriculture and Natural Resources deals with these.

42. *Sectoral ministries*: In order to effectively protect the country's wetlands, DoE and other environmental bodies must work closely with a number of sectoral ministries and Government Agencies. Those most directly relevant to wetlands include the following:

- Ministry of Agricultural Jihad (MoAJ): This ministry was formed in 2000 by merging the former Ministries of Agriculture and Jihad-e Sazandigi. A special Division for Watershed Management was established in 1989 within this Ministry; its main tasks are integrated management and soil conservation within watersheds. The division targetted some three million ha for conservation activities during the 1997-2002 period. MoAJ is also the 'parent' Ministry for the following key organisations: (i) the Forest & Rangeland Organization, which is responsible for all non-agricultural and non-constructed land; (ii) the Fisheries Company of Iran (Shilat), which is divided into four 'Deputies': fisheries research, fishing and fisheries affairs, aquaculture, and planning and administration, and; (iii) the Department of Agriculture, which deals with all agricultural issues that impact on wetlands, including abstraction and use of irrigation water, control of fertiliser and pesticide use, creation of new agricultural land etc. Finally, MoAJ is responsible for rural water and sewage management.

- Ministry of Energy: MoE is responsible under the Water Distribution Act of 1982 for water supply via its Water Resource Management Organisation (WRMO). WRMO has jurisdiction over all water bodies, including rivers, lakes, marshes and coastal zone wetlands. It therefore deals with all water infrastructure and water *quantity* issues, including dam construction and issuing of permits for water abstraction. However, WRMO does not have major responsibility for water *quality* issues, which are the respnsibility of DOE under the Executive By-law on Water Pollution.

- Ministry of Roads and Transportation: The Ministry of Roads and Transportation (MoRT) is responsible for transportation infrastructure projects, such as the highway being constructed across Lake Uromiyeh.

WPA management and regulatory baseline

43. *National-level overview:* As the host country of the 1971 conference that led to the Ramsar Convention on Wetlands, the Islamic Republic of Iran has always played a special role in its promotion and implementation. Iran was one of the first seven Contracting Parties that brought the Convention into force in 1975. At that time, Iran designated 18 wetlands for the Ramsar List of Wetlands of International Importance. Three have been added since. Altogether these 21 wetlands cover some 1.4 million hectares; Iran is thus one of only a few countries to have designated more than a million hectares for the Ramsar List.

44. Since its creation in 1974, DoE has established a fairly extensive system of protected areas in Iran, covering some 8.5 million ha., or five per cent of the country's total area. DoE is currently pursuing a goal of increasing this figure to 10%. Wetlands of international importance, including the present project's demonstration and target replication sites, are well represented within five separate categories of protected area, i.e., national parks (2 wetland sites, 619,500 ha.); wildlife refuges (6 sites, 660,000 ha); protected areas (13 sites, 407,000 ha.); no hunting areas (4 sites, 21,000 ha.), and; limited hunting areas (2 sites, 3,000 ha.). Nevertheless, this leaves at least 50 wetlands of international importance, including 10 Ramsar sites, without any national-level legal protection.

45. Since the mid-1960s, detailed information on the importance of Iran's wetlands (particularly for waterfowl) has been derived from mid-winter waterfowl counts that take place each January. Initially, counts were confined to the south Caspian region, but in the early 1970s aerial survey coverage was extended to the wetlands of Azarbaijan, Fars, Khuzestan, Sistan and along the coast of the Persian Gulf and Persian Baluchestan. Also during the early 1970s, breeding season surveys were undertaken at all wetlands in Iran that were thought likely to be important for breeding waterfowl. The importance of all of these surveys cannot be over-stated; many of Iran's wetlands are quite inaccessible and without the aerial surveys of the 1970s, their importance for biodiversity conservation would remain largely unknown.[29]

46. DoE's Habitats and Protected Areas Bureau maintains a computer database of site-based information on Iranian wetlands (in *Farsi*), currently containing 152 sites, with maps. This database represents an important potential tool for managing information and prioritizing management actions concerning wetlands of international significance in Iran; however, its data is outdated, incomplete and was not collected in a systematic way. The Bureau is also responsible for facilitating the development of site management plans. Following a period of delay, in 2000, a management planning exercise was launched for 40 of Iran's protected areas.

47. Through a UNDP-funded project, the Bureau of EIA has developed a comprehensive set of "Guidelines for the EIA process in Iran." The has project built and strengthened national capacity to carry out EIA effectively, develop a data bank on laws, regulations and practices on EIA activities in Iran, sensitized planners and decision-makers about EIA, encouraged public participation in EIA processes and developed EIA know-how customized for the Iranian context. The project was operationally and financially closed in March 2003.

48. *WPA management and regulatory systems at LUEZ*: Lake Uromiyeh National Park is managed by the Province of West Azarbaijan through their offices in the provincial capital of Uromiyeh. However, the lake's eastern shore lies within East Azarbaijan and is therefore managed by that Province. Sixteen of the 28 important wetlands within the LUEZ have some type of protected or designated status.[30]

49. Currently, DoE maintains game stations in Kaboudan Island, Ashk Island and a National Park Office in Rashkan. Fourteen staff are responsible for protection of the lake. Limited equipment available to them includes one vehicle, two motor bikes, two tractors and five motor boats.

50. *WPA management and regulatory systems at Lake Parishan*: Lake Parishan, together with Dasht-e Arjan and the mountainous area between the two wetlands, form the 52,800 ha Arjan Protected Area. This area had originally been established in 1972 as a National Park of 65,750 ha, before having its status and area changed following the revolution. The two wetlands were jointly designated as a Ramsar site in 1975 and as a Biosphere Reserve in 1976.

51. DoE currently maintains a game guard station on a Peninsula overlooking the western part of Lake Parishan. The station has nine personnel and three motorbikes. A similar station in Arjan has four personnel and one vehicle. Finally, a DoE station for Protection of Fallow Deer has five personnel and one motorbike. DoE Tehran's Ornithology Unit has carried out annual mid-winter censuses at the site since 1967.

Technical cooperation baseline

[29] Since 1980 only ground-based surveys have been undertaken. Resulting statistics are difficult to compare with those gathered during earlier aerial surveys.
[30] See above, para. 22.

52. A number of recent and ongoing projects are relevant to the present GEF intervention. These include the following:

- NBSAP: See summary of NBSAP strategic areas in **Table 1** above.
- The Irrigation Improvement Project (IIP) is a water resource and land development program of the Islamic Republic of Iran undertaken with the financial support and technical supervision of the World Bank from 1994 to 2002. It included four sub-projects, one of which worked with the Zarrineh Roud Irrigation system in West Azerbaijan Province, in the Uromiyeh Lake Basin. The Environment Component of the IIP (EC-IIP) has prepared a series of baseline studies and a management plan concerning the environmental and socio-economic situation of Lake Uromiyeh, its ecological zone and its overall Basin. This project has co-ordinated closely with the GEF project formulation team and has also aimed to enhance co-operation between DoE and MoAJ.

Threats, causes and barriers baseline

53. Within the context of the above described baseline situation, globally significant biodiversity at the project sites has been reduced well below its potential and continues to be threatened further. At some point, it is possible under the baseline scenario that an effectively irreversible situation could be reached, whereby much or all of the wetlands' capacity to support globally significant levels of biodiversity could be permanently lost. This is in essence **the problem** that this project seeks to address.

54. This section describes the cause-effect relationships which lie at the heart of the above-defined problem and which will in turn be directly addressed by the project. These include proximate threats to biodiversity, as well as the underlying and root causes of these threats. The section is organized by major threat category, with examples from project sites provided.[31] It should be noted that the types of threats facing the demonstration wetlands are characteristic of those faced by managers of WPAs throughout Iran. For this reason, demonstrating effective approaches to their removal is expected to have an important 'replication effect' on wetland management throughout the country.

THREAT NO. 1: VOLUMES OF INFLOWING SURFACE AND GROUNDWATERS ARE FALLING BELOW MINIMUM LEVELS NECESSARY TO MAINTAIN THE ECOLOGICAL INTEGRITY OF GLOBALLY SIGNIFICANT WETLANDS

55. Overview of the threat: Decreasing freshwater inflows are a major threat to Iranian wetlands. Many wetlands, including several of international importance, have dried up completely in recent years, while others have seen dramatic rises in their salinity levels. Both results have had important negative impacts on globally significant biodiversity.

56. Among the many Iranian wetlands facing the above threat, Lake Uromiyeh and other wetlands within the LUEZ represent the most dramatic and potentially catastrophic example. Up until recently, average annual inflows into the lake varied between 4.4 and 5.9 billion m^3, supporting an average lake depth of 5.4m and an average salinity of 253 g/l. Recent trends show substantial declines in annual inflows of freshwater, leading to increases in salinity and decreases in lake depth. It is projected that by

[31] The extent of available baseline information concerning Parishan Lake is substantially less than that which is available for Uromiyeh Lake and its surrounding ecological zone. This fact is due both to the greater size and significance of Lake Uromiyeh, as well as the excellent background studies prepared by EC-IIP. For these reasons, and also because the Lake Parishan component will be substantially smaller than that for Uromiyeh Lake, the threats analysis focuses mainly on Lake Uromiyeh. Project activities (see below) will include as an important first component the gathering of additional baseline data on Lake Parishan, a step which will largely be unnecessary in the case of the Lake Uromiyeh component.

2021, water inflows to the Lake could decrease by 24% from recent mean levels, which would result in a drop in the lake's depth to below 2.9 m, and an increase in its average salinity up to 272 g/l.[32]

57. Parishan Lake has been less affected by the problem of decreasing freshwater inflows, although its sister wetland, Dasht-e-Arjan, has been severely affected, and has run dry for much of the time in recent years.

58. Proximate and underlying causes: There are three proximate causes behind this threat, beneath two of which lie complex webs of underlying causes. One proximate cause is the unusually low rainfall experienced across much of Iran from 1998-2001. From 1978 to 1998, average annual precipitation within the Uromiyeh Lake basin was 345.5 mm. From 1998 to 2001, this figure fell by some 38%, contributing to sharp reductions in average water inflows reaching the lake and associated wetlands.

59. The second proximate cause is the large number of existing and planned water storage and diversion schemes in the middle and upper reaches of the lake basin. As of 2000, two major dams had been constructed with a total volume of 975 million m^3, three more were under construction (for a further 428 million m^3), and a further ten were at the planning and design stages. In addition, many small and medium-sized dams are being planned or are under construction.[33]

60. A series of economic, technical and political issues drives the building of these dams. As with many countries, over the past decades, Iran has favoured an engineering and physical infrastructure approach to addressing development problems. As a result, dams and diversions are built to address water shortages where governance and soft-infrastructure changes may be more appropriate. The number and scale of dam schemes also reflects the strength of the engineering and dam-building lobby in Iran. Mostly, the dam-building schemes are initiated and developed in a top-down manner. The initiative often comes from decision-makers based in Tehran, and the design is not undertaken in a participatory manner. Moreover, the dams are designed and implemented without environmental impact assessments. There is no formal accounting of environmental costs and the perceived costs of downstream environmental impacts are clearly seen as neglible. A centralized decision-making process, in which local stakeholder values are discounted or ignored, has contributed to the discounting of these environmental costs.

61. The third proximate cause is the increasing water withdrawals throughout the basin. Agriculture is the main user of water through both formal and informal irrigation schemes. Over 90% of water stored in present and future dams is for agricultural uses. The irrigation schemes are inefficient and wasteful and there is presently little control over them. Moreover, water users, whether domestic, industrial, or agricultural, pay only a token fee for the water they use. In the case of agricultural users, the cost of water is based on the value of the crops produced (1% for traditional schemes, 4% for formal irrigation schemes) and does not reflect the scarcity and value of the water. The result is wasteful use of water and inefficient irrigation systems.

62. Meanwhile, the number and scale of *ad-hoc* groundwater extractions have also increased in the past ten years, particularly in areas close to Lake Uromiyeh and in and around critical wetland sites within the LUEZ. These extractions decrease groundwater supplies, decrease the outflow from springs, and increase vulnerability to drought in the region. Groundwater extractions also contribute to the processes described below under Threat no. 2.

63. Ecological impacts: The most significant ecological impact of decreased freshwater inflows for Lake Uromiyeh has been the increasing salinity of the lake, as this affects the Lake's *artemia* populations.

[32] EC-IIP, Report 4, pp. 40-43.
[33] EC-IIP, 2002.

Salinity changes during 1998-2002 have already devastated the lake's *artemia* population, leading to a complete cessation since 1998 in breeding by flamingos at the site. If salinity levels continue to rise, the *artemia* would at some point be completely wiped out. Given the key role *artemia* plays in the food-chain, i.e., as the sole source of food for the lake's globally significant flamingo population, this would be devastating for the lake's biodiversity.

64. At the same time, falling water levels have already led to a receding lakeshore. At some points the shore has receded by over 7 km. Impacts of the declining water levels and receding lakeshore include the following:

- Some of the lake's islands are now accessible on foot from the mainland. Nesting sites on these former islands are being disturbed by human visitors, and have been abandoned by their avian inhabitants.
- The receding coastline leaves behind it a deserted salt plain. Winds remove the salt and contaminants from these plains and deposit them on surrounding agricultural lands, causing a process of degradation analogous to that which devastated the Aral Sea region.
- Visually, the lake has lost some of its beauty.

65. Declining water flows and levels are also having a serious negative impact on wetland sites within the LUEZ. As a result, many of these sites – including Shur Gol, Yadegarlu and Dorgeh Sangi wetlands – are drying up, and many of the waterbirds previously using these sites are now unable to feed or breed. The ecosystem may be permanently damaged at some sites, particularly given that people have begun taking the opportunity to encroach upon these areas (see Threat no. 4 below).

66. Baseline activities to address threat: As evidence has begun to mount of a serious problem related to water inflows into Lake Uromiyeh, Government response has been far from uniform. Not surprisingly, the lead voice of concern has come from DoE, which has been warning for some time of the risks of new dam construction. The Department has made numerous attempts to galvanize public opinion on this issue and to impress upon provincial and sectoral ministries the risks of a 'business-as-usual' approach to the problem.

67. Other than the above efforts, actual on-the-ground attempts to address this long-term and potentially catastrophic situation have been limited and ineffectual. Many parts of Government, notably including MoAJ and the Provincial authorities, have been reluctant to acknowledge the anthropogenic roots of the problem, preferring to see it as an issue that would resolve itself once rainfall patterns return to normal. In only one case, that of the Shahid Madani dam on the Talkheh River, has DoE been successful in negotiating with Ministry of Energy a reduction in size – in this case by 1/3 – of the proposed dam.

68. In the last couple of years, there has been evidence of a gathering of momentum concerning this issue. This may partly be due to the work of the EC-IIP, which has presented clear evidence of the long-term risks inherent in the situation.

THREAT NO. 2: AQUATIC AND NOISE POLLUTION ARE HAVING NEGATIVE BIOLOGICAL EFFECTS AND MAY ULTIMATELY THREATEN ECOSYSTEM STABILITY AND FUNCTIONING

69. Overview of the threat: In the case of the LUEZ, organic and inorganic pollutants flow down the rivers into the critical wetland sites and the lake. In addition, pollution from surrounding fields flows directly into the lake and critical sites. Given that this is a closed drainage Basin, most of the pollutants ultimately accumulate in the Lake and on the lake floor. This not only affects present lake-users; in the

future, should the lake become dry, the high concentration of pollutants on the lake floor will be dispersed by the wind and possibly become a major health hazard in the area. However, this is only an extreme example, of a generalized problem whereby decreasing water volumes (Threat no. 1) and increasing rates of contaminant inputs (Threat no. 2) combine to produce rapid increases in contaminant concentrations.

70. Noise pollution also threatens critical bird breeding and nesting sites at Lake Uromiyeh. Flamingos are particularly sensitive to disturbance in the spring breeding season and in August when they lose their feathers and cannot fly. Flamingos have been known to abandon nesting sites en masse in response to relatively minor disturbances.

71. The main sources of aquatic pollution at Parishan Lake include: (i) erosion in upland areas surrounding the Lake, which is leading to increasing sedimentation of its southern, western and eastern portions; (ii) agro-chemical use. However, in neither case have these reached severe levels.

72. Noise pollution has caused similar problems at Lake Parishan, where the widespread use of outboard motorboats by fishermen, as well as for transport and providing tours to visitors, has resulted in an increased level of disturbance to waterfowl populations. These motorboats are gradually replacing traditional reedboats.

73. Proximate and underlying causes: There are five proximate causes of pollution, of which the most important is the excessive and inappropriate use of agricultural fertilizers and pesticides. Excess agricultural chemicals from cereal fields and orchards flow into the small rivers, on into bigger rivers, and onto the critical sites. EC-IIP (2002) estimate that, only in the area surrounding the Lake, 1 million liters of pesticides and about 92,000 tons of fertilizers are used annually.

74. Underlying the excess use of agricultural chemicals are government policies and programmes promoting a high-input approach to agriculture. Chemical inputs are made available with Government subsidies, and so are very attractive to farmers. Alternative methods are poorly publicized. Additionally, the long-term negative impacts of agricultural chemicals are poorly understood by farmers.

75. The second proximate cause is the growing industrial sector. Latest available figures from EC-IIP (2002) state that in 1996 there were about 30 large and 477 small industrial units in the Basin; it is likely that these numbers have increased since. Nearly all of these industrial units pour untreated waste into the rivers, which ultimately finds its way to the critical sites. Of special note is the tourist and recreation industry, which is almost entirely centred on the lake. Waste from hotels and restaurants near the lake are not treated.

76. The third proximate cause is the growing number of people living in the basin, especially in urban areas close to the lake. The population in the overall basin was 4.36 million in 1996 and has increased by about 1.5% annually since. The urban population has increased by 2.5% annually. The urban population is a greater source of pollution to the lake given urban lifestyles, efficient urban wastewater collection schemes, and the proximity of major urban centers to the lake. 138 million m^3 of domestic wastewater are released to the Lake each year. There is almost no treatment of industrial or domestic waste.

77. The final proximate cause of pollution is irrigation, leading specifically to salt pollution. Due to inefficient and inappropriate irrigation practices, water returned to the rivers from irrigation in the basin has very high salt concentrations. This contributes to the problem of rising salinity levels in the lake. Yekom (2002) forecast that, based on present development scenarios, this will lead to an annual average import of 5,500 tons of salt to the Lake by 2021.

78. The main causes of noise pollution are tourists, fishing boats, and domestic and military airplanes. For example, there are approximately 750,000 person-day visits per annum (mainly of local people) to take advantage of this area for mental and physical appeasement. Tourists often take trips on the lakes and visit the islands, and disturb the breeding sites.

79. In each of the above cases, the polluter gains immediate, personal benefits from his/her actions. The polluter is generally unaware of the long-term impacts of the aggregate pollution. The costs of the pollution are distributed across society, and stretch into the long and mid-term future. This incentive framework encourages polluting behaviour.

80. Ecological impacts: Evidence of biological impacts of pollution have included several fish kills within the LUEZ. Noise pollution has well documented effects on bird breeding.

81. Baseline activities to address threat: Baseline efforts to address the pollution problem at Lake Uromiyeh include construction of a number of wastewater treatment plants within the basin.

THREAT NO. 3: POTENTIALLY UNSUSTAINABLE EXPLOITATION OF WETLAND RESOURCES IS THREATENING GLOBALLY SIGNIFICANT SPECIES AND HABITAT

82. Overview of threat:[34] Lake Uromiyeh and the surrounding wetlands provide many natural products, including Artemia, salt, vegetation for grazing, reeds, waterbirds, therapeutic mud and fish. In general, there is little evidence of over-harvesting, with the following exceptions.

- Following joint analyses with the University of Ghent, Shilat piloted commercial harvesting of artemia in 1997. In 1999, 343 tons were harvested. These pilots were not commercially successful due to the low yields, which in turn were probably due to the drought. The commercial harvest was stopped in 2001 because the artemia level had declined too much. There are plans to recommence the harvest if and when levels recover. Some economic studies suggest that the artemia harvest should be used to finance the completion of the Kalantari highway (see Threat no. 5 below), although the suggested harvesting levels would likely not be sustainable.
- Small-scale hunting of birds is a threat to some species in the area.
- The extent of grazing of the marshes and grasslands by sheep, goat and camel herds around the lake is of concern. This combines with the processes outlined in Threat no. 2 (conversion of natural habitats) to contribute to the overall decline of the ecosystem.

83. Proximate and underlying causes: As with many of the other threats, the main underlying cause is the distribution of the costs and benefits of over-harvesting natural products. The benefits of over-harvesting (notably of artemia, fish and pasture-land) are concentrated among a small number of individuals, whereas any costs (in terms of depleting stocks and land degradation) are distributed across the population, and are discounted into the future.

84. A second cause is poverty in the region. Many of the farming communities around the lake are poor by Iranian standards. They see the opportunity to supplement their income and their diet as a quick way out of poverty.

85. It should be noted that bird-hunting is a recreational as well as economic activity.

[34] The following description focuses on Lake Uromiyeh. Additional investigations and data collection will be needed to determine whether overfishing, for example, is an issue at Lake Parishan.

86. Ecological impacts: Severe potential impacts on globally significant biodiversity are associated with the possible overharvesting of *A. urmiana*, which has the potential to severely impact on flamingo populations at the Lake. Additional impacts include the direct loss of globally threatened bird species from hunting.

87. Baseline activities to address threat: Limited efforts are made by DoE to prevent illegal hunting of birds. DoE has also attempted to determine the sustainable harvest of *A. urmiana* through studies undertaken in co-operation with the University of Ghent.

THREAT NO. 4: SMALL-SCALE CONVERSION OF CRITICAL WETLAND SITES TO FARMING, GRAZING LAND AND OTHER USES IS DESTROYING CRITICAL HABITAT FOR GLOBALLY SIGNIFICANT SPECIES

88. Overview of the threat: Closely linked to the problem of declining freshwater inflows is that of wetland conversion. Indeed, the first step in wetland conversion is typically drainage, which under present circumstances may hardly be necessary in many cases.

89. Wetland conversion in the Lake Uromiyeh Basin ecological zone has been particularly rapid over the last 10 years. Marshes are being drained to make way for agricultural activities and rivers are being diverted away from wetland sites to agricultural areas. Notably, this process has directly affected many of the sites with international or national protected area status. The Lake-proper is only affected to a small degree by these conversions.

90. In the case of Lake Parishan, about 20 ha. of marsh at the northwest corner of the Lake were drained for agriculture by MoAJ shortly following the Revolution. Elsewhere around the lake, wet meadows have been replaced by cultivated fields. Some Government departments, including MoAJ and the water organisation (?), continue to favor more extensive use of the lake waters for agricultural purposes. A number of proposals exist in this regard. Some of these are related to hydrological studies. Thus, the Water Department is calling for a water balance study of the watershed. MoAJ, on the other hand, is calling for a study of the hydrological relationship between Arjan and Parishan. They appear to be interested in some type of underground dredging to enhance the flow from Dasht-e Arjan to Lake Parishan, thus draining Arjan more quickly and increasing water supplies for agriculture at Parishan. An increasing number of hillside lands are being brought under agriculture at Parishan.

91. Proximate and underlying causes: The principal cause underlying these processes is that the distribution of benefits and costs encourages both legal and illegal small and medium-scale conversions of natural habitat. Local communities and individual farmers in the ecological zone obtain immediate benefits from the conversion of wetlands to productive use, through increased crop and livestock production in the first years. They capture the benefits by making this conversion; and individuals feel that if they do not convert, somebody else will. Although it may be known that there are long-term and distant costs, these costs are distributed across the population, discounted over time and poorly understood. Similar incentives drive animal husbandry to exceed carrying capacity; this is also leading to degradation of these areas. A contributing factor is the failure of land management agencies to implement an appropriate system of payments for environmental services, so that those providing environmental services are compensated by those who use them, as are those whose use of the resource is compromised.

92. Finally, the ground-water extractions discussed under Threat no. 1 (above) also contribute to conversion of wetlands. These abstractions, although usually not undertaken with the intention of converting wetlands, alter the hydrological balance, increase drought vulnerability, and therefore contribute to the process of conversion from wetlands to dry, agricultural lands.

93. Ecological impacts: The four Ramsar sites lying to the South of the lake illustrate this process. Shur Gol wetland has been converted from a shallow, brackish, seasonal wetland, to a deep, permanent, freshwater reservoir (by the construction of a dam). This has destroyed waterbird breeding and wintering habitats. Yadegarlu and Dorgeh Sangi wetlands have been drained and converted to agricultural lands. Lake Gopi experienced the same fate as a result of river diversion. Most of the wetlands are now dry or drying. In addition to the direct loss of habitat and vegetation, these changes are likely to lead to the reduction of the carrying capacity and to increased drought vulnerability in the area (EC-IIP, 2002).

94. Baseline activities to address threat: DoE undertakes limited monitoring of these wetlands but does little in the way of enforcement.

THREAT NO. 5: LAND DEGRADATION WITHIN WATERSHEDS IS LEADING TO INCREASED SEDIMENTATION AND RELATED NEGATIVE IMPACTS ON DOWNSTREAM WETLANDS

95. Overview of the threat: A number of studies indicate that a high rate of erosion exists within the Lake Uromiyeh Basin. About 70% of the Lake's watershed sufers from medium – high levels of erosion, with more than 55% of erosion taking place within the Zarrineh Roud and Aji Chai river basins. Both surface and furrow erosion are considered serious problems throughout the basin.

96. There is evidence that similar problems, albeit at a lower scale, exist at Lake Parishan.

97. Watershed degradation is both a cause and a consequence of increased rates of erosion. It leads to increases in peak flows, decreases in minimum flows and increased sedimentation loads. Water quality and quantity in the lake and at all the critical sites is affected.

98. Proximate and underlying causes: Proximate causes of erosion and watershed degradation are both natural – steep slopes and erodability of the underlying marine geological formation – as well as anthropogenic – herds of sheep and goats in the upper reaches of the basin removing vegetative cover, deforestation and non-sustainable agricultural practices.

99. Underlying causes include the fact that the short-term benefits associated with rapidly growing and selling sheep and goats outweigh the costs to the individual farmers. Farmers and herders may not be fully aware of the costs, which are largely felt downstream and in the future. These costs are felt by a large number of people. This situation is exacerbated by poverty. The farming communities in the upstream areas of the lake basin are amongst the poorest in Iran. Poor people see an opportunity to supplement their income and their diet as a quick way out of poverty. Finally, while traditional approaches to managing the numbers and the practices of livestock have functioned effectively for millennia, they may no longer be sustainable in the face of recent population growth and increased sedentarisation of formerly transhumant populations.

100. Baseline efforts to address the problem: Baseline efforts to reduce erosion rates within the Basin include: (i) biological measures such as seeding, seed culture and plantation; (ii) biomechanical measures, such as bench traces or banquets; (iii) mechanical measures used in areas with high slopes and high flow-scouring velocity, and; (iv) conservation of critical areas, which are designated as erosion protected areas where grazing and other activities are prohibited. Unfortunately, investments in watershed management have been limited and have suffered from a lack of co-ordination. Furthermore, little if any effort has been made to orient the work towards conservation of ecological values within the LUEZ.

THREAT NO. 6: INFRASTRUCTURAL DEVELOPMENTS SUCH AS THE KALANTARI HIGHWAY ARE HAVING SEVERE IMPACTS ON CRITICAL HABITATS.

101. Overview of the threat: The Kalantari highway crosses the Uromiyeh Lake over a solid causeway. The lake is approximately 17 km wide at the crossing point. At present, the causeway is incomplete; there is a 1400-meter gap towards the middle of the causeway that allows water to flow between the northern and southern sides of the lake. Two ships, capable of carrying up to 40 vehicles each, make up to 10 return journeys per day to transport vehicles across the gap. This satisfies a small fraction of the demand to cross the lake; and most vehicles make a long journey around the lake.

102. There are plans to fill the gap in the causeway with a bridge, which would allow some water exchange between the two sides of the lake. However, some studies suggest that the resulting changes in sedimentation flow could eventually lead to a splitting of the lake into two parts. This would also lead to changes in the lake volume, to the distribution of sediments and pollutants, to changes in the water flow, and possibly to changes in the temperature.

103. On the positive side, the causeway reduces the travelling time between west and east Azerbaijan, and reduces air pollution as vehicles travel a far shorter distance.

104. Underlying causes: The highway was constructed during wartime when environmental considerations were not a priority. Now that the causeway is almost complete, the benefits to the transport sector of completing it strongly outweigh the construction costs and there is great pressure to complete it..

105. Ecological impacts: The ultimate ecological impacts of this construction are not fully understood Construction of the causeway, which started in the early 1980s, caused the loss of 120 ha of the Lake and has dramatically interrupted the hydrodynamics and scenic values of the Lake. The distribution of salt densities has changed measurably since the construction of the highway, reflecting changing water flow patterns.

106. Baseline efforts to address the problem: Two alternatives approaches, in order to allow an increased exchange of water and sediments, are: to place tunnels under the causeway and to converts parts of the existing causeway into a bridge. The construction costs of these two alternatives have not been determined. Moreover, the ecological impacts of these alternatives are not fully understood.

THREAT NO. 7: ALIEN SPECIES INTRODUCTIONS ARE THREATENING NATIVE SPECIES

107. Overview of the threat: In the past, at least seven exotic species of fish have been introduced to the Lake Uromiyeh Basin, and it is suspected that three of these may have introduced new diseases and parasites to the indigenous fish (EC-IIP, 2002). Lake Parishan has also seen fish species introduced.

108. There are proposals to develop aquaculture ponds to grow non-native species of Artemia. This would pose a great threat to the endemic, indigenous *A. urmiana*, given the high risk of escape from ponds and the likely subsequent hybridization or competition.[35]

109. Proximate and underlying causes: In the past, species were introduced based on the envisaged short-term benefits. This happened in an uncoordinated manner, and those responsible for introducing the species knew little of the implications.

110. Ecological impacts: Exotic fish species have substantial capacity to alter ecosystem dynamics, particularly where predator populations are absent. In the case of *A. urmiana*, accidental introduction of of

[35] EC-IIP, 2002.

another species of brine shrimp would have the potential either to hybridize or to drive *A. urmiana* to extinction.

111. Baseline activities to address the problem: Baseline activities of DoE related to alien species introductions is limited to identification of instances of introduction.

CONCLUSIONS

112. This section has analysed in some detail the types of threats facing the project demonstration sites. Similar threats face wetland protected areas throughout Iran. **Table 2** below summarises this situation.

Table 2: Threats matrix

Category of threat	Uromiyeh Lake ecological zone	Parishan Lake	Iranian wetlands (general)
Volumes of inflowing surface and groundwaters are falling below minimum levels needed to maintain volume and ecological integrity of wetlands	***	NA	**
Conversion of wetlands and portions of wetlands to farming, grazing land and other uses	***	**	**
Aquatic pollution	**	**	**
Unsustainable exploitation of wetland-based products	*	To be determined	**
Infrastructural developments	**	NA	*
Alien species introductions	**	**	*
Watershed degradation	**	*	**

2.2.2 Project logical framework

113. The project logical framework with details on project objectives, outputs, activities, performance indicators, risks and assumptions are described in **Annex 1**.

2.2.3 Project goal, objectives, outcomes, and related assumptions, risks and performance indicators

Project goal and objective

114. The **project goal** is to catalyse the sustainability of Iran's system of wetland protected areas (WPAs), thereby enhancing its effectiveness as a tool for conserving globally significant biodiversity.

115. The **project objective** is to systematically remove or substantially mitigate threats facing globally significant biodiversity and sustainability at two demonstration sites, while ensuring that the lessons learned through these demonstrations are absorbed within WPA management systems throughout Iran.

Project outcomes

116. The threats analysis, which forms the backbone of the project's design, has identified a set of threats and barriers operating at three distinct levels. These are:

- Site-based threats, the focus of which – and in many cases the solution for which – lies within the WPAs themselves;
- Watershed, or basin-wide threats, the origins and solutions for which lie well beyond the reach of WPA managers;
- National-level barriers, which constrain DoE Tehran efforts to provide support and backstopping to WPA managers around the country and furthermore would prevent effective replication of lessons learned by the project.

117. The above three-tiered analysis of threats and barriers calls for an approach by the project based on the three outcomes outlined below. Futher details concerning Activity Areas and specific activities under each outcome are presented in section 2.2.4 and in the Logframe Matrix (**Annex 1**).

Outcome 1: Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to manage WPA sites, including dealing with 'internally arising' threats to globally significant biodiversity (Government - $2,800,000; GEF - $915,000; Netherlands - $180,000)

118. While the majority of threats facing demonstration sites and other key WPAs in Iran is related to activities taking place outside of WPA boundaries, nevertheless certain threats are due to activities taking place within these WPAs themselves or in their immediate vicinity. Many of these threats can be solved by site-based managers themselves, with varying degrees of inter-sectoral co-ordination required. The following examples may be cited from the demonstration sites of such internally arising threats:

- Threats related to potentially unsustainable use of natural resources at the sites (hunting, *Artemia* harvest, etc.);
- Certain pollution threats, e.g., noise pollution from motorboats at Lake Parishan, related to 'on-site' activities;
- The threat of direct wetland conversion, e.g., at satellite wetlands around Lake Uromiyeh;

119. In addition to serving as front-line guardians against such threats, WPA site managers also have important roles to play in *monitoring* biodiversity and overall environmental conditions at the sites, in *raising awareness and encouraging participation*, particularly among communities living in the vicinity of WPAs and in *managing visitation* to the sites.

120. Outcome 1 will therefore focus on raising capacities within DoE provincial offices responsible for management of demonstration sites to perform the above described roles. The outcome has been divided into the following sub-outcomes:

SUB-OUTCOME 1.1: WPA MANAGERS ARE WELL TRAINED IN ECOSYSTEM-BASED PLANNING AND MANAGEMENT AND ARE SKILLED AT IDENTIFYING, MONITORING, MITIGATING AND REPORTING ON KEY SITE-BASED THREATS

SUB-OUTCOME 1.2: WPA MANAGERS IMPLEMENT BIODIVERSITY MONITORING PROGRAMMES WHICH TRACK THE IMPACTS OF ALL ANTHROPOGENIC THREATS

SUB-OUTCOME 1.3: SITE MANAGERS CO-OPERATE WITH LOCAL COMMUNITIES AND NGOS TO RAISE AWARENESS AND ENCOURAGE BROAD-BASED PARTICIPATION IN WPA MANAGEMENT

SUB-OUTCOME 1.4: SITE CONSERVATION, INCLUDING ACTIVE ENFORCEMENT OF REGULATORY MEASURES, IS PERFORMED ACCORDING TO AGREED MANAGEMENT PLANS, RESOLVING ISSUES AND ADDRESSING THREATS WHICH ARE FULLY WITHIN SITE MANAGERS' COMPETENCIES AND AUTHORITY

SUB-OUTCOME 1.5: DEGRADATION AND DESTRUCTION OF SATELLITE WETLANDS IS HALTED AND, IN PILOT CASES, REVERSED

Outcome 2: Co-ordinated and environmentally sound management at watershed or basin level enhances the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level (Government - $4,320,000; GEF - $1,080,000; Netherlands - $420,000)

121. Outcome 2 provides tools for addressing the paramount threats arising, and/or requiring solution at, a watershed or basin level. Most of the threats outlined in the preceding threats analysis may be categorized at this level. In many cases, e.g., water use within the Lake Uromiyeh basin, these are the most severe of the threats facing globally significant and other biodiversity at the sites.

122. The key to addressing many of these threats lies within what may be termed 'enforceable co-ordination,' i.e., the establishment and operation of inter-ministerial co-ordination mechanisms having enforcement powers. Such powers will need to extend to areas such as water allocation, dam building and alien species introduction, as well as priority-setting responsibilities in areas such as pollution and erosion control. The LUB will provide the key location for testing new models in this area. It represents a particularly challenging case, not only due to the severity of basin-wide threats facing the site, but also due to the fact that its area is distributed amongst three provinces, meaning that a Federal, or at least 'supra-provincial,' decision mechanism is essential.

123. The following sub-outcomes will be achieved under this outcome:

SUB-OUTCOME 2.1: CO-ORDINATION MECHANISMS HAVE BEEN DEVELOPED TO FACILITATE DECISION-MAKING AND WISE USE OF WATER, LAND AND OTHER NATURAL RESOURCES IN WATERSHED AREAS AFFECTING KEY WPAS

SUB-OUTCOME 2.2: SYSTEMS FOR IMPROVING THE EFFICIENCY OF WATER DISTRIBUTION ACROSS ECONOMIC AND ECOLOGICAL 'USES' WITHIN WPA DRAINAGE BASINS HAVE BEEN DEVELOPED

SUB-OUTCOME 2.3: INTEGRATED POLLUTION CONTROL PRACTICES HAVE BEEN DEVELOPED AND AMBIENT CONCENTRATIONS OF KEY CONTAMINANTS HAVE BEGUN TO DECLINE

SUB-OUTCOME 2.4: ENHANCED MEASURES FOR PREVENTING LAND DEGRADATION HAVE BEEN INTRODUCED AND ARE HELPING TO REDUCE SEDIMENTATION AND RELATED NEGATIVE IMPACTS DOWNSTREAM

SUB-OUTCOME 2.5: BEST PRACTICES IN ENVIRONMENTAL IMPACT ASSESSMENT HAVE BEEN DEMONSTRATED

SUB-OUTCOME 2.6: BEST PRACTICES CONCERNING ALIEN SPECIES INTRODUCTIONS AND CONTROL HAVE BEEN DEMONSTRATED

Outcome 3: National-level WPA management and inter-sectoral co-ordination structures possess and utilize enhanced capacities to strengthen WPA management, *inter alia*, by supporting the exchange of knowledge and lessons learned through Outcomes 1 & 2 above (Government - $2,240,000; GEF - $920,000)

124. Outcome 3 will remove national-level barriers to effective management of WPAs, in particular the numerous areas which continue to support globally significant levels of biodiversity. Many of these barriers relate to the less than fully effective support currently being provided by DoE Tehran to WPA managers throughout the country. This situation will become more critical in the context of the present project, where DoE units will be called upon to play an important role in co-ordinating processes of sharing lessons learned and replication. The project will therefore raise institutional and human capacities among these DoE Tehran units and staff.

125. In addition to building capacities within DoE Tehran, this outcome will need to build awareness and support among relevant central Government Departments and Ministries. As shown in the threats analysis, it is the policies and projects being developed – often at central level – by agencies such as MoAJ, that threaten not only the demonstration sites but WPAs throughout the country. The project will both co-operate directly with these agencies, as well as strengthen co-ordination structures through which national-level inter-sectoral decision-making takes place. Support from such high-level structures will be essential in ensuring implementation of some of the high-level recommendations expected to arise from the project.

126. Enhanced capacity and participation from DoE Teheran, from other central Government agencies and from national-level co-ordination structures will enable the lessons learned through the project's site demonstrations to be shared and replicated at other key WPAs nationally. Direct support to this replication process will be an important and final Sub-Outcome under Outcome 3.

127. The following sub-outcomes will be achieved under this outcome:

SUB-OUTCOME 3.1: RELEVANT DOE HEADQUARTERS STRUCTURES ARE RATIONALIZED, HUMAN CAPACITIES FOR WPA MANAGEMENT ARE STRENGTHENED AND ESSENTIAL NATIONAL-LEVEL WPA MANAGEMENT TASKS ARE DEMONSTRATED

SUB-OUTCOME 3.2: AWARENESS AND TECHNICAL CAPACITIES ARE RAISED IN KEY SECTORAL MINISTRIES WHILE NATIONAL CO-ORDINATION STRUCTURES ARE STRENGTHENED

SUB-OUTCOME 3.3: LESSONS LEARNED IN OUTCOMES 1 AND 2 ARE DISSEMINATED TO MANAGERS OF OTHER KEY WPA SITES, WHO USE THEM IN DEVELOPING STRATEGIES FOR REPLICATION AT THEIR SITES

Assumptions, Risks & Performance Indicators:

128. The project logical framework in **Annex 1** outlines the project's main assumptions, risks, and performance indicators related to the proposed project outputs and activities.

2.2.4 Brief description of proposed project activities

129. As outlined above, the project is divided among three Outcomes, which correspond to the main functional / geographic levels at which threats and barriers have been defined. These Outcomes have been grouped into a set of 14 Sub-Outcomes. Each of these Sub-Outcomes will be achieved through implementation of various Activities, which have themselves been grouped into Activity Areas. This section provides summary information concerning the Sub-Outcomes, Activity Areas and their constituent Activities.

SUB-OUTCOME 1.1: WPA MANAGERS ARE WELL TRAINED IN ECOSYSTEM-BASED PLANNING AND MANAGEMENT AND ARE SKILLED AT IDENTIFYING, MONITORING, MITIGATING AND REPORTING ON KEY SITE-BASED THREATS (GOVERNMENT - $45,000; GEF - $135,000)

130. The sub-outcome will be achieved through two site-based Activity Areas, each of which will begin with a training needs assessment and with the development of a training programme for relevant officials within the WPA and the relevant DoE provincial headquarters. Training will include team-building exercises and will focus on enhancing abilities to identify, monitor and report on key threats facing the sites. Finally, each Activity Area will include support for study tours to allow DoE officials to learn from examples of WPAs.

SUB-OUTCOME 1.2: WPA MANAGERS IMPLEMENT BIODIVERSITY MONITORING PROGRAMMES WHICH TRACK THE IMPACTS OF ALL ANTHROPOGENIC THREATS (GOVERNMENT - $70,000; GEF - $165,000)

131. Ecological monitoring is an important function in which site-based staff, due to their locations and their knowledge of local characteristics, need to play a lead role. However, it is also necessary for data that is gathered locally to be inter-comparable with data gathered from other WPAs, thus permitting the preparation of more broad-based, e.g., national-level, assessments. One example would be assuring the use of standardized bird count methodologies.

132. For these reasons, Outcome 1.2 will be closely linked with efforts taking place under Sub-Outcome 3.1.3 to standardize and consolidate national-level monitoring data concerning WPAs. Thus, national-level WPA monitoring guidelines (developed under Sub-Outcome 3.1.3) will be adapted (under Sub-Outcome 1.2) to fit the particular circumstances of the sites. These guidelines will then be implemented in baseline and periodic follow-up monitoring efforts. The sub-outcome, which will consist of two site-based Activity Areas, will also include the provision of necessary monitoring equipment.

SUB-OUTCOME 1.3: SITE MANAGERS CO-OPERATE WITH LOCAL COMMUNITIES AND NGOS TO RAISE AWARENESS AND ENCOURAGE BROAD-BASED PARTICIPATION IN WPA MANAGEMENT (GOVERNMENT - $165,000; GEF - $125,000)

133. This sub-outcome consists of three Activity Areas. Activity Area 1.3.1 will build on work performed during the PDF-B stage of the project in preparing detailed assessments of local community relationships with each of the demonstration sites. This will involve assessing the extent and nature of local community dependence on site resources, both direct and indirect in nature. It will also include an examination of the socio-economic factors underlying specific threats, such as bird hunting.

134. Activity Area 1.3.2 provides a process for addressing issues that may arise related to the need for alternative sustainable livelihoods by communities living in the immediate vicinity of project demonstration sites. In the case of Lake Uromiyeh for example, local communities do not make extensive use of WPA resources to earn their livelihoods and required support is expected to be minimal. In the case of satellite wetlands, there may be more substantial issues to deal with related to land uses. In Lake Parishan, the need for developing alternative sustainable livelihoods will depend mainly on an assessment to be conducted of current and sustainable fishing practices at the site.

135. Activity Area 1.3.3 addresses the important need to demonstrate NGO involvement in environmental and WPA issues in Iran. A two-pronged effort will be made in this area, based on the Uromiyeh Lake site. First, existing environmental and other relevant NGOs active within the LUB will be brought together and supported to establish a Lake Uromiyeh NGO Forum and possibly to join together to create an umbrella NGO. Second, either the individual NGOs or the newly formed umbrella NGO will be encouraged to undertake implementation of project activities, particularly related to awareness raising and building the support of local communities.

SUB-OUTCOME 1.4: SITE CONSERVATION, INCLUDING ACTIVE ENFORCEMENT OF REGULATORY MEASURES, IS PERFORMED ACCORDING TO AGREED MANAGEMENT PLANS, RESOLVING ISSUES AND ADDRESSING THREATS WHICH ARE FULLY WITHIN SITE MANAGERS' COMPETENCIES AND AUTHORITY (GOVERNMENT - $1,349,000; GEF - $300,000; NETHERLANDS - $149,000)

136. In the case of each of the demonstration sites, substantial work has been undertaken during the course of the PDF-B in developing management plans for the sites. Indeed, this process has been underway for many of the WPAs in the country. The most extensive such process has been at Lake Uromiyeh and at Shadegan wetlands on the Persian Gulf, where support from the Environment Component of the World Bank-funded Irrigation Improvement Project (EC-IIP) has allowed for the preparation of a detailed environmental assessment and draft action plan. Many of the site-specific activities in the present project are based on evaluations and recommendations made in these documents.

137. It will be important to reach both local and national-level agreement early in the present project concerning the final form of the Lake Uromiyeh Management Plan, as well as the draft plan for Arjan Protected Area. Additional consultations with, and participation by, local communities will play an important role in this process. These finalized plans will in turn help to determine the details of support to be provided under the present sub-outcome. However, in the case of each site, they are expected to include such measures as: development of zonation schemes; revised regulations concerning access and use by local communities and others, based on zoning; strengthened enforcement of revised regulations; implementation of ecological rehabilitation measures, and; development of visitor management plans.

SUB-OUTCOME 1.5: DEGRADATION AND DESTRUCTION OF SATELLITE WETLANDS IS HALTED AND IN PILOT CASES, REVERSED (GOVERNMENT - $866,000; GEF - $190,000; NETHERLANDS - $31,000)

138. This Sub-Outcome will remove barriers currently facing legal and regulatory approaches to preventing conversions of internationally significant and other wetlands. In doing so, it will alter the structure of incentives facing potential wetland 'converters,' making conversion a significantly less attractive proposition. Work under the Sub-Outcome will begin by generating and synthesising historical, baseline and project monitoring data concerning the areas of globally significant wetlands at LUEZ and Parishan. It will include two analyses, conducted during the first and last years of the project respectively,

of satellite images showing wetland area and/or land use. Current and time-series images will be included in order, first, to demonstrate and quantify wetlands loss since 1975,[36] and second, to quantify changes that take place during the period of project implementation.

139. A second Activity Area will demonstrate the use of regulatory and legal approaches to preventing wetland conversion. It will begin with a detailed assessment of the situation, including a review of the reasons why several internationally protected wetlands could not be protected from conversion in recent years. This stage will also include a review of international best practices related to preventing wetland conversion. Building on this review, the project will develop and implement an action plan aimed at removing barriers in this area. Areas to be targeted are likely to include: enhanced and targeted penalties for infractions; support for regulatory and judicial reform; awareness-raising among key provincial officials; support for specific legal efforts aimed at preventing pending conversions.

SUB-OUTCOME 2.1: CO-ORDINATION MECHANISMS HAVE BEEN DEVELOPED TO FACILITATE DECISION-MAKING AND WISE USE OF WATER, LAND AND OTHER NATURAL RESOURCES IN WATERSHED AREAS AFFECTING KEY WPAS (GOVERNMENT - $2,620,000; GEF - $425,000; NETHERLANDS - $20,000)

140. The various basin-wide threats facing the LUEZ have a single characteristic in common: each one requires an adequate system of inter-sectoral co-ordination and decision-making to ensure its amelioration. Whether it is the threat of inadequate water volumes reaching the lake and its satellite wetlands, the environmental problems caused by infrastructural developments, or the risks associated with alien species introductions, each remedy must involve working closely with economic actors and officials across sectors. The poor and worsening environmental condition of the LUEZ offers strong evidence that such co-operation has not been in operation to date.

141. This sub-outcome will be accomplished through two site-based Activity Areas. In the first, a permanent Lake Uromiyeh Basin Management Authority (LUBMA) will be established. This new entity will be a Federal-level institution with supra-ministerial, supra-provinical authority to decide on and enforce key water and land use issues within the LUB. The project will develop detailed TOR and operating guidelines for the LUBMA, which will need to be approved by Iran's Environmental High Council. Once established with adequate facilities, staffing levels and operating budget, the LUBMA will supervise and review studies and proposals including proposals for dam construction, pollution and erosion control, alien species introduction, as well as associated EIAs. It will have the responsibility to ensure that the combination of projects and investments allowed to move forward within the basin represent a sustainable mix.

142. The issues facing Lake Parishan are less complex, involve fewer institutional actors and a single province (versus three at Lake Uromiyeh). Therefore, a Provincial Co-ordinating Committee will be established and given responsibility for reaching co-ordinated and environmentally sound decisions related to water use, water quality investments, erosion control, etc.

143. It should be noted that each of the remaining sub-outcomes under Outcome 2 will have linkages to Sub-Outcome 2.1. The nature of these linkages will be outlined below.

SUB-OUTCOME 2.2: SYSTEMS FOR IMPROVING THE EFFICIENCY OF WATER DISTRIBUTION ACROSS ECONOMIC AND ECOLOGICAL 'USES' WITHIN WPA DRAINAGE BASINS HAVE BEEN

[36] It was in 1975 that most of these wetlands were declared as Ramsar sites.

DEVELOPED (GOVERNMENT - $650,000; GEF - $200,000; NETHERLANDS - $400,000)

144. As highlighted in the EC-IIP report, the medium-term baseline scenario for Uromiyeh Lake consists of continuing decreases in water inflows and increases in salinity, which would effectively represent the destruction of its ecosystem. The project seeks to help avoid this scenario by introducing an ecosystem management approach to help ensure adequate supplies of water for both economic and ecological needs.

145. In summary, it is expected that activities being supported under this outcome will provide water resource and wetland managers with the necessary tools needed to ensure that adequate water is available both for economic development needs as well as for the ecological needs of globally significant biodiversity. GEF support will focus on the latter aspect, while also working with project partners (Government of Iran and Netherlands co-operation) to remove barriers to the former. Opening lines of communication among a wide variety of stakeholders – heretofore sharply segmented along sectoral, ministerial and provincial lines – and demonstrating new approaches to persistent problems will be an important theme of this work.

146. Activities in support of this outcome will come under two activity areas, each of which will take place at the Lake Uromiyeh site. Activity Area 2.2.1 will involve the development and use of an integrated water management model for the Lake Uromiyeh Basin This model will serve as a tool allowing wetland managers to develop scenarios and for LUBMA to make and enforce basin-wide, inter-sectoral water use and allocation decisions.

147. Activity Area 2.2.2 will pilot the use of environmental economic tools and other techniques aimed at increasing water use efficiency and water conservation within the basin. A combination of policy and technical innovations under this Activity Area will provide guidance for helping to ease medium-term water supply constraints.

SUB-OUTCOME 2.3: INTEGRATED POLLUTION CONTROL PRACTICES HAVE BEEN DEVELOPED AND AMBIENT CONCENTRATIONS OF KEY CONTAMINANTS HAVE BEGUN TO DECLINE (GOVERNMENT - $450,000; GEF - $110,000)

148. Aquatic pollution and noise pollution are seen as important threats to both the Lake Uromiyeh and Lake Parishan ecosystems. Among the most important sources of aquatic pollution are agricultural chemicals (pesticides and fertilizers) and untreated domestic and (in the case of Lake Uromiyeh) industrial sewage. In the case of noise pollution, low-flying planes, along with motorboats, create substantial disturbances to wildlife, particularly threatened bird species.

149. Activities in support of this outcome will come under three Activity Areas. The first of these will assess baseline pollution levels and impacts, including associated threats to globally significant biodiversity. It will use a rapid assessment methodology to characterize and estimate aquatic pollution sources and hotspots, while assessing economic, human health and ecological impacts. The results of this assessment will be widely disseminated as part of an effort to raise awareness among decision-makers concerning aquatic pollution impacts. Improved methods for biological monitoring of pollution effects will be introduced through GEF support

150. A second Activity Area will involve prioritization and targeting of pollution control investments based on the other assessment and other available data. At Lake Uromiyeh, this process will be among the

responsibilities of the newly established LUBMA. Funding for the actual pollution control investments is available through Associated Financing identified as part of the project baseline.

151. Finally, a third Activity Area will include steps to control noise pollution, including the development and enforcement of necessary regulations.

SUB-OUTCOME 2.4: ENHANCED MEASURES FOR PREVENTING LAND DEGRADATION HAVE BEEN INTRODUCED AND ARE HELPING TO REDUCE SEDIMENTATION AND RELATED NEGATIVE IMPACTS DOWNSTREAM (GOVERNMENT - $400,000; GEF - $90,000)

152. This outcome will work in co-operation with the Ministry of Agricultural Jihad (MoAJ), which has several ongoing projects in the area of watershed management. In the case of Lake Uromiyeh, work will be condiucted under the overall auspices of the LUBMA, once the latter is established.

153. Activities under the Sub-Outcome will begin with a comprehensive study of surface geology within the respective river basins. This study will help to rank the erosion potential of various areas and thus to prioritize actions.

154. The Sub-Outcome will undertake a watershed management programme for the Zarinneh Roud and Aji Chai river basins, which are estimated to be responsible for 55% of the total sediments reaching the Lake and its satellite wetlands. The programme, which will be funded through baseline Government support, will incorporate a variety of control measures, including strengthening of an existing system of Erosion Protected Areas.

155. Within this Sub-Outcome, GEF support will help to highlight and raise public and government awareness concerning the linkages between watershed management and environmental quality of the lakes. Through LUBMA and the LPPCC, it will establish and enhance inter-ministerial connections between MoAJ and DoE to ensure that watershed management activities are undertaken in a way that is complementary to the management objectives of WPAs.

SUB-OUTCOME 2.5: BEST PRACTICES IN ENVIRONMENTAL IMPACT ASSESSMENT HAVE BEEN DEMONSTRATED (GOVERNMENT - $100,000; GEF - $150,000)

156. A major cause of environmental problems at Lake Uromiyeh in particular has been the absence of effective Environmental Impact Assessment (EIA) processes. Construction of the Shahid Kalantary Highway is an important example, highlighted in the threats analysis, as is more recent planning for dam construction. EIA regulations have not functioned effectively and substantial negative impacts have resulted.

157. Given the current increased recognition of the perils facing the Lake Uromiyeh ecosystem, EIA is slowly beginning to take its place as a tool for environmental management. Under the present sub-outcome, the Ministry of Roads and Transportation and DoE will oversee the preparation of an EIA for finalization of the Shahid Kalantary Highway across the Lake. It is expected that certain measures for environmental remediation will be required as a result of this EIA.

158. The above EIA, while crucial to the future of Lake Uromiyeh, will affect a single development. In order for the project to have a wider impact, it will be necessary to support the strengthening of the EIA process as it relates to WPAs. The main issue in the case of Lake Uromiyeh will be that of dam

construction. A key problem in this area has been that up to now, projects have been assessed on a piecemeal basis, though it is cumulative impact that is most damaging.

159. Given the above, the project will identify ways in which the EIA process can be made strategic, to work within river basins where cumulative impacts of multiple projects such as dams need to be assessed on a strategic basis. The role of LUBMA and LPPCC will once again prove critical in this context. GEF support will help to build capacities to undertake such EIAs, while Government co-financing will support the costs of the EIAs, as well as the costs of any remedial measures called for by the EIAs.[37]

SUB-OUTCOME 2.6: BEST PRACTICES CONCERNING ALIEN SPECIES INTRODUCTIONS AND CONTROL HAVE BEEN DEMONSTRATED (GOVERNMENT - $100,000; GEF - $105,000)

160. This sub-outcome will link closely with the preceding outcome 2.5, given that EIA is one important tool for controlling and limiting the introduction of ecologically hazardous alien species. It will include the imposition of a moratorium on the introduction of alien fish species within the project demonstration sites, as well as an assessment of the impact of past introductions. Regulatory mechanisms associated with species introductions will be assessed and updated and enforcement mechanisms, e.g., penalties for unauthorized introductions, strengthened. Finally, IUCN guidelines related to alien species introduction will serve as a basis for awareness raising and the development of detailed EIA procedures.

SUB-OUTCOME 3.1: RELEVANT DOE HEADQUARTERS STRUCTURES ARE RATIONALIZED, HUMAN CAPACITIES FOR WPA MANAGEMENT ARE STRENGTHENED AND ESSENTIAL NATIONAL-LEVEL WPA MANAGEMENT TASKS ARE DEMONSTRATED (GOVERNMENT - $130,000; GEF - $400,000)

161. This sub-outcome is designed to strengthen DOE's overall capacities in the area of WPA management. It will involve strengthening DoE's ability to perform national-level co-ordinating functions as well as providing technical support to managers at Provincial and site levels. Methodologies will be developed and tested in areas such as biodiversity assessment, investment planning, policy analysis and selection and establishment of new WPAs. Particular attention will be paid during the first years of project implementation to building DoE's capacities to co-ordinate processes of sharing lessons learned and encouraging replication of best practices demonstrated under other project outcomes.

162. The sub-outcome will commence with a review and rationalization of the task descriptions of relevant DoE units in order to ensure minimal overlap and maximum internal co-ordination of wetland management tasks. It will subsequently provide support for improved operational processes (planning, financial management, etc.) within these restructured units.

163. An important barrier identified during the PDF-B process is the limited knowledge and skills related to biodiversity among DoE managers and officials responsible for WPA management. This sub-outcome will remove this barrier beginning with an effort to improve job descriptions and job profiling for staff positions within these units—the units themselves having already had their responsibilities clarified (see above). This step will include the development and implementation of a training programme to upgrade biodiversity- and WPA-management skills among relevant staff. Together, the activities under this sub-outcome will ensure that required tasks for PA management at national level are properly allocated, first among DoE units, and second among individual, qualified professional and support staff,

[37] The latter will be considered as leveraged co-financing.

who in turn will have received the necessary skills upgrading needed to accomplish their tasks. This new capacity will be put to the test later in the project when the need for support to the replication process becomes crucial (see sub-outcome 3.3 below).

SUB-OUTCOME 3.2: AWARENESS AND TECHNICAL CAPACITIES ARE RAISED IN KEY SECTORAL MINISTRIES WHILE NATIONAL CO-ORDINATION STRUCTURES ARE STRENGTHENED (GOVERNMENT - $35,000; GEF - $120,000)

164. While the strengthening of DoE co-ordination and support mechanisms is a necessary condition for improved WPA management nation-wide, it is by no means a sufficient one. Just as inter-agency co-ordination was found to be a key element at site, or in this case drainage basin, level, so too its importance at the national level.

165. The project will thus need to work closely with relevant headquarters units of key Government agencies such as MoAJ, Ministry of Energy and Ministry of Transportation. This will involve raising awareness within these ministries of sustainable development and conservation issues. It will also involve disseminating to them the results of work at project demonstration sites and involving them in the development of replication strategies (see 3.3 below).

SUB-OUTCOME 3.3: LESSONS LEARNED IN OUTCOMES 1 AND 2 ARE DISSEMINATED TO MANAGERS OF OTHER KEY WPA SITES, WHO USE THEM IN DEVELOPING STRATEGIES FOR REPLICATION AT THEIR SITES (GOVERNMENT - $2,075,000; GEF - $400,000)

166. This final sub-outcome will encompass key steps towards the replication of project findings and best practices throughout the WPA management system. The strategy for acheving this aim, though contained within a single and final sub-output, should be understood as pervading the overall project logic. Thus, replication will not be treated as an after-thought, but will be an intrinsic element of many project activities.

167. The first step in achieving the replication of project demonstration activities will be to open up the project's site demonstration work to managers and staff responsible for management of Iran's approximately 35 remaining WPAs throughout the country. An initial national-level workshop will introduce the project and the demonstration sites to a wide range of stakeholders from these target replication sites. WPA staff exchanges will be organized to allow managers to learn from challenges facing the demonstration sites.

168. An important mechanism in this exchange process will be the establishment of thematic working groups involving stakeholders from approximately five to ten of the target replication sites, as well as those from the demonstration sites.[38] These provincial-level stakeholders will work on the demonstration themes highlighted in Outcome 2, i.e., inter-sectoral co-ordination, water use and distribution, integrated pollution control, etc. This work will take place in parallel to the actual site-based demonstration work addressing these same themes. National and international expert support will be provided to guide both the demonstration work at the sites as well as the replication work of the thematic working groups. The latter will develop thematic action plans for adapting and replicating project demonstration themes at their respective sites.

169. The above thematic action plans will ultimately be recombined into site action plans and submitted for national-level approval and implementation. Seed funding for implementation of these

[38] These sites will be selected during the early stages of the project.

plans has been included in the present project budget; however, the project will aim to leverage additional funding from national and international sources as well.

2.2.5 Global environmental benefits of project

170. Global environmental benefits to be achieved by the project are included as impact indicators within the project's logframe matrix (LFM). They include the following benefits at the project's demonstration sites:

- Conservation of the unique Lake Uromiyeh ecosystem, based on the endemic brine shrimp, *Artemia urmiana*
- The return of globally significant numbers (>10,000) and breeding pairs (>2,500 annually) of flamingos to Lake Uromiyeh by the completion of the project and their sustained presence at comparable levels thereafter;
- The return of globally significant numbers of breeding pairs (>200 annually) of white pelicans to Lake Uromiyeh by the completion of the project and their sustained presence at comparable levels thereafter;
- Substantially increased numbers of globally threatened species visiting restored wetlands within the LUEZ;
- Continuation of Lake Uromiyeh's status as "a magnificent example of a natural, hypersaline lake with great scenic beauty."
- A 30% increase over baseline levels of populations of globally threatened bird species (see para. 25 for species names) at Lake Parishan by the end of the project and their sustainaed presence at comparable levels thereafter.

171. In addition to benefits at the above demonstration sites, the project will generate spin-off, or replication benefits through its Outcome 3. Iran supports approximately 76 wetlands of international significance, representing an estimated 40% of the wetlands of international importance in the entire Middle East.[39] More than 30 of these sites are nationally or internationally protected. Project activities will build capacities for enhanced management of, and problem-solving at, these sites. Together with seed financing made available as co-financing under the present project, these actions are expected to creat additional global environmental benefits during the life of the project. Specific targets to this effect will be established during the project's inception phase.

2.2.6 Incremental Cost Estimation

172. The incremental cost analysis is presented in Annex 2. The process for jointly estimating incremental costs with in-country project partners involved both face-to-face and e-mail exchanges. A national project team was re-established towards the end of the PDF-B phase and provided a good deal of information on baseline and proposed co-financing. In the case of baseline spending, very conservative estimates have been used and it is possible that certain associated spending, e.g., for sewage collection and treatment, could eventually reach substantially higher than estimated in the ICA.

[39] Vide supra, para. 10.

2.3 Sustainability

2.3.1 Financial sustainability

173. The GEF alternative involves a one-time investment to develop and raise the operating level of technical, managerial and operational systems for WPA management in Iran. This does not imply, however, that there will not be a need to operate and maintain this capacity, together with associated recurrent costs. Fortunately, the Iranian Government has shown a substantial degree of willingness to fund this sector, as evidenced by the high level of co-financing committed to the present project. This willingness is clearly linked to the Government's continuing political commitment, as host of the Ramsar Convention, to wetlands conservation. The urgent need to develop strategies to address the problems facing wetlands under drought conditions – as highlighted by the Iranian Government during the recent COP-8 meeting – are further signs that the Government is eager to maintain a high profile in this area. All of these factors bode well for a continuing willingness to maintain the strengthened WPA management infrastructure that will arise from this project.

174. The project's emphasis on multi-stakeholder participation will also improve prospects for sustainability. The project will build the capacity of government authorities and strengthen the enabling environment at each site so that frameworks and incentives are in place for the long-term management of resources. Working with local communities and local stakeholders – including farmers and fishermen at thee demonstration sites – will be an important element of this participatory approach. Finally, the learning and adaptation process undertaken under Outcome 3 will help to ensure that stakeholders have the capacity to respond to and apply new ways of managing resources following the project's completion.

175. Project activities at Lake Uromiyeh are expected to lead to a significant re-allocation of investment resources within the Basin. The incorporation of environmental costs into investment decision-making is expected to lead to enhanced recognition of the need to invest in pollution and erosion control, etc. Similar benefits, albeit on a smaller scale, are expected at the Lake Parishan site.

2.3.2 Technical sustainability

176. The project does not rely heavily on international experts, but rather will place emphasis on building the capacity of local experts. Thus, the project's primary long-term expert will be recruited on a retainer basis to provide part-time support throughout the duration of the project. The level of support will diminish through the course of the project. It is expected that a critical mass of national-level expertise will be reached during the course of the project, thus substantially reducing the long-term need for international expertise in WPA management.

2.4 Replicability

177. The project's strategy is closely oriented to achieving additional global benefits through replication. This was considered important from the outset for two main reasons:

- the large number of wetlands of international significance in Iran and the need to work at a limited number of demonstration sites.
- the frequency with which typical threats and barriers, e.g., the need for enhanced inter-sectoral co-ordination, recurred at many sites.

178. It should be noted that one of the advantages of having Lake Uromiyeh as a demonstration site is its high profile in Iran. It is a very well known location in the Iranian context and its recent environmental problems have attracted a good deal of public attention. For this reason, project efforts at the site will be closely watched, a fact that is sure to enhance its ultimate replicability.

179. Outcome 3 is largely aimed at facilitating replication. It acknowledges that DoE will need to assume primary responsibility for adapting lessons learned to other sites and that it will require both human and institutional cpacity building to accomplish this task. Outcome 3 also includes the concept of 'target replication sites'; these will be the first locations to which tools and methods developed at the project demonstration sites will be disseminated. Partial government co-financing has already been committed for the purpose of replication, and the project will aim to leverage additional co-financing for this purpose.

2.5 Stakeholder involvement

180. The project aims at generating a strong sense of commitment to biodiversity conservation and ownership over the management of biodiversity resources amongst a broad base of stakeholders. Broad-based stakeholder consultation and participation have therefore been integral to the project design process. This has featured consultations with local officials, visits to, and consultations with, communities surrounding project sites and conducting of local logical framework workshops. A Project Steering Committee (PSC) was also established under the PDF-B.

181. Key categories of stakeholders engaged under the PDF-B included Central Government, Provincial Government, Non-Government Organisations, Local communities, and Project Partners and Co-funders. The continuing participation of each in various full project sub-outcomes has been identified in **Annex 5**.

182. The participatory process engendered under the PDF-B will be expanded under the full project. Stakeholder participation will occur at two levels: the project decision-making process; and implementation of project-related interventions. The former will occur by means of the PSC, which will be expanded to include all key stakeholders identified under the PDF-B (see **Annex 5** for list of stakeholders). At the level of implementation, a number of stakeholders will be engaged and their support be intrinsic to the project's ultimate success. This is particularly true of activities being co-financed by Government, which will involve a number of different government agencies.

2.6 Implementation and co-ordination arrangements

183. Project implementation will follow national execution arrangements and will be undertaken by the Department of Environment, in co-operation with other relevant Government bodies including MPO, MFA, MoE, MoAJ and MoRT.[40] These agencies will be supported by a Project Co-ordination Unit (PCU) under the overall guidance-oversight of UNDP.

184. Prior to the project inception mission, DoE will appoint its National Project Manager (NPM), who will be responsible for co-ordinating the implementation of project activities. The NPM will also be responsible to ensure effective co-ordination and co-operation with other counterpart Ministries, as well as with the PCU. It is preferable that the NPM either be the individual in charge of the main implementing unit within DoE or that individual's direct supervisor.

[40] Detailed implementation arrangements will be developed as part of the project document.

185. The PCU will be led by a full-time National Project Director (NPD), who will be selected by a panel established for this purpose. This panel will include representatives of all pertinent Governmental and Non-governmental stakeholders. Once selected, the NPD, with the technical and contract-issuing support of UNDP, will recruit PCU staff members, including a Deputy NPD (who should be someone of unquestioned technical abilities) along with two support staff.

186. Responsibilities of the PCU will include the following:[41]

- to provide overall project co-ordination, while acting as an independent and unbiased guarantor of co-operation and information exchange between the ministries;
- to convene quarterly Project Implementation Meetings (PIMs), which will review progress in implementing project workplans and will attempt to resolve any ongoing difficulties in inter-ministerial co-operation;
- to ensure, together with the executing agency and UNDP, that specified tasks undertaken at the project sites are outsourced to suitable consultants and/or sub-contractors through competitive bidding processes. This would include, for example, development of bidding documents and terms of reference;
- to organize project-level meetings and workshops, e.g., inception workshop, Project Steering Committee (PSC) meetings (see para. 112 below), etc.;
- working closely with UNDP Iran, to co-ordinate all missions by international consultants, including preparation of terms of reference;
- to develop, in co-operation with DoE and other agencies, as relevant, details of equipment procurement; and
- to prepare overall project reporting.

187. It is worth recalling that the PCU is by definition the single non-sustainable component of the project. In other words, its existence is required only for the purposes of the project's operation; it should be expected to dissolve at the time of project completion, leaving the inter-sectoral co-ordination of protected area management to be achieved by the relevant Government agencies. This temporary character of the PCU should be widely understood so that parties may begin fully to assume these co-ordination responsibilities prior to the project's completion.

188. The PCU will receive periodic support from an international Project Implementation and Monitoring Expert (PIME), who will carefully monitor and support the implementation of all project components. This expert will undertake periodic visits to the PCU and to the project sites in order to review the progress of project implementation as compared with the defined baseline and with respect to the benchmark indicators highlighted in the Logical Framework Analysis Matrix (see **Annex 1**). The PIME will represent one vehicle for introducing international best practices to the project sites. PIME mission reports will follow an agreed format and will represent an important technical source for keeping the UNDP Iran desk officer, UNDP-GEF Regional Co-ordinator and UNDP-GEF Regional Manager apprised concerning developments in project implementation. Support from the PIME will gradually decline over the course of project implementation, e.g., from four months in Year One to one month in Year Seven.

189. UNDP will provide both technical and administrative backstopping to ensure results-oriented management, proper administration of funds, maintain project accounts, facilitate staff recruitment and procurement processes, monitor resource mobilization of baseline and co-finance as contemplated in

[41] A complete TOR for the PCU, as well as for the NPD, NPM and PIME will be appended to the UNDP project document.

project document. Financial transactions will be subject to annual audits undertaken by internationally certified auditors.

190. A Project Steering Committee (PSC) will meet on an annual basis with the role of overseeing project planning, implementation and performance. It will consist of representatives from UNDP, MSEA, MAAR, the national executing agency and each of the participating provinces. The PSC will be responsible, *inter alia*, for adopting annual work programmes prepared by the PCU.

2.7 Monitoring & Evaluation

2.7.1 Incorporating lessons learned from similar projects

191. The lessons learned from UNDP-GEF experience in other wetland protected area projects have been incorporated into the design of this project. In particular, experiences accumulated by several ongoing projects have pointed to the need for a well thought out replication strategy to share lessons in wetland management and conservation more broadly. Experience, particularly in the context of ICZM projects has demonstrated the importance of inter-sectoral coordination and the facilitating role that can be played by a coastal or basin-wide management body. Furthermore, ongoing projects, such as the China Wetlands project to name but one, have highlighted the necessity of focusing on threats located in upper watersheds.

192. The project is also designed to promote ongoing learning and adaptive management during project implementation through a systematized process of cross-project learning. This will involve identifying common thematic areas of project interventions and networking relevant projects around these themes. The project will promote results-oriented project networking by ensuring, at project inception, that relevant projects jointly develop a plan and process for regular information sharing and communication on project methodologies and impacts. This is intended to contribute towards effective coordination and collaboration across multiple stakeholders, programs, and projects in working towards common conservation and sustainable development objectives.

193. Cross-project learning linkages with other projects/programs, including projects in China and Pakistan, as well as a regional IW project for the Caspian Sea and a World Bank MSP reviewing lessons learned for lake management, will also be undertaken since lessons from such projects would be helpful and carry potential replicability to the present project. In addition, lessons generated during the initial stages of the present project will be usefully incorporated into the project development process underway for an IW project in the Sistan Basin between Iran and Afghanistan.

194. The PCU and UNDP will ensure effective documentation of all processes undertaken, lessons learned and successful initiatives. Information on successful experiences will be disseminated through networking arrangements from central to local levels to strengthen their support and ownership of the project initiatives. Information on successful experiences will be disseminated to other similar areas in Iran as well as to the general public and donors.

2.7.2 Monitoring and evaluation during the main project

195. The total indicative cost of the monitoring and evaluation (M&E) component of the project is about US$300,000. The project incorporates monitoring of biodiversity and socioeconomic indicators as an integral activity to track the performance and impact of project interventions and as a basis for adaptive management. This will be done in coordination and collaboration with other partner institutions. Comprehensive socioeconomic and biodiversity baselines will be established at the initial stage of the

project. Periodic surveys on ecological and socioeconomic parameters will be undertaken subsequently to ascertain ecological, social, and economic trends. The project will ensure these ecological and socio-economic parameters are closely linked to project interventions. Major project impact and implementation indicators to gauge the performance of project interventions have been developed. (See **Annex 1** for indicators of project objectives, outputs, and activities in the logical framework matrix).

196. Project evaluation will conform to UNDP and GEF requirements and procedures. The Executing Agency and, in particular, the project management, will ensure regular monitoring of progress, using detailed indicators for field level monitoring covering both quantitative and qualitative information, and provide project reports to the UNDP. Quarterly and annual review of progress made will be done with the participation of relevant stakeholders. The Executing Agent will prepare and submit to UNDP the Annual Progress Report (APR) for discussion at annual Tripartite Review Meetings, with the involvement of major partners. A GEF Project Implementation Review will be completed annually for each year that the project is under implementation. The project will be subject to independent mid-term review, as per GEF guidelines. Technical review meetings will also be organized as required.

3. FINANCING

3.1 Financing plan

3.1.1 Project costs and disbursements

197. **Table 4** below provides a summary of the project costing and financing by project output.

198. A financial plan with timing of disbursements is not applicable as this is not a phased project. The timing of disbursements will be determined at the project implementation phase.

3.1.2 Confirmation of commitments by co-financiers

199. See **Annex 8** for supporting documentation demonstrating commitments of co-financiers.

3.2 Cost effectiveness

200. The future costs of restoring the sites, should they become further degraded, would be prohibitive, particularly given the sensitivity of these ecosystems. The loss of biodiversity induced by the current practices would likely be irreversible. This project is based on the assumption that taking a precautionary and fully participatory approach to conservation – one which emphasizes enhanced co-ordination at all levels – is the most cost-effective solution. Finally, the project's cost effectiveness will be greatly enhanced by its emphasis on integrating site-level and national-level capacity-building activities, which is considered essential to replication and thus to building up the national WPA system in the long-term.

201. From the point of view of the Iranian Government, and particularly when broader environmental economic costs and benefits are incorporated into the calculus, the present approach could produce substantial benefits. In particular, a new emphasis on strategic water sector investment planning within the Uromiyeh Basin will likely prove highly advantageous over the long run.

202. Finally, the project will explore the possibilities of revenue generation at the demonstration sites as a partial means for financing management activities.

Table 4: Proposed Project Budget and Financing Scheme

Project Outcomes	TOTAL (US$ Million)	GEF (US$ Million)	Co-financing	
			Source	Amount (US$) Million
1 – Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to effectively manage WPA sites, including dealing with most 'internally arising' threats to globally significant biodiversity		0.92	Government Netherlands	2.80 0.18
2 – Inter-sectoral co-ordination structures, established at watershed or basin level, enhance the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level		1.08	Government Netherlands	4.32 0.42
3 – National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, *inter alia*, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above		0.92	Government	2.24
Totals	12.88	2.92		9.96

3,2,2. Alternative approaches considered

203. The initial site selection process conducted under the PDF-B selected four demonstration sites. In addition to Lake Uromiyeh and Lake Parishan, the other sites were Miankaleh Peninsula and Khouran Straits.[42] Following the initial site selection, assessments and stakeholder consultations continued at the four sites and a draft project brief was prepared.

204. At this point, however, external factors related to the GEF replenishment and a heavy GEF pipeline made it appear highly unlikely that the project as designed – with approximately $9 million in proposed GEF support – would be approved any time soon. As a result, it was agreed that the number of demonstration sites would be reduced to two. Following a carefully prepared assessment, UNDP-GEF and Government agreed on the final two demonstration sites.

205. The retention of Lake Uromiyeh as a project site was somewhat contentious, as its environmental condition had continued to deteriorate during an ongoing drought. However, Government was particularly insistent on retaining the site and ultimately agreed to supply substantial co-financing for it – something which would have been much more difficult in the case of the other, lower profile sites.

206. In light of the above changes, and also in view of the newly approved GEF Strategic Priorities, it was decided to place additional, substantial emphasis on replication and system-wide strengthening of the WPA system. Indeed, this decision has been facilitated by the selection of Lake Uromiyeh, which has a

[42] See Annex __, Site selection and Biodiversity Significance.

prominence and public recognition matched only by one other wetland in Iran, Anzali Mordab (a target replication site). Thus, the high profile of the work to be done at Lake Uromiyeh will clearly facilitate efforts to replicate and extend lessons learned at the site.

4. Institutional Coordination & Support

4.1 Relationship with UNDP core programme

207. UNDP's first Country Co-operation Framework (CCF) with Iran (1995-1999) made protection of the environment for sustainable development as one of its two main thematic areas. Within this area, the CCF included projects both at policy and field levels to support the restructuring of the Department of the Environment, introduce environment impact assessments as part of the Government's approval mechanism for large-scale investments, formulate a national strategy for development and sustainable environment, and implement a land and water programme.

208. The land and water programme, particularly with regard to watershed management, addressed key Sustainable Human Development (SHD) and gender considerations. It took an integrated approach and gained the active support of grassroots and local organizations. The CCF review recommended that the project be mainstreamed with poverty alleviation in the future to increase its impact. The CCF review team felt that the Environment Impact Assessment (EIA) project was also justified. This latter project has particular relevance for the present GEF effort.

209. Under the second CCF (2000-2004), resource-based management and environmental conservation represent one of three iinitiatives under the programme area of economic and resource-based management. The aim of this initiative is to assist the Government in institutionalizing the optimal use of its resources and conservation practices and link them with other programmes to achieve improved planning modalities for sustainable development. Efforts will focus on the interlinkages between natural and economic resource bases and national planning, emphasizing the interaction of the population-poverty nexus with efficient and sustainable use of natural resources, especially in rural areas.

4.2 Consultation, coordination and collaboration between IAs

210. The PDF-B phase worked closely with the World Bank-funded, FAO-implemented Irrigation Improvement Project (IIP). That project's Environmental Component (EC-IIP) developed an environmental assessment and draft management plan for Lake Uromiyeh which was an essential source for the PDF-B team. Their work was also instrumental in attracting the support of the Netherlands Government, which will provide important co-financing for work at the site.

5. RESPONSE TO REVIEWS

5.1 Council

No Council comments were received at pipeline entry

5.2 Convention Secretariat

To be added

5.3 GEF Secretariat

Please see Annex 3e.

5.4 Other IAs and relevant EAs
To be added

5.5 STAP
No comments were received from STAP at pipeline entry.

5.6 Review by expert from STAP Roster
See Annex 3a for the frist STAP Review and Annex 3b for the Response to the first STAP review.

As the first review was a fairly upstream review, the same STAP reviewer was requested to undertake a second STAP review of the complete and finalized Project Brief, including the GEF Secretariat's comments and UNDP's response to these.

See Annex 3c for the second STAP Review, and Annex 3d for the Response to the second STAP Review.

List of Annexes

Required:

Annex 1: Logical Framework Matrix
Annex 2: Incremental Cost Analysis
Annex 3a: STAP review
Annex 3b: Response to STAP review
Annex 3c: Revised STAP Review
Annex 3d: Response to Revised STAP Review
Annex 3e: Response to GEFSec Review
Annex 4: GEF focal point endorsement letter (*separate attachement*)
Annex 5: Public participation strategy
Annex 6: Site selection and biodiversity significance
Annex 7: Maps
Annex 8: Co-financing confirmation letters (*separate attachment*)

Annex 1 - Logical Framework Matrix

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
Project goal	To catalyse the sustainability of Iran's system of wetland protected areas (WPAs), thereby enhancing its effectiveness as a tool for conserving globally significant biodiversity.			
Project objective	To systematically remove or substantially mitigate threats facing globally significant biodiversity and sustainability at two demonstration sites, while ensuring that the lessons learned through these demonstrations are absorbed within WPA management systems throughout Iran.	• The return of globally significant numbers (>10,000) and breeding pairs (>2,500 annually) of flamingos to Lake Uromiyeh by the completion of the project and their sustained presence at comparable levels thereafter; • The return of globally significant numbers of breeding pairs (>200 annually) of white pelicans to Lake Uromiyeh by the completion of the project and their sustained presence at comparable levels thereafter; • Substantially increased numbers of globally threatened species visiting restored wetlands within the LUEZ; • Continuation of Lake Uromiyeh's status as "a magnificent example of a natural, hypersaline lake with great scenic beauty." • A 30% increase over baseline levels of populations of globally threatened bird species (see para. 25 for species names) at Lake Parishan by the end of the project and their sustainaed presence at comparable levels thereafter. • 10% net increase over baseline levels of protected wetland areas withing LUEZ • Reduction in Lake Uromiyeh salinity levels to levels that no longer threaten Artemia populations • 30-50% average reduction in levels of threat indicators facing project sites	• Project and DoE environmental and biodiversity monitoring reports	○ External threats or factors outside the systems boundary, e.g., drought, do not overwhelm the impact of sustainable management of the sites.

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
		• 10-20% measured reduction in sediment levels reaching the Lakes and satellite wetlands		
	Outcome 1: Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to effectively manage WPA sites, including dealing with most 'internally arising' threats to globally significant biodiversity			
Outcomes	Sub-outcome 1.1: WPA managers are well-trained in ecosystem-based planning and management and are skilled at identifying, monitoring, mitigating and reporting on key site-based threats	• Training workshops produce assessment of internally arising threats and threat indicators • WPA managers provide regular assessment reports on threat levels	• Threat assessment reports	○ Improved knowledge and skills provided are effectively utilised by site managers and DOE institutionally.
	Sub-outcome 1.2: WPA managers implement biodiversity monitoring programmes which track the impacts of all anthropogenic threats	• WPA managers (site-based and HQ-based) prepare periodic biodiversity assessments • Monitoring equipment received	• Biodiversity assessment reports • PCU quarterly reports	○ Monitoring results are acted upon in a timely and effective manner
	Sub-outcome 1.3: Site managers co-operate with local communities and NGOs to raise awareness and encourage broad-based participation in WPA management	• Socio-economic conditions have been assessed by the end of Year 1 • Alternative livelihoods have been introduced as necessary in years 3-5 • Regular NGO Forums are held	• Socio-economic assessment reports • PCU quarterly reports • Report of NGO Forum	○ Awareness-raising and education activities result in tangible changes in behaviour. ○ Availability of alternative income sources results in reduced dependence on illegal encroachment activities and reduced incidence of encroachment
	Sub-outcome 1.4: Site conservation, including active enforcement of regulatory measures, is performed according to agreed management plans, resolving issues and addressing threats which are fully within site managers' competencies and authority	• Approval / adoption of site management plans • Major task areas highlighted in site management plan are completed as scheduled	• Finalized plans • Management plans and WPA Annual Reports	○ DOE effectively implements management plans that are developed
	Sub-outcome 1.5: Degradation and destruction of satellite wetlands is halted and in pilot cases, reversed	• No net loss of LUEZ wetlands (WPAs and others during project period	• Baseline and follow-up quantitiative analyses	○ Wetlands can be restored to a level approaching their former value

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	Outcome 2: Inter-sectoral co-ordination structures, established at watershed or basin level, enhance the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level			
	Sub-outcome 2.1 Co-ordination mechanisms have been developed to facilitate decision-making and wise use of water, land and other natural resources in watershed areas affecting key WPAs	• End of Month 6 (following pro-doc signature): Memorandum of Understanding signed by major institutional stakeholders (Ministerial and Provincial) agreeing on need to establish a LUBMA and on its basic operating parameters • End of Year 1: Environmental High Council (EHC) approves establishment of LUBMA and forwards draft legislation / request to Parliament. LUBMA begins provisional operations under existing project budget, with authority devolving from EHC and with staff on temporary secondment from key agencies. • End of Year 3: Parliament approves official establishment of LUBMA • End of Year 5: Government has fully taken over costs of operating LUBMA	• Memorandum of Understanding • EHC Minutes • Parliamentary Act • LUBMA operational reports	○ The project receives all required cooperation from relevant Government stakeholders. ○ Sufficient institutional support for policy changes exists. ○ LUBMA will receive a sufficiently wide mandate and will be able to co-ordiante effectively among various sectoral agencies
	Sub-outcome 2.2: Systems for improving the efficiency of water distribution across economic and ecological 'uses' within WPA drainage basins have been developed	• End of Year 2: Water pricing system has been developed • End of Year 3: Institutional arrangements have been made for the introduction of a water pricing system and system introduced • End of Year 4: Water management model has been established and is being used to support analysis, projections and decision-making	• Netherlands project reports • PCU progress reports	○ Stakeholders resist the idea of water use charges
	Sub-outcome 2.3: Integrated pollution control practices have been developed	• Baseline pollution assessment available at end of Year 1 • Identified pollution hotspots have begun to be ameliorated by end of Year 3 • Noise pollution regulations are revised and enforced by end of Year 1	• PCU progress reports	○ Diffuse sources can be effectively reached and controlled

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	Sub-outcome 2.4: Enhanced measures for preventing land degradation have been introduced and are helping to reduce sedimentation and related negative impacts downstream	• Surface geology study available to assist prioritization of erosion control efforts by end of Year 2	• Surface geology report	○
	Sub-outcome 2.5: Best practices in Environmental Impact Assessment (EIA) have been demonstrated	• Kalantary Highway EIA is completed and remedial measures agreed by end of Year 3 • End of Year 3: Increased transparency and public consultations on relevant EIAs • Strategic EIA concerning dam construction (see also 2.2) is completed under LUBMA auspices by end of Year 4	• EIA reports are publicly available • PCU progress reports	○ Legislative changes required for EIA revision are supported.
	Sub-outcome 2.6: Best practices concerning alien species introduction and control have been demonstrated	• Moratorium is imposed on new species introductions within demonstration sites by end of year 1	• Moratorium Declaration	○ Accidental or unannounced species introductions may be difficult to prevent
	Outcome 3: National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, *inter alia*, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above			
	Sub-outcome 3.1: Relevant DoE headquarters structures are rationalized, human capacities for WPA management are strengthened and essential national-level WPA management tasks are demonstrated	• Revised organigramme showing DoE internal management arrangements and structures concerning wetlands management agreed by end of Year 1 • Key staff have all received training by end of Year 2 • WPA Annual reports are produced and disseminated • Five new WPAs are established using enhanced selection and establishment processes by end of project.	• PCU reports	○ Key trained personnel remain within their positions
	Sub-outcome 3.2: Awareness and technical capacities are raised in key sectoral ministries while National co-ordination structures are strengthened	• Technical support related to WPA management (expert consultation, etc.) has been provide to EHC and other inter-sectoral mechanisms as requested	• PCU reports	○ Overall working relations between DoE and relevant ministries remain positive and facilitate co-operation

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	Sub-outcome 3.3: Lessons learned in Outcomes 1 and 2 are disseminated to managers of other key WPA sites, who use them in developing strategies for replication at their sites	• End of Year 1: Staff from 15 target replication sites have received demonstration site-based training • End of Year 1: Approximately six thematic working groups are established and operational • End of Year 5: 5-10 target replication sites sites have developed site action plans to replicate project results	• PCU reports	○ Site action plans do not conflict with existing management plans so much as to hinder their implementation
Activities:	**Outcome 1: Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to effectively manage WPA sites, including dealing with most 'internally arising' threats to globally significant biodiversity** SUB-OUTCOME 1.1: WPA MANAGERS ARE WELL-TRAINED IN ECOSYSTEM-BASED PLANNING AND MANAGEMENT AND ARE SKILLED AT IDENTIFYING, MONITORING AND REPORTING ON KEY SITE-BASED THREATS *Activity Area 1.1.1 Training of Uromiyeh National Park and satellite wetland cadres and managers in ecosystem planning and management* 1.1.1.1 Conduct training needs assessment and develop training programmes 1.1.1.2 Implement site-based training programmes and team-building exercises, including assessment of 'internally arising threats' and development of related indicators 1.1.1.3 Undertake study tours to successful examples of protected wetland areas, especially GEF project sites *Activity Area 1.1.2 Training of Arjan National Park cadres and managers in ecosystem planning and management* 1.1.2.1 Conduct training needs assessment and develop training programmes 1.1.2.2 Implement site-based training programmes and team-building exercises, including assessment of 'internally arising threats' and development of related indicators 1.1.2.3 Undertake study tours to successful examples of protected wetland areas, especially GEF project sites SUB-OUTCOME 1.2: WPA MANAGERS IMPLEMENT BIODIVERSITY MONITORING PROGRAMMES WHICH TRACK THE IMPACTS OF ALL ANTHROPOGENIC THREATS *Activity Area 1.2.1 Biodiversity monitoring at Lake Uromiyeh and selected satellite wetlands* 1.2.1.1 Based on revised data collection and monitoring guidelines prepared by DoE Tehran (see Activity 3.1), prepare final site-specific data collection protocols 1.2.1.2 Provide monitoring equipment 1.2.1.3 Prepare initial baseline biodiversity report for each site based on agreed site-specific guidelines 1.2.1.4 Undertake follow-up monitoring throughout project lifespan 1.2.1.5 Regularly provide collected data in a standardized format to national-level database and GIS system being managed by MoE (see AA 3.1) *Activity Area 1.2.2 Biodiversity monitoring at Lake Parishan*			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions

1.2.2.1 Based on revised data collection and monitoring guidelines prepared by DoE Tehran (see Activity 3.1), prepare final site-specific data collection protocols

1.2.2.2 Provide monitoring equipment

1.2.2.3 Prepare initial baseline biodiversity report for each site based on agreed guidelines

1.2.2.4 Undertake follow-up monitoring throughout project lifespan

1.2.2.5 Regularly provide collected data in a standardized format to national-level database and GIS system being managed by MoE (see AA 3.1)

SUB-OUTCOME 1.3: SITE MANAGERS CO-OPERATE WITH LOCAL COMMUNITIES AND NGOS TO RAISE AWARENESS AND ENCOURAGE BROAD-BASED PARTICIPATION IN WPA MANAGEMENT

Activity Area 1.3.1 Assessment of local community relationships with demonstration sites and site resources

1.3.1.1 Undertake a comprehensive, participatory socio-economic assessment of each site, building upon the preliminary assessments undertaken during the PDF-B phase, including the following aspects:

- Assess the extent and nature of local community dependence on site resources, both directly (fuel, water, food, medicinal or income-generating resources) and indirectly (existence values, environmental values including watershed and soil stability, etc.)
- Identify, quantify and prioritize various anthropogenic threats to the sites related to local communities, e.g., hunting, grazing, agriculture and agrochemical use, hunting, etc.
- Assess the extent to which these anthropogenic threats affect biodiversity in and sustainable use of the sites and the degree to which these threats need to be reduced or eliminated to achieve sustainability.

Activity Area 1.3.2: Alternative livelihood activities and opportunities are identified and made available to local communities where required

1.3.2.1 Undertake briefings and discussions with local communities to raise awareness concerning the ways in which their activities affect the sustainability of the sites, and the necessity for finding alternative sustainable livelihood activities to substitute for existing unsustainable activities

1.3.2.2 Identify, in close consultation with local communities, potential alternative livelihood activities which are acceptable substitutes for existing income and resource sources.

1.3.2.3 Research and pilot-test potential alternatives to identify those sustainable livelihood activities which are most suitable for local socio-economic and ecological conditions.

1.3.2.4 Once suitable alternative livelihood activities have been identified and accepted by local communities, provide technical and financial support for the implementation of these alternatives in affected communities

Activity Area 1.3.3: Encourage and facilitate NGO participation in raising grassroots support for conservation at Lake Uromiyeh

1.3.3.1 Organise an NGO Forum for Uromiyeh Basin, bringing together representatives from environmental and other NGOs active within the basin, with possibility to create an umbrella NGO, e.g., 'Friends of Lake Uromiyeh.' Selection by NGO Forum of NGO representatives to participate in inter-sectoral co-ordination meetings

1.3.3.2 Identification of project activities, e.g., awareness raising, community extension, etc., in which NGO participatory capacities may be strengthened

1.3.3.3 Conduct capacity building activities as necessary, for NGOs

1.3.3.4 NGO support for implementation of identified project activities

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	SUB-OUTCOME 1.4: SITE CONSERVATION, INCLUDING ACTIVE ENFORCEMENT OF REGULATORY MEASURES , IS PERFORMED ACCORDING TO AGREED MANAGEMENT PLANS, RESOLVING ISSUES AND ADDRESSING THREATS WHICH ARE FULLY WITHIN SITE MANAGERS' COMPETENCIES AND AUTHORITY *Activity Area 1.4.1 Management planning and conservation at Uromiyeh Lake* 1.4.1.1 Finalize current draft management plan with institutional partners and local stakeholders 1.4.1.2 Site managers lead implementation of site-based components of management plan, focused on addressing site-based threats to biodiversity while managing sustainable uses. Plan will include: o development of functional zonation scheme; o drafting of regulations associated with zoning scheme; o revisions to job profiles and management structures; o definition of equipment needs; o implementation of ecological rehabilitation measures, and; o development and implementation of a visitor management plan, including establishment of a visitors' center. *Activity Area 1.4.2 Management planning and conservation at Parishan Lake* 1.4.2.1 Finalize current draft management plan with institutional partners and local stakeholders 1.4.2.2 Site managers lead implementation of site-based components of management plan, focused on addressing site-based threats to biodiversity while managing sustainable uses. Plan will include: o development of functional zonation scheme; o drafting of regulations associated with zoning scheme; o revisions to job profiles and management structures; o definition of equipment needs; o implementation of ecological rehabilitation measures, and; o development and implementation of a visitor management plan. SUB-OUTCOME 1.5: DEGRADATION AND DESTRUCTION OF SATELLITE WETLANDS IS HALTED AND IN PILOT CASES, REVERSED *Activity Area 1.5.1: Improving baseline data and monitoring of wetland conversions* 1.5.1.1 At beginning of project, conduct a quantitative analysis, using time-series satellite images, of loss and/or conversion of wetland habitat at LUEZ and Parishan since 1975 1.5.1.2 Utilizing GIS techniques, prepare biodiversity overlays delineating specific land areas that formerly represented globally significant wetland habitat, showing their current uses and identifying target areas for restoration (see also 1.4) 1.5.1.3 At end of project, conduct a follow-up quantitative analysis demonstrating conservation and, where possible, restoration of internationally significant wetlands within LUEZ and at Parishan *Activity Area 1.5.2: Improving effectiveness of regulatory and legal approaches to halting and where possible reversing the conversion of wetlands of international significance* 1.5.2.1 Prepare detailed assessment of difficulties impeding local, provincial and national-level regulatory and legal efforts to halt land conversions at LUEZ and Parishan and develop remedial action plan. Process should include a review of international best practices in this area. 1.5.2.2 Consult relevant stakeholders on contents of action plan and gain approval of plan			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions

1.5.2.3 Implement action plan for addressing identified legal and regulatory shortcomings at national and provincial levels. Plan will include:
- enhanced and targeted penalties for infractions;
- support for regulatory and judicial reform;
- awareness raising among key provincial officials;
- support for specific legal efforts aimed at preventing pending conversions

Activity Area 1.5.3 Pilot restoration of satellite wetlands

1.5.3.1 Prepare feasibility assessments for restoration of internationally important wetlands within LUEZ (Shur Gol, Yadegarlu, Dorgeh Sangi, Lake Kobi, Gori Gol, Ghara Gheslaq marshes, Gerde Gheet and Mamiyand (Dutch, Govt)

1.5.3.2 Based on above feasibility assessments, select two internationally important wetlands for implementation of comprehensive restoration plans (Gov. GEF)

1.5.3.3 Implement restoration plan (Government)

Outcome 2: Co-ordinated and environmentally sound management at watershed or basin level enhances the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level

SUB-OUTCOME 2.1 CO-ORDINATION MECHANISMS HAVE BEEN DEVELOPED TO FACILITATE DECISION-MAKING AND WISE USE OF WATER, LAND AND OTHER NATURAL RESOURCES IN WATERSHED AREAS AFFECTING KEY WPAS

2.1.1 Establish and operate a permanent Lake Uromiyeh Basin Management Authority (LUBMA), i.e., a Federal-level institution with supra-ministerial, supra-provincial authority to decide on and enforce key water and land use issues

2.1.1.1 Develop detailed TOR and operating guidelines for establishment of a LUBMA[1]

2.1.1.2 High-level political discussions to ensure that the LUBMA has adequate authority to achieve its proposed mandate

2.1.1.3 Gain final approval for TOR and establishment of a LUBMA from Environmental High Council

2.1.1.4 Establish a LUBMA with appropriate staffing levels, facilities and operating budget

2.1.1.5 Organize regular inter-sectoral meetings to reach co-ordinated and environmentally sound decisions on projects and other proposals related to water resource use, water quality investments, erosion control, etc.

2.1.2 Establish a Lake Parishan Provincial Co-ordinating Committee (LPPCC) for participatory, inter-sectoral decision-making concerning issues affecting the Lake and protected area

2.1.2.1 Develop detailed TOR and operating guidelines for establishment of LPPCC

2.1.2.2 Gain final approval for TOR and establishment of LPPCC from Provincial authorities

2.1.2.3 Organize regular inter-sectoral meetings to reach co-ordinated and environmentally sound decisions on projects and other proposals related to water resource use, water quality investments, erosion control, etc.

SUB-OUTCOME 2.2: SYSTEMS FOR IMPROVING THE EFFICIENCY OF WATER DISTRIBUTION ACROSS ECONOMIC AND ECOLOGICAL 'USES' WITHIN WPA DRAINAGE BASINS HAVE BEEN DEVELOPED

[1] See Annex 6 for notes on establishing a LUBMA.

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions

2.2.1 Develop and implement an integrated water management model for the Lake Uromiyeh Basin

2.2.1.1 Complete water balance studies of the Lake Uromiyeh basin, including scenarios of overall water supply and alternatives for meeting current and projected demand, e.g., increasing irrigation efficiency, etc. (NL, Gov)

2.2.1.2 Assess water requirements for Lake Uromiyeh and other wetland ecosystems of international importance within the ecological zone (NL, Gov)

2.2.1.3 Recommend and implement improvements in hydrological monitoring systems (NL, Gov)

2.2.1.4 Develop an information system for handling geo-referenced hydrological and ecological data related to water budget and requirements (NL, GEF, Gov)

2.2.1.5 Create a dynamic model, using the information system developed in 1.1.4, to simulate processes such as snowmelt runoff, evapotranspiration, etc. Model will be capable of predicting lake levels and volumes and water availability in wet and dry periods (NL, Gov)

2.2.1.6 Build institutional and human capacities to utilize and maintain model (NL, GEF, Gov) (Ref. Outcome # 1)

2.2.1.7 Utilize the model as a tool for developing scenarios and making basin-wide, inter-sectoral water resource allocation decisions (Gov, GEF) (Ref. Activity Area # 2.1). This should include a set of final decisions regarding dam-building proposals that will ensure sustainable water use within the basin.

2.2.1.8 Identify key target areas for replication and disseminate results to wetland managers in these areas (NL, GEF, Gov)

2.2.2 Develop environmental economic tools and other techniques aimed at increasing water use efficiency and water conservation within the Lake Uromiyeh basin

2.2.2.1 Conduct an environmental economic study to estimate the economic value of Lake Uromiyeh and satellite wetlands, and to highlight the current and potential future economic costs of degradation; raise awareness among decision-makers and water users concerning findings

2.2.2.2 Develop and pilot test market-based instruments (e.g., user fees, charges, fines) as mechanisms for cost internalization and for limiting wasteful or lower productivity water uses in agricultural and industrial sectors (GEF, Gov)

2.2.2.3 Pilot testing in two areas of technical options for improving irrigation efficiency in order to make water available for restoration of two internationally important wetlands (see 1.3 below) (NL, Gov)

2.2.2.4 Develop and disseminate water-saving technologies for industrial and domestic users within the basin (Gov)

2.2.2.5 Organise water users associations to assess the potential for improved water use efficiency (Gov, GEF)

SUB-OUTCOME 2.3: INTEGRATED POLLUTION CONTROL PRACTICES HAVE BEEN DEVELOPED

2.3.1 Assess baseline pollution levels and associated threats to globally significant biodiversity

2.3.1.1 Develop a module for pollution data to be included in information system being developed under Activity 1.1.4 (Gov)

2.3.1.2 Review and propose changes to existing system of pollution monitoring, including inclusion of biological effects monitoring (Gov't, GEF)

2.3.1.3 Conduct LUEZ-wide rapid aquatic pollution assessment, identifying key hotspots threatening biodiversity (Gov, GEF)

2.3.2 Undertake priority pollution control investments

2.3.2.1 Raise awareness among key decision-makers concerning the importance of pollution control and potential impacts (Gov, GEF)

2.3.2.2 Address key pollution hotspots through legal approach and/or pollution control investments (Gov)

2.3.2.3 At the demonstration satellite wetland sites, identify and implement cost-effective pollution control technologies

2.3.2.4 For each zone of Protected Areas, develop regulations on allowed activities, including regulations on levels of key pollutants and noise levels

2.3.2.5 At the demonstration satellite sites, develop improved pollution collection and treatment facilities

2.3.2.6 At the demonstration satellite sites, demonstrate and disseminate improved agricultural practices, including IPM, low input agriculture, and efficient irrigation (Gov)

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	2.3.3 Control noise pollution at demonstration sites 2.3.3.1 Impose a ban on all low flights over Lake Uromiyeh and other breeding sites during the breeding season, and a ban on all human activities within 3km of breeding sites 2.3.3.2 Develop and enforce regulations at Lake Parishan concerning noise pollution and associated disturbance from motorboats SUB-OUTCOME 2.4: ENHANCED MEASURES FOR PREVENTING LAND DEGRADATION HAVE BEEN INTRODUCED AND ARE HELPING TO REDUCE SEDIMENTATION AND RELATED NEGATIVE IMPACTS DOWNSTREAM *2.4.1 Demonstrate integrated watershed management at Lake Uromiyeh and Parishan drainage basins* 2.4.1.1 Undertake an intensive study of surface geology in order to rank erosive hydrological units and to provide a baseline overview of erosion with the Lake Uromiyeh and Lake Parishan drainage basins 2.4.1.2 Develop and implement a watershed management program for the Zarinneh Roud and Aji Chai river basins (Lake Uromiyeh), including: o Biomechanical measures to reduce the flow velocity in steep slope watercourses o Mechanical measures in watercourses with high slope and high flow-scouring velocities o Strengthen and expand the system of "Erosion Protected Areas," areas which are fully protected from grazing and other activities o Develop incentives for watershed conservation by farmers and herders 2.4.1.3 Review and quantify impacts of erosion control programme SUB-OUTCOME 2.5: BEST PRACTICES IN ENVIRONMENTAL IMPACT ASSESSMENT (EIA) HAVE BEEN DEMONSTRATED *2.5.1 Undertake full EIA for finalization of Kalantary Highway (Gov)* 2.5.1.1 Undertake full feasibility study for the finalisation of the highway, considering all options, assessing financial and economic implications of each option, including the economic cost of losing lake ecosystem 2.5.1.2 Assess financial and economic implications of each option, including the economic cost of further damages to lake ecosystem 2.5.1.3 Secure government funding for projects to undertake remedial work 2.5.1.4 Undertake remedial work, such as the construction of tunnels, or the replacement of sections of the causeway with bridges *2.5.2 Build overall capacities to undertake effective EIA processes in areas within and surrounding WPAs* 2.5.2.1 Develop capacity to undertake consultative and participatory project appraisal and approval processes, including region-wide and strategic EIAs which assess the cumulative impact of policy and several projects in one region 2.5.2.2 Develop an informal EIA process adapted to local small projects 2.5.2.3 Develop local capacity, through NGOs, to contribute to the appraisal of large projects impacting project sites 2.5.2.4 Develop an informal EIA process adapted to local small projects SUB-OUTCOME 2.6: BEST PRACTICES CONCERNING ALIEN SPECIES INTRODUCTION AND CONTROL HAVE BEEN DEMONSTRATED AT LAKE UROMIYEH AND LAKE PARISHAN *2.6.1 Develop and implement plan to manage alien species* 2.6.1.1 Impose moratorium on introducing new species 2.6.1.2 List all exotic species introduced in past 30 years and undertake environmental audit of impact 2.6.1.3 Forecast future impact of previously introduced exotic species 2.6.1.4 Develop management plan for key exotic species and implement 2.6.1.5 Develop and implement EIA procedures for introduction of any exotic fauna or flora to the lake basin			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	Outcome 3: National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, *inter alia*, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above			
	SUB-OUTCOME 3.1: RELEVANT DOE HEADQUARTERS STRUCTURES ARE RATIONALIZED, HUMAN CAPACITIES FOR WPA MANAGEMENT ARE STRENGTHENED AND ESSENTIAL NATIONAL-LEVEL WPA MANAGEMENT TASKS ARE DEMONSTRATED			
	Activity Area 3.1.1 Institutional capacity building for WPA management within DoE Headquarters			
	3.1.1.1 Review and rationalize task descriptions of relevant DoE units to ensure minimal overlap and maximum internal co-ordination of required WPA-management tasks.			
	3.1.1.2 Provide support for improved operational processes within restructured units, such as planning and financial management			
	Activity Area 3.1.2 Human capacity building for WPA management within DoE Headquarters			
	3.1.2.1 Review and rationalize job descriptions of relevant staff within HQ units to ensure minimal overlap and maximum coverage of required WPA-management and co-ordination tasks.			
	3.1.2.2 Develop and implement training programmes to upgrade WPA-related management skills among relevant staff			
	Activity Area 3.1.3 DoE performs essential national-level tasks related to WPA management			
	3.1.3.1 Develop and implement methodologies and guidelines for baseline biodiversity information gathering, assessments and ongoing monitoring / inspection of WPAs.			
	3.1.3.2 Improve capacities for investment planning related to WPAs.			
	3.1.3.3 Develop and implement mechanisms for identifying and prioritizing potential new WPAs. These may include ecological surveys and social impact assessments to be undertaken prior to WPA establishment.			
	3.1.3.4 Develop mechanisms to ensure that national-level biodiversity conservation objectives are incorporated into site management planning.			
	3.1.3.5 Standardize reporting by provincial-level DoE offices concerning WPAs within their jurisdiction.			
	3.1.3.6 Prepare and disseminate a single Annual Report covering WPAs.			
	3.1.3.7 Based on information and data collected at both WPA and landscape levels, produce periodic assessments of the efficacy of the national system for WPA management and proposals for its improvement. These will constitute lessons learned, beginning with experience at demonstration sites.			
	3.1.3.8 Assess the existing system for Environmental Impact Assessment (EIA) as it relates to WPAs and propose necessary revisions.			
	3.1.3.9 Develop rules and requirements for establishing and monitoring WPAs, including financial and budgetary, ecological assessments (studies) as a tool for prioritization, (re)-definition of objective process for identifying, nominating and approving, social impact assessment prior to establishment.			
	3.1.3.10 Raise public awareness concerning the role of WPAs in biodiversity conservation. This should include preparation and wide dissemination of awareness materials including brochures, posters, a 'user-friendly' annual report, etc.			
	SUB-OUTCOME 3.2: AWARENESS AND TECHNICAL CAPACITIES ARE RAISED IN KEY SECTORAL MINISTRIES WHILE NATIONAL CO-ORDINATION STRUCTURES ARE STRENGTHENED			
	3.2.1.2 Preparation of a policy analysis assessing current institutional arrangements and describing in detail a set of streamlined, yet effective, national institutional arrangements for WPA management. The report should include a detailed and comprehensive organigramme showing			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	responsibilities of, and relationships among, national-level agencies for WPA management 3.2.1.3 Above institutional arrangements should be codified formally, for example in a Memorandum of Understanding among relevant agencies or another formal policy agreement on institutional set-up. SUB-OUTCOME 3.3: LESSONS LEARNED IN OUTCOMES 1 AND 2 ARE DISSEMINATED TO MANAGERS OF OTHER KEY WPA SITES, WHO USE THEM IN DEVELOPING STRATEGIES FOR REPLICATION AT THEIR SITES *Activity Area 3.3.1 Establish mechanisms for sharing of project experience with wetland managers nationally* 3.3.1.1 WPA staff exchanges are organized, e.g., rotating staff exchanges with different WPA staff spending 1 month visiting demonstration sites 3.3.1.2 Establish thematic working groups bringing together provincial-level officials and other stakeholders involved with management and protection of target replication sites 3.3.1.3 Organize regular national-level workshops and capacity-building exercises for above working groups. These will enable exchange of experience and knowledge concerning best practices and project experience related to the various demonstration themes, i.e., (i) inter-sectoral co-ordination, (ii) water use and distribution, (iii) integrated pollution control, (iv) integrated watershed management and erosion control, (v) environmental impact assessment, and (vi) alien species introduction and control. 3.3.1.4 Working groups, with consultant support, prepare thematic action plans describing strategies for adapting and replicating project demonstration themes at target replication sites, including development of financing strategies. 3.3.1.5 Action plans are recombined into site action plans and submitted for national-level approval 3.3.1.6 Commence implementation of thematic action plans.			
Inputs				

Annex 2: Incremental Cost Analysis

1. Broad Development Goals

1. Iran's Third Five Year Development Plan (FYDP) (2000-2004) is a package of articles, policies, and guideline covering 26 sectoral and intrasectoral areas. It provides a comprehensive framework for resolving structural impediments and economic difficulties during the plan period. Major areas of economic emphasis include privatization, creation of a social safety net and establishment of an oil stabilization fund.[1]

2. Global Environmental Objective

2. Iran supports approximately 76 wetlands of international significance, distributed amongst seven major wetland systems. This figure represents an estimated 40% of the wetlands of international importance in the entire Middle East.[2] The project's global environmental objective is the conservation of wetland biodiversity at these sites, particularly those which have been established as Wetland Protected Areas (WPAs). Primary global benefits will occur at the project's two demonstration sites as well as at the target replication sites, i.e., the remaining WPAs.

3. Baseline

3. Three main problem areas have been identified during the PDF-B. These are outlined below, together with a summary of baseline activities being undertaken to address them.

A. Local WPA management structures are weak and unable to deal with locally arising threats

4. Baseline management activities being undertaken by WPA management authorities, i.e., DoE, Provincial and site-based staff, are quite limited. They include patrolling the WPAs and undertaking environmental and biodiversity monitoring. Fourteen staff are responsible for protection of Lake Uromiyeh, while Arjan Protected Area has nine staff. Baseline expenditures during the seven-year project period have been estimated at US$305,000 and are mainly spent on staffing, operational costs, equipment, training and conducting annual bird counts.

B. Unsustainable development at basin level with little or no effective inter-sectoral co-ordination

5. Key threats and related activities and expenditures identified at this level include the following:

- VOLUMES OF INFLOWING SURFACE AND GROUNDWATER ARE FALLING BELOW MINIMUM LEVELS NEEDED TO MAINTAIN WATER LEVELS AND ECOLOGICAL INTEGRITY OF GLOBALLY SIGNIFICANT WETLANDS: As evidence has begun to mount of a serious problem related to water inflows into Lake Uromiyeh, Government response has been far from uniform. Not surprisingly, the lead voice of concern has come from DoE, which has been warning for some time of the risks of new dam construction. The Department has made several attempts to galvanize public opinion on this issue and to impress upon provincial and sectoral ministries the risks of a 'business-as-usual'

[1] See http://www.iranembassy.hu/eco_3rd5year.html
[2] Vide supra, para. 10.

approach to the problem. Actual on-the-ground attempts to address this long-term and potentially catastrophic situation have been limited and ineffectual. Many parts of Government, notably including MoAJ and the Provincial authorities, have been reluctant to acknowledge the anthropogenic roots of the problem, preferring to see it as an issue that would resolve itself once rainfall patterns return to normal. There has been some limited success in delaying approval of dam projects; however, many such projects continue to move forward. In the last couple of years, there has been evidence of a change in momentum concerning this issue. This may partly be due to the work of the EC-IIP, which has presented clear evidence of the long-term risks inherent in the situation. Baseline efforts in this area relate mainly to dam and canal construction costs and hydrological monitoring at the Lake Uromiyeh site and are estimated at US$2 million annually or US$14 million over the life of the project.[3]

- AQUATIC AND NOISE POLLUTION ARE HAVING NEGATIVE BIOLOGICAL EFFECTS AND MAY ULTIMATELY THREATEN ECOSYSTEM STABILITY AND FUNCTIONING: Baseline efforts to address the pollution problem at Lake Uromiyeh include construction of a number of wastewater treatment plants within the basin. Monitoring is the main response of DoE, while other branches of Government, notably municipal authorities, have worked to develop wastewater treatment facilities at various locations throughout the Basin. The Ministry of Agricultural Jihad also has a program, including monitoring and extenstion services, to reduce pesticide and fertilizer use within the basin. Baseline expenditures related to pollution monitoring and treatment throughout the LUB are estimated at roughly US$30 million through the life of the project.[4]

- LAND DEGRADATION WITHIN THE DRAINAGE BASINS IS LEADING TO INCREASED SEDIMENTATION AND RELATED NEGATIVE IMPACTS ON DOWNSTREAM WETLANDS: Baseline efforts to reduce erosion rates within the LUB include: (i) biological measures such as seeding, seed culture and plantation; (ii) biomechanical measures, such as bench traces or banquets; (iii) mechanical measures used in areas with high slopes and high flow-scouring velocity, and; (iv) conservation of critical areas, which are designated as erosion protected areas where grazing and other activities are prohibited. Unfortunately, investments in watershed management have been limited and have suffered from a lack of co-ordination. Furthermore, little if any effort has been made to orient the work towards conservation of ecological values within the LUEZ. Baseline costs of controlling sedimentation and erosion within the LUB are estimated at US$10 million.

- INFRASTRUCTURAL DEVELOPMENTS SUCH AS THE KALANTARY HIGHWAY ARE HAVING SEVERE IMPACTS ON CRITICAL HABITATS: Two alternatives approaches, in order to allow an increased exchange of water and sediments, are: to place tunnels under the causeway and to converts parts of the existing causeway into a bridge. The construction costs of these two alternatives have not been determined, and are therefore not included here. Moreover, the ecological impacts of these alternatives are not fully understood. Baseline costs of conducting an EIA for the completion of the Kalantary Highway are estimated at US$100,000. The baseline costs of EIAs likely to be conducted for dams within the basin under the baseline scenario have been roughly estimated at $200,000 over the life of the project.

[3] It should be noted that relevant infrastructural investments, e.g., for dam construction and sewage collection and treatment, will be counted as part of the project baseline but will not be counted as co-financing. Other baseline expenditures that will contribute to achieving the project outcomes, e.g., site management, will be counted as co-financing, as per the latest guidelines from the GEF Secretariat.

[4] Due to the large scale of these investments and the difficulty of co-ordinating closely with them, pollution control investments are not being considered as project co-financing but rather as associated financing.

- ALIEN SPECIES INTRODUCTIONS ARE THREATENING NATIVE SPECIES: Baseline activities of DoE related to alien species introductions is limited to identification of instances of introduction. Shilat, which is responsible for fisheries management in Iran, is estimated to spend US$50,000 under the baseline scenario, mainly related to management of fisheries, including introduced species, at Lake Parishan.

C. DoE Headquarters and national level co-ordination structures are providing little in the way of support

6. Baseline activities taking place under this outcome mainly consist of DoE expenditures related to the management of Iran's WPA system. As previously noted, the national protected areas management system currently includes the following WPAs: two national parks; six wildlife refuges; 13 protected areas; four no hunting areas and two limited hunting areas. Baseline expenditures during the seven-year project period have been conservatively estimated at US$1,260,000 and are mainly spent on staffing, operational costs, equipment, training and conducting annual bird counts.[5] These include DoE Headquarters expenditures on co-ordinating the WPA management system, but exclude site-level management expenditures. Also included are estimated expenditures on inter-sectoral co-ordination and relevant expenditures by national-level Ministries other than DoE.

4. GEF Alternative Project

7. The GEF alternative project has been designed to remove or substantially and sustainably ameliorate threats facing project demonstration sites while creating and disseminating lessons learned for the purpose of their replication at other sites in Iran, particularly at so-called target replication sites. GEF support, together with co-financing, will address the three main baseline problem areas by turning them into the following outcomes.

Outcome 1: *Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to effectively manage WPA sites, including dealing with most 'internally arising' threats to globally significant biodiversity*

8. Incremental support provided by GEF and Government will substantially raise the level of conservation and the sustainability of natural resources use within the demonstration sites and their surrounding drainage basins. Support will be provided to achieve the following sub-outcomes:

1.1 WPA MANAGERS ARE WELL TRAINED IN ECOYSTEM BASED PLANNING AND MANAGEMENT: The sub-outcome will be achieved through two site-based Activity Areas, each of which will begin with a training needs assessment and with the development of a training programme for relevant officials within the WPA and the relevant DoE provincial headquarters. Training will include team-building exercises and will focus on enhancing abilities to identify, monitor and report on key threats facing the sites. Finally, each Activity Area will include support for study tours to allow officials to learn from examples of wetland protected areas. Additional costs of the GEF alternative are estimated at US$180,000, of which US$135,000 will be provided by GEF and

[5] The estimate is to be distinguished from that made under Section 3A, which referred to spending for the demonstration sites.

US$45,000 will be provided by Government. Together with US$12,000 of baseline co-financing,[6] the total cost of achieving this sub-outcome is estimated at US$192,000.

1.2 WPA MANAGERS IMPLEMENT BIODIVERSITY MONITORING PROGRAMMES WHICH TRACK THE IMPACTS OF ALL ANTHROPOGENIC THREATS: Outcome 1.2 will be closely linked with efforts taking place under Sub-Outcome 3.1 to standardize and consolidate national-level monitoring data concerning WPAs. Thus, national-level WPA monitoring guidelines (developed under Sub-Outcome 3.1) will be adapted (Sub-under Outcome 1.2) to fit the particular circumstances of the sites. These guidelines will then be implemented in baseline and periodic follow-up monitoring efforts. The sub-outcome, which will consist of two site-based Activity Areas, will also include the provision of necessary monitoring equipment. Additional costs of the GEF alternative are estimated at US$235,000, of which US$165,000 will be provided by GEF and US$70,000 will be provided by Government. Together with US$21,000 of baseline co-financing, the total cost of achieving this sub-outcome is estimated at US$256,000.

1.3 SITE MANAGERS CO-OPERATE WITH LOCAL COMMUNITIES AND NGOS TO RAISE AWARENESS AND ENCOURAGE BROAD-BASED PARTICIPATION IN WPA MANAGEMENT: This sub-outcome consists of three Activity Areas. Activity Area 1.3.1 will involve the preparation of detailed assessments of local community relationships with each of the demonstration sites. Activity Area 1.3.2 provides a process for addressing issues that may arise related to the need for alternative sustainable livelihoods by communities living in the immediate vicinity of project demonstration sites. Activity Area 1.3.3 addresses the important need to demonstrate NGO involvement in environmental and WPA issues in Iran. Additional costs of this alternative are estimated at US$290,000, of which US$125,000 will be provided by GEF and US$165,000 will be provided by Government. Together with US$7,000 of baseline co-financing, the total cost of achieving this sub-outcome is estimated at US$297,000.

1.4 SITE CONSERVATION, INCLUDING ACTIVE ENFORCEMENT OF REGULATORY MEASURES, IS PERFORMED ACCORDING TO AGREED MANAGEMENT PLANS, RESOLVING ISSUES AND ADDRESSING THREATS WHICH ARE FULLY WITHIN SITE MANAGERS' COMPETENCIES AND AUTHORITY: In the case of each of the demonstration sites, substantial work has been undertaken during the course of the PDF-B in developing management plans for the sites. Indeed, this process has been underway for many of the WPAs in the country. Many of the site-specific activities in the present project are based on evaluations and recommendations made in these documents. It will be important to reach national-level agreement early in the present project concerning the final form of the Lake Uromiyeh Management Plan, as well as the draft plan for Arjan Protected Area. These finalized plans will in turn help to determine the details of support to be provided under the present sub-outcome. Additional costs of this alternative are estimated at US$1.798 million, of which US$300,000 will be provided by GEF, US$1.349 million by Government and US$149,000 by the Netherlands Government. Together with US$250,000 of baseline co-financing, the total cost of achieving this sub-outcome is estimated at US$2.048 million.

1.5: DEGRADATION AND DESTRUCTION OF SATELLITE WETLANDS IS HALTED AND IN PILOT CASES, REVERSED: This Sub-outcome will remove barriers currently facing legal and regulatory approaches to preventing conversions of internationally significant and other wetlands. In doing so, it will alter the structure of incentives facing potential wetland 'converters,' making

[6] Here and elsewhere, the ICA has identified selected elements of the baseline as 'baseline co-financing,' where "such activities are essential for achieving the GEF objectives and are managed as as integral part of the same project." Baseline financing that does not meet these criteria has been categorized as associated financing (termed here 'baseline associated financing'). See GEF/C.20/6. September 16, 2002. "Cofinancing." Report prepared as Agenda Item 9 for GEF Council Meeting of 14-15 October 2002

conversion a significantly less attractive proposition. Work under the Sub-outcome will begin by generating and synthesising historical, baseline and project monitoring data concerning the areas of globally significant wetlands at LUEZ and Parishan. The sub-outcome will also demonstrate the use of regulatory and legal approaches to preventing wetland conversion. Areas to be targeted are likely to include: enhanced and targeted penalties for infractions; support for regulatory and judicial reform; awareness-raising among key provincial officials; support for specific legal efforts aimed at preventing pending conversions. Additional costs of this alternative are estimated at US$1.087 million, of which US$866,000 will be provided by Government, US$190,000 by GEF and US$31,000 by the Netherlands Government. Together with US$15,000 of baseline co-financing, the total cost of achieving this sub-outcome is estimated at US$1.102 million.

Outcome 2: Co-ordinated and environmentally sound management at watershed or basin level enhances the sustainability of the WPA system by, inter alia, helping to address threats arising at this broader geographic level

9. Incremental support provided by GEF, the Netherlands and the Iranian Government will substantially improve the sustainability of development within the drainage basins surrounding demonstration WPAs. Support will be provided to achieve the following sub-outcomes:

2.1: CO-ORDINATION MECHANISMS HAVE BEEN DEVELOPED TO FACILITATE DECISION-MAKING AND WISE USE OF WATER, LAND AND OTHER NATURAL RESOURCES IN WATERSHED AREAS AFFECTING KEY WPAS: This sub-outcome will be accomplished through two site-based Activity Areas. In the first, a permanent Lake Uromiyeh Basin Management Authority (LUBMA) will be established. This new entity will be a Federal-level institution with supra-ministerial, supra-provinical authority to decide on and enforce key water and land use issues within the LUB. Once established with adequate facilities, staffing levels and operating budget, the LUBMA will supervise and review studies and proposals including proposals for dam construction, pollution and erosion control, alien species introduction, as well as associated EIAs. It will have the responsibility to ensure that the combination of projects and investments allowed to move forward within the basin represent a sustainable mix. The issues facing Lake Parishan are less complex, involve fewer institutional actors and a single province (versus three at Lake Uromiyeh). Therefore, a Provincial Co-ordinating Committee will be established and given responsibility for reaching co-ordinated and environmentally sound decisions related to water use, weater quality investments, erosion control, etc. Additional costs of this alternative are estimated at US$3.065, of which US$2.62 will be provided by the Iranian Government, US$425,000 by the GEF and US$20,000 by the Netherlands.

2.2: SYSTEMS FOR IMPROVING THE EFFICIENCY OF WATER DISTRIBUTION ACROSS ECONOMIC AND ECOLOGICAL 'USES' WITHIN WPA DRAINAGE BASINS HAVE BEEN DEVELOPED: The medium-term baseline scenario for Uromiyeh Lake consists of continuing decreases in water inflows and increases in salinity, which would effectively represent the destruction of its ecosystem. The project seeks to help avoid this scenario by introducing an ecosystem management approach to help ensure adequate supplies of water for both economic and ecological needs. In summary, it is expected that activities being supported under this outcome will provide water resource and wetland managers with the necessary tools needed to ensure that adequate water is available both for economic development needs as well as for the ecological needs of globally significant biodiversity. GEF support will focus on the latter aspect, while also working with project partners (Government of Iran and Netherlands co-operation) to remove barriers to the former. Activities in support of this outcome will come under two activity areas, each of which will take place at the Lake Uromiyeh site. Activity Area 2.2.1 will involve the development and use of an integrated water management model which will allow wetland managers to develop scenarios and for LUBMA to make ensuing basin-wide, inter-sectoral

water use and allocation decisions for the Lake Uromiyeh Basin. Activity Area 2.2.2 will pilot the use of environmental economic tools and other techniques aimed at increasing water use efficiency and water conservation within the basin. A combination of policy and technical innovations under this Activity Area will provide support for easing medium-term water supply constraints. Additional costs of this alternative are estimated at US$1.25 million, of which US$650,000 will be provided by the Iranian Government, US$400,000 by the Netherlands and US$200,000 by the GEF. Together with US$14 million of baseline associated financing,[7] the total cost of achieving this sub-outcome is estimated at US$15.25 million.

2.3: INTEGRATED POLLUTION CONTROL PRACTICES HAVE BEEN DEVELOPED AND AMBIENT CONCENTRATIONS OF KEY CONTAMINANTS HAVE BEGUN TO DECLINE: Aquatic pollution and noise pollution are seen as important threats to both the Lake Uromiyeh and Lake Parishan ecosystems. Activities in support of this outcome will come under three headings: AA-2.3.1 will assess baseline pollution levels and associated threats to globally significant biodiversity. AA-2.3.2 will begin with an effort to raise awareness among decision-makers concerning pollution impacts and will then focus on leveraging additional financial resources to address key polluting sources. This Activity Area will also be supported through substantial amounts of Associated Financing, mainly aimed at improved wastewater collection and treatment. Finally, Activity Area 2.3 will include steps to control noise pollution, including the development and enforcement of necessary regulations. Additional costs of this alternative are estimated at US$560,000, of which US$450,000 will be provided by the Iranian Government and US$110,000 by the GEF. Together with US$30.0 million of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$30.59 million.

2.4: ENHANCED MEASURES FOR PREVENTING LAND DEGRADATION HAVE BEEN INTRODUCED AND ARE HELPING TO REDUCE SEDIMENTATION AND RELATED NEGATIVE IMPACTS DOWNSTREAM: This outcome will work in co-operation with the Ministry of Agricultural Jihad (MoAJ) which has several ongoing projects in the area of watershed management. GEF will provide support for highlighting and raising public and government awareness concerning the linkages between watershed management and environmental quality of the lakes. It will establish and enhance inter-ministerial connections between MoAJ and DoE to ensure that watershed management activities are undertaken in a way that is complementary to the management objectives of the Lake. Additional costs of this alternative are estimated at US$490,000, of which US$400,000 will be provided by Government, and US$90,000 by the GEF. Together with US$10.0 million of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$10.49 million.

2.5: BEST PRACTICES IN ENVIRONMENTAL IMPACT ASSESSMENT HAVE BEEN DEMONSTRATED: Incremental support under this sub-outcome will include additional support for an EIA for finalization of the Kalantary Highway, as well as capacity building for conducting EIAs in areas adjacent to WPAs. The latter will include strategic EIAs that assess the cumulative impact of projects within a geographic area, i.e., a watershed or an internal drainage basin. Government and/or private sector co-financing will support the costs of the EIAs, as well as the costs of any remedial measures called for by the EIAs (the latter will be considered as leveraged co-financing). Additional costs of this alternative are estimated at US$250,000, of which US$150,000 will be provided by GEF, and US$100,000 by the Iranian Government. Together with US$300,000 of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$550,000.

2.6: BEST PRACTICES CONCERNING ALIEN SPECIES INTRODUCTIONS AND CONTROL HAVE BEEN DEMONSTRATED: This outcome will link closely with the preceding outcome 2.5, given that EIA is

[7] See note 41 for definition.

one important tool for controlling and limiting the introduction of ecologically hazardous alien species. Additional costs of this alternative are estimated at US$205,000, of which US$105,000 will be provided by GEF, and US$100,000 by the Iranian Government. Together with US$50,000 of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$255,000.

Outcome 3: National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, inter alia, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above

10. Incremental support provided by GEF and the Iranian Government will facilitate more effective DoE support to remaining WPAs, in particular through the replication of project results from demonstration sites. Support will be provided to achieve the following sub-outcomes:

3.1: RELEVANT DOE HEADQUARTERS STRUCTURES ARE RATIONALIZED, HUMAN CAPACITIES FOR WPA MANAGEMENT ARE STRENGTHENED AND ESSENTIAL NATIONAL-LEVEL WPA MANAGEMENT TASKS ARE DEMONSTRATED: This Sub-Outcome has been broken down into three Activity Areas. The first of these aims to build DoE's institutional capacity through restructuring, reprofiling of operational units and support to operational processes. A second Activity Area will build human capacities within the restructured units, while a third will support various co-ordination tasks. Together, these activites will enable DoE Tehran to play an active and positive role in supporting enhanced WPA management. Additional costs of this alternative are estimated at US$530,000, of which US$400,000 will be provided by GEF, and US$130,000 by the Iranian Government. Together with US$1,050,000 of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$1,580,000.

3.2: AWARENESS AND TECHNICAL CAPACITIES ARE RAISED IN KEY SECTORAL MINISTRIES WHILE NATIONAL CO-ORDINATION STRUCTURES ARE STRENGTHENED: The Sub-Outcome will increase awareness and capacities within sectoral ministries. It will also provide technical support to the work of inter-sectoral co-ordiantion committees. Additional costs of this alternative are estimated at US$155,000, of which US$120,000 will be provided by GEF, and US$35,000 by the Iranian Government. Together with US$210,000 of baseline associated financing, the total cost of achieving this sub-outcome is estimated at US$365,000.

3.3: LESSONS LEARNED IN OUTCOMES 1 & 2 ARE DISSEMINATED TO MANAGERS OF OTHER KEY WPA SITES, WHO USE THEM IN DEVELOPNG STRATEGIES FOR REPLICATION AT THEIR SITES: This Sub-Outcome will ensure that work performed at project demonstration sites is disseminated and ultimately replicated throughout Iran's WPA system. Technical support will be provided to ensure that wetland managers throughout the country become familiar with the best practices being demonstrated by the project and use this knowledge to develop strategies to address analogous problems facing 'their' wetlands. Seed funding will be available during the latter portion of the project for implementing these strategies and additional leveraged funding will be sought. Additional costs of this alternative are estimated at US$2,475,000, of which US$400,000 will be provided by GEF, and US$2,075,000 by the Iranian Government.

5. Scope of Analysis

11. The analysis has estimated covered two general types of baseline expenditures. The first consists of estimated expenditures taking place within the physical boundaries of the two project demonstration sites,

in each case internal drainage basins. Sizeable infrastructural investments, including dam construction and construction of sewage treatment plants, were included, given their obvious relevance to the goals of the project. Rough estimates were made of these projected investments and no attempt was made to conduct a substitutional analysis, e.g., to estimate possible reductions in dam construction expenditures in the alternative project. Although this would theoretically have been possible, data gaps and uncertainties would have complictaed such an approach.

12. The second broad category of spending that was included was national-level spending on co-ordination of the WPA management system as a whole. This included estimates both of DoE expenditures as well as ancillary costs faced by other Ministries as they pursued their objectives in the vicinity of WPAs. This expenditure category forms the baseline for Outcome 3.

13. The analysis adopted what may appear at first to be a confusing approach to the issue of defining co-financing and associated financing, but one which seemed necessary under the circumstances. First, new funds committed by Government and the Netherlands were naturally considered as co-financing. Second, baseline costs that were deemed essential for achieving the GEF objectives and which would be managed as as integral part of the project were also counted as co-financing. This category included baseline costs of managing protecting areas.

14. Third, baseline costs which would contribute to project objectives, but which could not easily be controlled or managed as part of the overall project effort, were categorized as associated financing. This included, for example, watershed level spending on sewage collection and treatment and erosion control. Finally, baseline spending which did not contribute to project objectives, or indeed may have been counter-productive to them, were not counted as either cofinancing or associated financing. The estimated costs of dam construction fell within this category.

6. Costs

15. Baseline expenditures within the systems boundary of the project outputs are estimated at US$55.9 million. These are the estimated costs of all relevant investments, programmes and management activities in project site areas that would have taken place in the absence of a GEF project, together with national-level co-ordination efforts.

16. Including the above baseline expenditures, the total cost of the alternative project necessary to ensure sustainable development and the conservation of globally significant biodiversity is US$69.0 million. The total additional, or incremental cost, which is the difference between the baseline and the alternative projects, is approximately US$13.0 million.

Development Objective:

	Baseline (B) ***(existing environmental management)***	**Alternative (A)** ***(additional biodiversity conservation measures***	**Increment (A-B)**
Global Benefits	• Wetland protected areas (WPAs) covering globally significant areas have been established but are operating at low levels of effectiveness. Ecosystem, genetic and species diversity at these sites are gradually (or rapidly in certain cases) being lost. • Limited institutional, human and financial capacities put WPAs at risk	• Effective models for WPA management, aimed squarely at removal of threats, have been demonstrated and disseminated • National capacities to manage WPAs are increased	• Globally significant species, ecosystem and genetic biodiversity is conserved at project demonstration sites and throughout the WPA system • Strengthened capacities support informed and wise management of WPA biodiversity, reducing risks of major and imminent loss of biodiversity
Domestic Benefits	• Unsustainable development patterns, e.g., overuse of limited water resources, are creating economic and health risks for the future	• Integrated, basin-wide decision-making permits a more rational allocation of water and other resources	• A more sustainable development pattern, with greater long-term returns on scarce investment resources

Outcome 1:	**Local WPA management structures (e.g., National Park offices, DoE Provincial offices) possess and use enhanced capacities to effectively manage WPA sites, including dealing with most 'internally arising' threats to globally significant biodiversity**					
Sub-outcomes	**Baseline (B)** ***(existing environmental management***		**Alternative (A)** ***(additional biodiversity conservation measures)***		**Increment (A-B)**	
Sub-outcome 1.1: WPA managers are well-trained in ecosystem-based planning and management and are skilled at identifying, monitoring and reporting on key site-based threats	Gov't TOTAL	$12,000 $12,000	Gov't GEF TOTAL	$57,000 $135,000 $192,000	Gov't GEF TOTAL	$45,000 $135,000 $180,000
Sub-outcome 1.2: WPA managers implement biodiversity monitoring programmes which track the impacts of all anthropogenic threats	Gov't TOTAL	$21,000 $21,000	Gov't GEF TOTAL	$91,000 $165,000 $256,000	Gov't GEF TOTAL	$70,000 $165,000 $235,000
Sub-outcome 1.3: Site managers co-operate with local communities and NGOs to raise awareness and encourage broad-based participation in WPA management	Gov't TOTAL	$7,000 $7,000	Gov't GEF TOTAL	$172,000 $125,000 $297,000	Gov't GEF TOTAL	$165,000 $125,000 $290,000
Sub-outcome 1.4: Site conservation, including active enforcement of regulatory measures, is performed according to agreed management plans, resolving issues and addressing threats which are fully within site managers' competencies and authority	Gov't TOTAL	$250,000 $250,000	Gov't GEF Netherlands TOTAL	$1,599,000 $300,000 $149,000 $2,048,000	Gov't GEF Netherlands TOTAL	$1,349,000 $300,000 $149,000 $1,798,000
Sub-outcome 1.5: Degradation and destruction of satellite wetlands is halted and in pilot cases, reversed	Gov't TOTAL	$15,000 $15,000	Gov't GEF Netherlands TOTAL	$881,000 $190,000 $31,000 $1,102,000	Gov't GEF Netherlands TOTAL	$866,000 $190,000 $31,000 $1,087,000
Outcome 1 totals	Gov't TOTAL	$305,000 $305,000	Gov't GEF Netherlands TOTAL	$2,800,000 $915,000 $180,000 $3,896,000	Gov't GEF Netherlands TOTAL	$2,495,000 $915,000 $180,000 $3,590,000

Outcome 2: Inter-sectoral co-ordination structures, established at watershed or basin level, enhance the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level						
Outputs	**Baseline (B)** ***(existing environmental management***		**Alternative (A)** ***(additional biodiversity conservation measures)***		**Increment (A-B)**	
Sub-outcome 2.1 Develop co-ordination mechanisms / institutions to facilitate decision-making and wise use of water, land and other natural resources in watershed areas affecting WPAs	Gov't TOTAL	$0 $0	Gov't GEF Netherlands TOTAL	$2,620,000 $425,000 $20,000 $3,065,000	Gov't GEF Netherlands TOTAL	$2,620,000 $425,000 $20,000 $3,065,000
Sub-outcome 2.2: Systems for improving the efficiency of water distribution across economic and ecological 'uses' within WPA drainage basins have been developed	Gov't TOTAL	$14,000,000 $14,000,000	Gov't GEF Netherlands TOTAL	$14,650,000 $200,000 $400,000 $15,250,000	Gov't GEF Netherlands TOTAL	$650,000 $200,000 $400,000 $1,250,000
Sub-outcome 2.3: Integrated pollution control practices have been developed	Gov't TOTAL	$30,030,000 $30,030,000	Gov't GEF TOTAL	$30,480,000 $110,000 $30,590,000	Gov't GEF TOTAL	$450,000 $110,000 $560,000
Sub-outcome 2.4: Enhanced measures for preventing land degradation have been introduced and are helping to reduce sedimentation and related negative impacts downstream	Gov't TOTAL	$10,000,000 $10,000,000	Gov't GEF TOTAL	$10,400,000 $90,000 $10,490,000	Gov't GEF TOTAL	$400,000 $90,000 $490,000
Sub-outcome 2.5: Best practices in Environmental Impact Assessment (EIA) have been demonstrated	Gov't TOTAL	$300,000 $300,000	Gov't GEF TOTAL	$400,000 $150,000 $550,000	Gov't GEF TOTAL	$100,000 $150,000 $250,000

Outcome 2: Inter-sectoral co-ordination structures, established at watershed or basin level, enhance the sustainability of the WPA system by, *inter alia*, helping to address threats arising at this broader geographic level						
Outputs	**Baseline (B)** ***(existing environmental management***		**Alternative (A)** ***(additional biodiversity conservation measures)***		**Increment (A-B)**	
Sub-outcome 2.6: Best practices concerning alien species introduction and control have been demonstrated	Gov't TOTAL	$50,000 $50,000	Gov't GEF TOTAL	$150,000 $105,000 $255,000	Gov't GEF TOTAL	$100,000 $105,000 $205,000
Outcome 2 totals	Gov't TOTAL	$54,380,000 $54,380,000	Gov't GEF Netherlands TOTAL	$58,700,000 $1,080,000 $420,000 $60,200,000	Gov't GEF Netherlands TOTAL	$4,320,000 $1,080,000 $420,000 $5,820,000

Outcome 3 – National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, inter alia, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above						
Outputs	**Baseline (B)** ***(existing environmental management***		**Alternative (A)** ***(additional biodiversity conservation measures)***		**Increment (A-B)**	
Sub-outcome 3.1: Relevant DoE headquarters structures are rationalized, human capacities for WPA management are strengthened and essential national-level WPA management tasks are demonstrated	Gov't TOTAL	$1,050,000 $1,050,000	Gov't GEF TOTAL	$1,180,000 $400,000 $1,580,000	Gov't GEF TOTAL	$130,000 $400,000 $530,000
Sub-outcome 3.2: Awareness and technical capacities are raised in key sectoral ministries while National co-ordination structures are strengthened	Gov't TOTAL	$210,000 $210,000	Gov't GEF TOTAL	$245,000 $120,000 $365,000	Gov't GEF TOTAL	$35,000 $120,000 $155,000
Sub-outcome 3.3: Lessons learned in Outcomes 1 and 2 are disseminated to managers of other key WPA sites, who use them in developing strategies for replication at their sites	Gov't TOTAL	$0 $0	Gov't GEF TOTAL	$2,075,000 $400,000 $2,475,000	Gov't GEF TOTAL	$2,075,000 $400,000 $2,475,000
Outcome 3 totals	Gov't TOTAL	$1,260,000 $1,260,000	Gov't GEF TOTAL	$3,500,000 $920,000 $4,420,000	Gov't GEF TOTAL	$2,240,000 $920,000 $3,160,000
PDF-A					GEF	$25,000
PDF-B			GEF Gov't TOTAL	$347,400 $100,000 $447,400	GEF Gov't TOTAL	$347,400 $100,000 $447,400
Project totals	Gov't	$55,945,000	Gov't GEF Netherlands	$65,100,000 $3,262,400 $600,000	Gov't GEF Netherlands	$9,155,000 $3,287,400 $600,000

Outcome 3 – National-level WPA management and inter-sectoral co-ordination structures possess and utilise enhanced capacities to strengthen WPA management, inter alia, by supporting the exchange of knowledge and lessons learned through Outcomes 1&2 above						
Outputs	**Baseline (B)** ***(existing environmental management***		**Alternative (A)** ***(additional biodiversity conservation measures)***		**Increment (A-B)**	
	TOTAL	**$55,945,000**	TOTAL	**$68,962,400**	TOTAL	**$13,042,400**

Annex 3a: First STAP review

DRAFT STAP - Independent Technical Review of GEF Proposal

PROJECT TITLE**:**	*CONSERVATION OF IRANIAN WETLANDS*
Project Number:	PIMS 980
Reviewer:	Wim Giesen, Mezenpad 164, 7071 JT Ulft, The Netherlands email: 100765.3312@compuserve.com; or w.giesen@arcadis.nl
Date:	15th June 2003

Review of the:
UNDP-GEF CONSERVATION OF IRANIAN WETLANDS
FULL PROJECT BRIEF - DATED 6 JUNE 2003

CONTENTS:

A. GENERAL COMMENTS

The Full Project Brief presents a coherent, balanced package of interventions targeting the conservation of globally significant biodiversity in the wetlands of Iran. The focus appears to be overly on inland wetlands, which is an opportunity lost, given the importance of Iran's coastal wetlands (both Caspian Sea and Persian Gulf). 9 of the 15 sites recognised by the project as 'replication sites' are coastal, i.e. either Caspian Sea or Persian Gulf sites. The version received by the reviewer, however, still has many substantial gaps, including a lack of sections on sustainability (2.3), lessons learnt, financial plan, cost effectiveness, alternative approaches, logframe (partial) and incremental costs analysis. The reviewer appreciates that STAP have encouraged the Implementing Agencies to move the STAP review "upstream" so as to gain more from the reviewer's comments than when this is performed at the last minute when the brief is complete. However, as certain areas are not covered, the STAP review may need to be revisited once the missing sections are incorporated.

A.i Global priority in the area of biodiversity

The global significance of the biodiversity of Iran's wetlands is evident and clearly presented in paragraph 10, and in annexes 7 (site selection) and 10 (biodiversity significance). Paragraph 10 summarizes the number of potential Ramsar sites and IBAs, but should be expanded to include numbers of globally important species of various taxon groups.

The global significance of the biodiversity of the two selected demonstration sites – Lake Uromiyeh and Lake Parishan is not entirely clear. For example, most of the plant diversity found at Lake Uromiyeh is located in the meadow and grassland vegetation of mountainous areas, and not in the lake or its peripheral wetlands. Lake Uromyeh contains one endemic brine shrimp, *Artemia urmiana*, but its main importance to globally significant biodiversity is because it supports many important bird species such as greater flamingo, white pelican, duck and large numbers of migratory shorebirds. However, flamingo no longer breed there, the pelicans are fish feeders and depend on wetlands other than Lake Uromiyeh (but located in the LUEZ), and the duck species are common *Anas querquedula*. 12,500 km² of plains surround the lake, with 28 ecologically interconnected wetlands – important, but including these as part of the Lake Uromiyeh demonstration site is a bit tenuous. The global significance of Lake Parishan is more substantiated, as globally significant species are listed. However, the importance of the site to these species is not entirely clear, as the brief speaks of 'appreciable numbers' and 'supports over 1% of the regional population' (which region is being refered to?).

A.ii Cost-effectiveness in achieving focal area objective(s)

The Conservation of Iranian Wetlands project is budgeted at US$3.332 million for the GEF contribution – a significant amount, considering that most of this is for activities at the two demonstration sites. The Project leverages a total of about US$9 million in co-financing, of which most from the Iranian Government (93%) and some from the Netherlands Government (about 7%). The proportion of non-national government co-funding is low, and the lowest seen by the reviewer on a GEF project to date. While this may be interpreted as reflecting the degree to which the Iranian fovernment is committed to protection of its wetlands, it also reflects the country's lack of attracting international donors. This may have implications for replicability and sustainability. The project brief provided to the reviewer did not give any details re financing. Table 3 on Proposed Project Budget and Financing Scheme was blank, as was section 3 on project financing. The incremental costs analysis (annex 2) provided only a narrative (which

seemed reasonable) and did not include any figures. Without details on which funds are allocated for which components, the reviewer cannot comment on cost-effectiveness.

A.iii Adequacy of project design

The design of the Conservation of Iranian Wetlands project is generally adequate, but as pointed out in the general comments, there are many gaps at this stage that still need to be addressed. The project objective is stated as: "systematically remove or substantially mitigate threats facing globally significant biodiversity and sustainability at two demonstration sites, while ensuring that the lessons learned through these demonstrations are absorbed within WPA management systems throughout Iran". This should be reformulated, for example, as an overall project goal "Strengthened strategic capacity to plan and manage the conservation of globally significant biodiversity in wetlands throughout Iran", along with two immediate objectives: i) systematically remove or substantially mitigate threats facing globally significant biodiversity and sustainability at two demonstration sites; and ii) ensuring that the lessons learned through these demonstrations are absorbed within WPA management systems throughout Iran.

Several aspects of project design that should be addressed during finalization of the project document are:

1. Para 2. Country driveness. Meagre analysis, showing only linkages between the project and the NBSAP; what about other strategies, plicies and action plans? More importantly, as the goal of the project is sustainable conservation of wetland biodiversity, there should be an indication that this aim is country driven. Nothing presented on the Iranian NBSAP appears directly related to wetlands (apart from sustainable fisheries, in a more oblique way).
2. Para. 10 summarizes the number of potential Ramsar sites and IBAs, but should be expanded to include numbers of globally important species of various taxon groups.
3. Para.17-21, biodiversity importance of Lake Uromiyeh. Need to expand, to indicate more comprehensively which globally significant species occur at this site in significant numbers, and/or are dependent on the site.
4. Para.'s 13 and 21. LUEZ is described in para. 13 as being 12,500 km², and consisting of the lake (5000-6000 km²), and including 17 ecologically connected wetlands in the surrounding area. Para. 21., however, states that 28 ecologically interconnected wetlands occur in the 12,500 km² of plains that surround the lake. Inconsistencies in area and number of wetlands.
5. Para. 25. 9 of the 15 sites recognised as 'replication sites' are coastal, i.e. either Caspian Sea or Persian Gulf sites. It is therefore strange (and an opportunity lost) that both demonstration sites are inland wetlands.
6. Para. 27. Locals at Lake Uromiyeh do not see the lake as a significant part of their resource base. Given the preceeding description of socio-economics, this would seem a correct assessement by the local community.
7. Para. 32-35 Legal and policy baseline. No mention of international treaties, conventions etc…. Elsewhere there is mention of Ramsar and the CBD, but does Iran have other international obligations?
8. Para. 41: Ministry of Transportation: blank
9. Para. 43 Protected Area system and the inclusion of wetlands in these areas. A mention should be made here of the status of the two demonstration sites, and of the 15 additional 'replication sites'.
10. Para. 47-50. What is the status of LUEZ/Lake Uromyeh? Is it a mosaic of areas with different status? (e.g. game reserve, NP). Unclear.

11. Para. 62, increasing salinity has affected *Artemia* population. What about harvesting of brine shrimp, and the effects of pollution?
12. Para. 79, ecological implications of aquatic and noise pollution: blank.
13. Para. 80. Baseline activities to address the threat: any indication of effects of enforcement of EIA procedures? Integrated Pest Management measures?
14. Para. 81-86. Potentially unsustainable exploitation of wetland resources. Reference is made to 'the lake' but it is understood to be Lake Uromiyeh. Focus is entirely on Lake Uromiyeh, which does not appear to be suffering from over-exploitation to any great degree. Why no mention of Lake Parishad? Table 3 shows that L. Parishad is suffering more from unsustainable exploitation than L.Uromiyeh. If these are to be demonstration sites, site selection must result in a choice of sites that provide examples that are of use elsewhere. The choice of Lake Uromiyeh in this instance seems less obvious.
15. Para. 93: baseline activity is left blank; are there no baseline activities addressing conversion of wetlands?
16. Para. 100-105. Construction of a causeway on Lake Uromiyeh. This can hardly be regarded as being of demonstrative value, as it appears 'one off' and produced under wat-time duress. It is also unclear why it is listed as one of the 6 main threats to the two demonstration sites. If ecological implications are not fully understood, why is it regarded as 'having severe impacts on critical habitats'? the latter is not made evident.
17. Para 106. The basin? This must refer to LUEZ – please make clear which of the two demonstration sites is being considered.
18. Table 3 Threats matrix. The described main threats appear to be mainly applicable to inland wetlands; several threats seem to hold for L. Uromiyeh only (e.g. infrastructure development). Redo matrix, and indicate whether the threats are applicable to inland wetlands, Caspian Sea wetlands, Persian Gulf wetlands. Given the importance of the latter two categories (e.g. 9 of the 15 replication sites), it would be wise to devote at least a paragraph or two on whether there are any threats that are peculiar to these coastal wetlands, that are not present at the demonstration sites.
19. Para. 116. Outcome 1: Local WPA management structures enhanced. As most wetland sites are outside the WPA system, and most threats are external, better arguments need to be put forward.
20. Para. 120-122 Outcome 2: Co-ordination at river basin level. Baseline does not describe the current situation: are river basins managed along administrative boundaries only (=likely)? Coordination – although a good start – does not automatically lead to wise use.
21. Para 140. Establishing a Lake Uromiyeh Basin Management Authority. Is this a wise approach? Is it institutionally/financially feasible to establish BMAs for all important river/lake basins? I'd hate to think what facilities, staff and operating budgets would cost for a dozen river basins in the country. Why not work with existing institutions/agencies, and devise a way in which they can coordinate more effectively among themselves? Experience with BMAs elsewhere shows that while they are usually empowered parastatals, their mandate is usually limited – often to water resources only, and with an emphasis on extraction and permitting.
22. Para. 146, increasing efficiency of water use, using economic tools and other techniques. I am not sure of baseline situation as this is not described, but very often water is not paid for by the users, only only a trivial amount is paid. Economic tools alone will not do much. Better is to: i) have users pay a resonable amount for water use, related to the volume they use; ii) establish water users associations to ascertain where there is room for improvement and to use as a vehicle for promoting more efficient water use systems (e.g. drip irrigation, etc..); and iiii) determine where the losses are; irrigation systems, for example, may lose 25-50% of their water because of poor maintenance (e.g. poor lining, leaks, evapotranspiration by dense floating vegetation in canals).

23. Para. 147-150 aquatic pollution. Surely there are opportunities here for cooperating with the Ministry of Agriculture (e.g. via IPM programs) and Ministry of Industry (e.g. effluents control), and Ministry of Environment (e.g. enforcement of EIA regulations).
24. Para. 153 Watershed management programme. What will the strengthening of the existing system of Erosion Protection Areas entail? Are these civil engineering works, or a programme involving capacity building?
25. Para. 158. GEF support for capacity building for conducting EIAs, while government will support the cost of EIAs. Aren't EIAs carried out by commercial firms or agencies/institutes seeking additional sources of income? Why is the EIA process ineffective? As an example, the Shahid Kalantary Highway is not illustrative, as this was initiated under the duress of war. Perhaps the process would already be effective if funds were made available by the Government for implementing EIAs for government sponsored projects (with significant impacts), and made mandatory for (impacting) projects funded by the private sector. In many cases EIA processes are ineffective because of lack of enforcement (they are not implemented), lack of independence (funded by company or agency that will directly benefit from project implementation), lack of follow-up, and lack of control, enforcement and monitoring.
26. Para. 163-164 Sub-outcomes 3.2 and 3.3 = blank or needing complete revision.
27. Para. 165 Global Environmental Benefits. Benefits are first and foremost felt in the two demonstration sites. Replication at the 15 additional replication sites is not part of the present project, but remains a potential future development. Global environmental benefits of activities at the two demonstration sites should be refered to.
28. Para. 166. Incremental Cost Analysis. Not included.
29. Para. 167. Sustainability. Section has been left blank.
30. Para. 168-170 on replicability. Hinges on Outcome 3, and notably on Sub-outcome 3.3 – which needs to be entirely rewritten.
31. Para. 182 Lessons learnt = blank
32. Para. 187 and Table 3 Financial Plan = blank
33. Para. 190. Cost effectiveness = very meagre, needs to be vastly expanded
34. Para. 191. Alternative approaches = blank
35. Para.s 192-194 Insitutional Coordination & Support = blank
36. Annex 1. Logframe. Verifiable indicators, means of verification, and assumptions are all left blank (except at project objective level)
37. Annex 2. Incremental Costs Analysis: no figures provided; no section 2.2.6 provided.

A.iv Feasibility of implementation, operation and maintenance.

Project risks, assumptions and how these are to be dealt with by the Project are not provided – it is the proponents intention that these will be provided in Annex 1. Logframe, but this has been left blank. The reviewer can therefore not adequately assess if these have been correctly identified and addressed. Performance indicators are also not listed in the Logframe, and feasibility of set goals cannot be determined.

B. KEY ISSUES

B.i Scientific and technical soundness of the project

Generally, the project brief is technically and scientifically sound; areas of possible deficiency or where some improvements may be made are mentioned under A.iii, above. Key areas that need to

be addressed are: i) Selection of demonstration sites; adding a coastal wetland should be considered, as most sites identified for replication are coastal, while both of the current demonstration sites are inland wetlands; ii) funding for replication at other sites; iii) establishing sufficient coordination between existing agencies instead of creating a new basin authority; and iv) the many significant gaps in the current proposal (e.g. finances, ICA, logframe, sustainability). Minor points of deficiency are mentioned at the end of this review (under D).

B.ii Identification of the global environmental benefits and/or drawbacks of the Project

The global environmental benefits of the *Conservation of Iranian Wetlands* project are potentially significant. Iranian wetlands support a large number of endemic plants species, plus a wide range of endangered, vulnerable and rare wildlife species. Biogeographically, much of the country lies in the Palearctic realm, although areas of the southwest and southeast support fauna characteristic of the Afro-tropical and Indo-Malayan sub-tropical realms, respectively. Iran is considered to be a bridge between four major plant geographical regions—Irano-Turanian, Euro-Siberian, Saharo-Arabian and Sudanian. This position at the confluence of various faunal and floral regions has bestowed upon the country important levels of biological diversity. There are no foreseeable drawbacks for the global environment.

B.iii How the Project fits within the context of the goals of the GEF, as well as its operational strategies, program priorities, Council guidance and the provisions of the relevant conventions

Iran ratified the CBD on 11 June 1996 and is therefore eligible for GEF assistance. The Conservation of Iranian Wetlands project meets GEF eligibility criteria under Operational Program #2 "Coastal, Marine and Freshwater Ecosystems", as it promotes conservation and sustainable use of biodiversity of freshwater and (eventually) coastal ecosystems. The approach outlined is also fully in accordance with the GEF-OP2 Criteria.

B.iv Regional context

Although focused on wetlands within Iran, the *Conservation of Iranian Wetlands* project is also of regional importance. Iran's wetlands are of significant importance in supporting migratory bird species – the country is host to many winter migrant species, mostly from northern and central Asia. Strained inter-country relations in the region hinder close regional cooperation.

B.v Replicability of the Project

15 additional wetland sites have been short-listed from the total of >70 potential Ramsar Sites in Iran as sites for future replication. Sub-outcome 3.3 is the main component of the project aiming at replication, but this section has not been adequately drafted in the current draft and can therefore not be assessed. One issue associated with replicability is the fact that the two demonstration sites are inland wetlands, and 9 of the 15 sites identified for replication are coastal (see A.iii). Selection of a coastal demonstration site should therefore be considered. Certain aspects of project design seem too costly for replication, such as the establishing of a Lake Uromiyeh Basin Management Authority (see para. 140 and comment 21 under A.iii). Little external co-funding has been identified/leveraged for the present project, indicating that it may be an issue in case of replication.

B.vi Sustainability of the Project

This section has been left blank in the project document and it can therefore not be fully assessed if provisions made are adequate. Many of the project components deal with capacity building, and it is therefore expected that this will lead to a degree of continuation, and possibly sustainability.

C. Secondary Issues

C.i Linkages to other focal areas

Of the other focal areas (mitigation of greenhouse gas emission/climate change, international waters, ozone depletion, POPs), the Project is weakly linked to:

Climate change

- in a positive way, by slowing/preventing habitat conversion and maintaining plant biomass (carbon sequestration in natural vegetation), and
- in a slightly negative way, by means of methane emissions from wetlands.

International waters

- in a positive way, as these inland wetland areas are (regionally) linked via the migration of waterbirds, and via the safeguarding of quality (e.g. via nutrient uptake) and quantity (e.g. buffering release) of waters released into international waters (Caspian Sea and Persian Gulf).

C.ii Linkages to other programs and action plans at regional or sub-regional level

The Project makes no mention of regional programmes or action plans, although Iran has commitments and is expected to take actions related to the Ramsar Convention. Tensions in the region, especially with its western neighbour, do not encourage regional cooperation and can therefore not be expected at this stage.

C.iii Other beneficial or damaging environmental effects

The Conservation of Iranian Wetlands project should have favourable overall environmental impacts if its key outputs are achieved. In the case of the two demonstration sites, improved conservation of wetland biodiversity on-site may have beneficial effects on biodiversity over a larger area, as these sites are important for migratory species, may provide areas of refuge, or serve as sources of dispersal. No damaging environmental effects are anticipated.

C.iv Degree of involvement of stakeholders in the Project

In draft form, Annex 5 provides a Public Participation Strategy, which at present consists of a listing of agencies and entities to be involved in project implementation, plus a table indicating the type of involvement anticipated per project outcome. This should also be summarised in a narrative, formulating the aim and purpose of the participation strategy. Annex 2 lists Provincial and Central Government Stakeholders, Non-Government Organisations, Project Partners and Co-funders, and Local communities as stakeholders. Government organisations will primarily be involved via capacity building programmes, while NGOs and local communities will be involved

via participation in the formulation of management plans, data collection programmes, and in development of alternative livelihood programmes.

C.v Capacity building aspects

Capacity building if well-embedded in the project design:

- the project will work with DoE's Participation Bureau to raise public awareness and encourage participation in activities at demonstration sites. It will also support capacity building and participation of NGOs through the creation of an NGO Forum and possibly a new umbrella NGO in the Lake Uromiyeh Basin;
- the project will build capacities within DoE Teheran to collect, manage and disseminate information on the biodiversity of wetland protected areas;
- activity 1.3.3.3 Conduct capacity building activities as necessary, for NGOs
- Activity Area 3.1.1 Institutional capacity building for WPA management within DoE Headquarters, including:
    - 3.1.1.1 Review and rationalize task descriptions of relevant DoE units to ensure minimal overlap and maximum internal co-ordination of required WPA-management tasks.
    - 3.1.1.2 Provide support for improved operational processes within restructured units, such as planning and financial management
- Activity Area 3.1.2 Human capacity building for WPA management within DoE Headquarters, including:
    - 3.1.2.1 Review and rationalize job descriptions of relevant staff within HQ units to ensure minimal overlap and maximum coverage of required WPA-management and co-ordination tasks.
    - 3.1.2.2 Develop and implement training programmes to upgrade WPA-related management skills among relevant staff; and
- capacity building for conducting EIAs in areas adjacent to WPAs.

C.vi Innovativeness of the Project

THE PROJECT AS A WHOLE IS INNOVATIVE IN THE IRANIAN CONTEXT, AS WETLAND BIODIVERSITY SPECIFIC PROGRAMMES HAVE BEEN PIECEMEAL OR SITE-SPECIFIC, OR EMBEDDED IN LARGER PROGRAMMES (E.G. ESTABLISHING THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN).

D. MINOR CHANGES SUGGESTED FOR IMPROVEMENT OF THE PROJECT BRIEF

- Include a table of contents
- List of abbreviations is far from complete (e.g. LUBMA, LPPCC)
- Scientific names of bird species (para. 24):
    - *Phoenicopterus rubber* should read *Phoenicopterus ruber*
    - *Platalea leucordia* should read *Platalea leucorodia*
    - *Haliaeetus albicialla* should read *Haliaeetus albicilla*
    - *Falco pelegrinides* should read *Falco pelegrinoides*

Given the number of mistakes in this small section, the proponent should check elsewhere if scientific names are correctly spelled.

- Para. 92. It is assumed that 'the lake' in para. 92 refers to Lake Uromiyeh?
- The latter occurs in various places, and the document should be checked throughout to assess if references to 'the lake' are self-evident.

Ulft, the Netherlands,
15th June 2003

Wim Giesen

Annex 3b: Response to First STAP review

The project proponents would like to thank the STAP Reviewer for his constructive comments on the draft project brief. The following table matches issues raised in the review with specific responses, including, where appropriate, reference to changes incorporated into the revised brief.

Section of review	Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
A.iii – Adequacy of project design	1. Para 2. Country driveness. Meagre analysis, showing only linkages between the project and the NBSAP; what about other strategies, policies and action plans? More importantly, as the goal of the project is sustainable conservation of wetland biodiversity, there should be an indication that this aim is country driven. Nothing presented on the Iranian NBSAP appears directly related to wetlands (apart from sustainable fisheries, in a more oblique way).	Para. 2 now provides a cross-reference to paras. 33-36, which highlight legal and policy developments that stand to benefit the project
	2. Para. 10 summarizes the number of potential Ramsar sites and IBAs, but should be expanded to include numbers of globally important species of various taxon groups.	See newly inserted paragraph 11.
	3. Para.17-21, biodiversity importance of Lake Uromiyeh. Need to expand, to indicate more comprehensively which globally significant species occur at this site in significant numbers, and/or are dependent on the site.	This section has been revised, and Annex 6 completed.
	4. Para.'s 13 and 21. LUEZ is described in para. 13 as being 12,500 km², and consisting of the lake (5000-6000 km²), and including 17 ecologically connected wetlands in the surrounding area. Para. 21., however, states that 28 ecologically interconnected wetlands occur in the 12,500 km² of plains that surround the lake. Inconsistencies in area and number of wetlands.	Now paras. 14 and 22. There are 28 wetlands within the LUEZ, excluding the Lake itself. Seventeen of these have some protection or designation status (Ramsar, IBA, NHBA, etc.). Thea area of the plains extends beyond the area of the LUEZ, and is of an equivalent size. See also para. 48.
	5. Para. 25. 9 of the 15 sites recognised as 'replication sites' are coastal, i.e. either Caspian Sea or Persian Gulf sites. It is therefore strange (and an opportunity lost) that both demonstration sites are inland wetlands.	The definition of target replication sites has been revised to include all nationally and internationally protected wetlands in Iran. A majority of these are inland sites. Also, to that extent that institutional, as opposed to technical issues may dominate, there should be substantial lessons learned that can be applied to costal sites as well.
	6. Para. 27. Locals at Lake Uromiyeh do not see the lake as a significant part of their resource base. Given the preceeding description of socio-economics, this would seem a correct assessement by the local community.	Now para. 28. The word 'potential' has been added.
	7. Para. 32-35 Legal and policy baseline. No mention of international treaties, conventions etc…. Elsewhere there is mention of Ramsar and the CBD, but does Iran have other international obligations?	Now paras. 33-36. Certainly Iran has other international obligations, but those listed are considered most relevant
	8. Para. 41: Ministry of Transportation: blank	See completed paragraph 42.

Section of review	Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
	9. Para. 43 Protected Area system and the inclusion of wetlands in these areas. A mention should be made here of the status of the two demonstration sites, and of the 15 additional 'replication sites'.	See above response to comment #5 re. revised definition of replication sites. Status of demonstration sites is provided in paras. 16 and 50.
	10.Para. 47-50. What is the status of LUEZ/Lake Uromyeh? Is it a mosaic of areas with different status? (e.g. game reserve, NP). Unclear.	See paragraph 48.
	11.Para. 62, increasing salinity has affected *Artemia* population. What about harvesting of brine shrimp, and the effects of pollution?	Now para. 63. There is no doubt that Artemia will reduce and ultimately cease breeding above a certain salinity. This section aims to make that relationship clear. Para. 82 refers to effects of harvesting. No data is available on possible effects of pollution
	12.Para. 79, ecological implications of aquatic and noise pollution: blank	See revised para. 80.
	13.Para. 80. Baseline activities to address the threat: any indication of effects of enforcement of EIA procedures? Integrated Pest Management measures?	Now para. 81. No data available, question can be addressed at inception stage.
	14.Para. 81-86. Potentially unsustainable exploitation of wetland resources. Reference is made to 'the lake' but it is understood to be Lake Uromiyeh. Focus is entirely on Lake Uromiyeh, which does not appear to be suffering from over-exploitation to any great degree. Why no mention of Lake Parishad? Table 3 shows that L. Parishad is suffering more from unsustainable exploitation than L.Uromiyeh. If these are to be demonstration sites, site selection must result in a choice of sites that provide examples that are of use elsewhere. The choice of Lake Uromiyeh in this instance seems less obvious.	Now paras. 82-87. The project has not specifically chosen either site for this purpose but will address this threat at both sites.
	15.Para. 93: baseline activity is left blank; are there no baseline activities addressing conversion of wetlands?	See completed para. 94.
	16.Para. 100-105. Construction of a causeway on Lake Uromiyeh. This can hardly be regarded as being of demonstrative value, as it appears 'one off' and produced under wartime duress. It is also unclear why it is listed as one of the 6 main threats to the two demonstration sites. If ecological implications are not fully understood, why is it regarded as 'having severe impacts on critical habitats'? the latter is not made evident.	Paras. 102 and 105 provide information on the ecological issues associated with the bridge construction. While the 'ultimate' impacts remain unclear, there is no question that the road is having substantial and negative impacts on hydrodynamics, sedinent flow, etc. Finally, while the situation is perhaps unique, the demonstration impact would be important in showing the possibility of requiring an important remedial measure for an ongoing infrastructural project affecting a wetland.
	17.Para 106. The basin? This must refer to LUEZ – please make clear which of the two demonstration sites is being considered.	Now para. 107, correction made.

Section of review	Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
	18.Table 3 Threats matrix. The described main threats appear to be mainly applicable to inland wetlands; several threats seem to hold for L. Uromiyeh only (e.g. infrastructure development). Redo matrix, and indicate whether the threats are applicable to inland wetlands, Caspian Sea wetlands, Persian Gulf wetlands. Given the importance of the latter two categories (e.g. 9 of the 15 replication sites), it would be wise to devote at least a paragraph or two on whether there are any threats that are peculiar to these coastal wetlands, that are not present at the demonstration sites.	As noted above, replication sites are now including a majority of inland wetland sites. However, the suggested analysis will be completed during the inception phase of the project.
	19.Para. 116. Outcome 1: Local WPA management structures enhanced. As most wetland sites are outside the WPA system, and most threats are external, better arguments need to be put forward.	Now para. 117. It would seem clear that WPAs require well functioning WPA management structures in order to operate. In addition, the brief has gone to great lengths to ensure that the project's efforts are largely taking place outside of the PA boundaries: less than 29% of incremental funds are going to Outcome 1, compared with more than 46% in the broader basins (Outcome 2). This ration appears to the project proponents to be appropriate.
	20.Para. 120-122 Outcome 2: Co-ordination at river basin level. Baseline does not describe the current situation: are river basins managed along administrative boundaries only (=likely)? Coordination – although a good start – does not automatically lead to wise use	Now paras. 121-123. The reviewer is correct in his depiction of the current baseline. The baseline situation is described in under the precednign section on threats, none of which are currently being addressed in an integrated, basin-wide manner.
	21.Para 140. Establishing a Lake Uromiyeh Basin Management Authority. Is this a wise approach? Is it institutionally/financially feasible to establish BMAs for all important river/lake basins? I'd hate to think what facilities, staff and operating budgets would cost for a dozen river basins in the country. Why not work with existing institutions/agencies, and devise a way in which they can coordinate more effectively among themselves? Experience with BMAs elsewhere shows that while they are usually empowered parastatals, their mandate is usually limited – often to water resources only, and with an emphasis on extraction and permitting.	Now para. 141. The reviewer has pointed out some important constraints and potential pitfalls facing the establishment of a BMA. However, in the case of Uromiyeh Lake, the project has considered, and rejected, the main alternative suggested, i.e., finding ways for existing agencies to enhance co-ordination, as having been shown to be unworkable. In addition, it should be noted that successful management of water resources, which the reviewer concedes is more likely than in other areas, would be perhaps the most important task of the LUBMA. Nevertheless, in response to the comments on the LUBMA, a new activities have been added to the LFM (2.1.1.2) to support high-level

Section of review	Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
		political discussions to ensure that the LUBMA has adequate authority to achieve its proposed mandate.
	22.Para. 146, increasing efficiency of water use, using economic tools and other techniques. I am not sure of baseline situation as this is not described, but very often water is not paid for by the users, or only a trivial amount is paid. Economic tools alone will not do much. Better is to: i) have users pay a resonable amount for water use, related to the volume they use; ii) establish water users associations to ascertain where there is room for improvement and to use as a vehicle for promoting more efficient water use systems (e.g. drip irrigation, etc..); and iiii) determine where the losses are; irrigation systems, for example, may lose 25-50% of their water because of poor maintenance (e.g. poor lining, leaks, evapotranspiration by dense floating vegetation in canals).	Now para. 147. Two points: (1) The project will introduce water payments by farmers where none existed precisely to overcome the undervaluation of the water resources. The introduction of payment systems will include pricing and affordability studies to make such a transition for farmers easier and more acceptable. The project will also ensure support for institutional arrangements for the application of such a pricing system. To clarify this aspect, milestones have been added in the logframe for the introduction and development of such a pricing system and associated institutional arrangements. (2) The original text does refer to 'other techniques' beyond economic instruments (see also Annex 1, LFM, Sub-Outcome 2.2.2). Nevertheless, the idea of water users' associations was not previously considered and has now been incorporated into the LFM.
	23.Para. 147-150 aquatic pollution. Surely there are opportunities here for cooperating with the Ministry of Agriculture (e.g. via IPM programs) and Ministry of Industry (e.g. effluents control), and Ministry of Environment (e.g. enforcement of EIA regulations).	Each of the mentioned agencies will indeed be involved in the project (see Annex 5, Stakeholder participation) and their work co-ordinated, with support from the LUBMA
	24.Para. 153 Watershed management programme. What will the strengthening of the existing system of Erosion Protection Areas entail? Are these civil engineering works, or a programme involving capacity building?	Now para. 154. The exact definition of work to be carried out in these areas remains undetermined, pending a closer assessment of their functioning and shortcomings. To be addressed during inception stage.
	25.Para. 158. GEF support for capacity building for conducting EIAs, while government will support the cost of EIAs. Aren't EIAs carried out by commercial firms or agencies/institutes seeking additional sources of income? Why is the EIA process ineffective? As an example, the Shahid Kalantary Highway is not illustrative, as this was initiated under the duress of war. Perhaps the process would already be effective if funds were made available by the Government for implementing EIAs for government sponsored projects (with significant impacts), and made mandatory for (impacting) projects funded by the private sector. In many cases EIA processes are ineffective because of lack of enforcement	Most of the required EIAs are believed to be public sector investments, with Government therefore covering the costs of relevant EIAs. The Reviewer has listed some of the relevant causes of EIA ineffectiveness, which were highlighted in a report on the subject prepared under the PDF-B. The project will review and support strengthening the EIA system and process (not just guidelines on EIAs) precisely to overcome the problems

Section of review	Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
	(they are not implemented), lack of independence (funded by company or agency that will directly benefit from project implementation), lack of follow-up, and lack of control, enforcement and monitoring.	highlighted. A new logframe milestone has been added for strengthening this process.
	26.Para. 163-164 Sub-outcomes 3.2 and 3.3 = blank or needing complete revision	See revised paras. 164-169.
	27.Para. 165 Global Environmental Benefits. Benefits are first and foremost felt in the two demonstration sites. Replication at the 15 additional replication sites is not part of the present project, but remains a potential future development. Global environmental benefits of activities at the two demonstration sites should be refered to.	See revised paragraph 170-171.
	28.Para. 166. Incremental Cost Analysis. Not included	See new para. 172 and completed ICA
	29.Para. 167. Sustainability. Section has been left blank	See new paras. 173-175.
	30.Para. 168-170 on replicability. Hinges on Outcome 3, and notably on Sub-outcome 3.3 – which needs to be entirely rewritten.	See revised paras. 176-178, also revised sub-outcome 3.3 (paras. 166-169)
	31.Para. 182 Lessons learnt = blank	See revised paras. 190-193
	32.Para. 187 and Table 3 Financial Plan = blank	See revised paras. 196-198
	33.Para. 190. Cost effectiveness = very meagre, needs to be vastly expanded	See revised para. 199-204
	34.Para. 191. Alternative approaches = blank	See new paras. 199-204
	35.Para.s 192-194 Institutional Coordination & Support = blank	See revised paras. 205-207
	36.Annex 1. Logframe. Verifiable indicators, means of verification, and assumptions are all left blank (except at project objective level)	See Annex 1, revised LFM
	37.Annex 2. Incremental Costs Analysis: no figures provided; no section 2.2.6 provided.	See Annex 2, revised ICA.

Annex 3c) Revised STAP Review

STAP – Revised Independent Technical Review of GEF Proposal

PROJECT TITLE:	*CONSERVATION OF IRANIAN WETLANDS*
Project Number:	PIMS 980
Reviewer:	Wim Giesen, Mezenpad 164, 7071 JT Ulft, The Netherlands email: 100765.3312@compuserve.com; or w.giesen@arcadis.nl
Date:	14th July 2003

Review of the:

UNDP-GEF CONSERVATION OF IRANIAN WETLANDS
REVISED FULL PROJECT BRIEF
- DATED 12 JULY 2003

FIRST REVIEWED ON 12TH JUNE 2003

CONTENTS:

A. GENERAL COMMENTS

The Full Project Brief (FPB) presents a coherent, balanced package of interventions targeting the conservation of globally significant biodiversity in the wetlands of Iran. While the draft FPB had significant gaps and a number of shortcomings (as perceived by the reviewer), these have largely been completed, explained or addressed by the proponent.

A.i Global priority in the area of biodiversity

The global significance of the biodiversity of Iran's wetlands is evident and clearly presented. Global significance of the two selected sites – Lake Uromiyeh and Lake Parishan – was initially unclear but has now been added to the main text.

A.ii Cost-effectiveness in achieving focal area objective(s)

The Project leverages a total of almost US$10 million in co-financing, of which most from the Iranian Government (94%), with the balance coming from the Netherlands Government (about 6%). The proportion of non-national government co-funding is therefore low. Other details on project funding have now been added to the brief, including sections on cost-effectiveness and an ICA. Under cost-effectiveness, the brief states that forms of revenue generation are being considered at the demonstration sites. The sites are disturbed and generally fragile – perhaps not the best circumstances for seeking (sustainable) forms of exploitation. The ICA is clear and comprehensive.

A.iii Adequacy of project design

The design of the Conservation of Iranian Wetlands project is adequate, and the gaps identified in the draft brief (see first STAP review) have been addressed. However, a few points remain that should be revisited:

1. Para. 26 now refers to 37 WPAs – instead of the original 15 – being identified as replication sites. As far as the reviewer can tell, this figure (37) is not mentioned in Annex 6, which refers to 26 national WPAs (of the 62 wetlands included in the Directory of Middle East wetlands). No information appears to be provided in Annex 6 about which percentage of these WPAs are inland wetlands, and which are coastal. However, of the 62 wetland sites, 31 are either Persian Gulf/Gulf of Oman or Caspian Sea wetlands. The conclusion that the 'majority are inland sites' is therefore puzzling. As para. 26/Annex 6 form the basis for site choice – important in relation to replication – the proponent should reword these, at least in order to convincingly argue why no coastal wetland was chosen as a demonstration site.
2. Para. 82-87. Potentially unsustainable exploitation of wetland resources. In the response to the STAP review, the proponent states that "The Project has not specifically chosen either site for this purpose but will address this threat at both sites." However, it is evident that most of the threats mentioned in this section (and the University of Ghent studies on *Artemia*) directly refer to Uromiyeh. If these paragraphs are to be less site specific, they should be reworded and made more general.
3. Para. 102-105. Construction of a causeway on Lake Uromiyeh. The proponent states that "while the situation is perhaps unique, the demonstration impact would be important in showing the possibility of requiring and important remedial measure for an infrastructural project affecting a wetland". Other infrastructural projects potentially affecting short-listed priority wetlands should be mentioned. If cumulative effects of infrastructural projects are most damaging (see also para 158 in

this respect), then Strategic EA (i.e. for a particular sector) rather than support for EIA is called for in the present project.

4. Table 2 Threats matrix. As stated in the first STAP review, the described main threats (for which the two demonstration sites provide examples) appear to be mainly applicable to inland wetlands, rather than coastal wetlands. The number of short-listed priority wetlands have now been expanded in the revised brief to include more inland wetlands, but the shortcoming remains in the area of providing useful examples for issues in coastal wetlands (e.g. Caspian Sea wetlands, Persian Gulf wetlands).
5. Para 141. Establishing a Lake Uromiyeh Basin Management Authority. Experience world-wide has shown that BMAs tend to focus on water resources management in a very limited way – extraction and permitting – and not deal with other water-related issues such as water quality, allocation of water for environmental flows, aquatic biodiversity, groundwater etc…. Put bluntly, BMAs often develop into agencies that are successful at generating income for themselves, but what is needed is good coordination between the various sectors and on the whole, BMAs do not provide this. Does the Government of Iran support establishing BMAs? In all likelihood the idea is supported by a department within the Ministry controlling water resources (that is likely to evolve into the BMA), and opposed by most other departments. In river basin management worldwide, the trend is away from BMAs, as they have proved to be ineffective. As an alternative, a coordination body (e.g. Lake Uromiyeh Basin Coordination Committee) could be established that includes representatives from major stakeholder agencies, and is provided with sufficient clout to deal with cross-sectoral issues. Another advantage is that same committee (or whatever you'd like to call it), with small differences in composition to accommodate local government/local interests, could be used for coordination in other lake/river basins.
6. Para. 159. GEF support for capacity building for conducting EIAs. The revised brief states "GEF support will help to build capacities to undertake such EIAs" which is not the same as what the response to the STAP review states, namely "review and support strengthening of the EIA system". It is not a lack of capacity to undertake EIAs that is the problem (if it were, it would be up to others to address, and not GEF), it is the lack of enforcement, control and monitoring EIAs. It is therefore the EA system that requires support from GEF, not the 'capacity to undertake EIA' (admittedly, this might be a matter of semantics). Related to this: Strategic EA may also be called for, to provide sectoral environmental strategies for identifying and mitigating cumulative impacts (among others) not identified via individual EIAs (see point 2, above).
7. Para. 172. Incremental Cost Analysis. This paragraph should summarize findings and conclusions of ICA Annex 2, rather than provide only a few words on the process by which it was determined.
8. Para. 167. Sustainability. The proponent states that the GEF alternative "involves a one-time investment to develop the technical, managerial and operational framework for effective management." The reviewer doubts that a one-time investment will be sufficient for sustainability of the programme. The following sub-outcomes all appear to require further funding: Sub-outcome 1.2 implemetation of biodiversity monitoring programmes; Sub-outcome 1.3 awareness programmes at PAs; Sub-outcome 1.5 (satellite) wetland degradation/ destruction halted and (in some cases) reversed; Sub-outcome 2.5 best practices in EIA demonstrated; Sub-outcome 2.6 best practices concerning alien species introduction and control have been demonstrated. Sub-outcome 3.3 Lessons leaned in outcomes 1 and 2 are disseminated to managers of other key WPA sites, who use them in developing strategies for replication at their sites. Para. 175 states that "Activities within the PAs themselves are expected to improve the efficiency of management efforts there, without creating substantial new financial burdens." This may be too simplistic, as activities initiated in PAs are not geared solely towards improving efficiency, but also involve new activities such as awareness raising and biodiversity monitoring.
9. Para. 168-170 on replicability. See points 1 and 4 above.

A.iv Feasibility of implementation, operation and maintenance.

Project risks, assumptions and how these are to be dealt with by the Project are provided in the Logframe (Annex 1). On the whole, these are realistic and do not pose a major threat to the feasibility of the Project.

Sub-outcome 1.3 assumes that "Availability of alternative income sources results in reduced dependence on illegal encroachment activities". This may be true, but reduced dependence does not automatically lead to reduced incidence. Alternatives may be viewed as supplementary, instead of achieving the hoped for replacement of unsustainable practices.

Sub-outcome 1.4 assumes that "DOE effectively implements management plans that are developed" – this also assumes that funds/resources required are available.

Sub-outcome 1.5 assumes that "Wetlands can be restored to a level approaching their former value" – it also assumes that changes will be visible during the relatively brief project period. This may perhaps be the case in actively restored pilot sites, but not in wetlands that may eventually recover due to changes in land use and management practices in the basin, etc…

Sub-outcome 2.1 – also assumes that the LUBMA will have a broader mandate than water resources *sensu stricta*, and can coordinate effectively between various sectoral agencies.

Sub-outcome 2.2 – Stakeholders resist the idea of water use charges. This is a real threat, as water users that have never paid for water consumption and regard provision of free water as their natural right will balk at the idea of payment, even if this is nominal. Changing this often takes many years and lots of government input/convincing, hardly something that can be achieved within a few years. A water pricing system – yes – actual payment – questionable!

B. KEY ISSUES

B.i Scientific and technical soundness of the project

Generally, the project brief is technically and scientifically sound. Key areas mentioned in the first STAP review that needed to be addressed were: i) Selection of demonstration sites; adding a coastal wetland should be considered, as most sites identified for replication are coastal, while both of the current demonstration sites are inland wetlands; ii) funding for replication at other sites; iii) establishing sufficient coordination between existing agencies instead of creating a new basin authority. The reviewer considers that these three points still need to be fully addressed.

B.ii Identification of the global environmental benefits and/or drawbacks of the Project

Does not need to be revisted – fully addressed in first draft brief.

B.iii How the Project fits within the context of the goals of the GEF, as well as its operational strategies, program priorities, Council guidance and the provisions of the relevant conventions

Does not need to be revisted – fully addressed in first draft brief.

B.iv Regional context

Does not need to be revisted – fully addressed in first draft brief.

B.v Replicability of the Project

See A.iii points 1, 4 and 9.

B.vi Sustainability of the Project

See A.iii point 8.

C. Secondary Issues

C.i Linkages to other focal areas

Does not need to be revisted – fully addressed in first draft brief.

C.ii Linkages to other programs and action plans at regional or sub-regional level

Regional programmes and projects are mentioned under 2.7.1, on Incorporating lessons learned from similar projects. These include a regional IW project for the Caspian Sea, a World Bank MSP reviewing lessons learned for lake management, and an an IW project in the Sistan Basin between Iran and Afghanistan

C.iii Other beneficial or damaging environmental effects

Does not need to be revisted – fully addressed in first draft brief.

C.iv Degree of involvement of stakeholders in the Project

Does not need to be revisted – fully addressed in first draft brief.

C.v Capacity building aspects

Does not need to be revisted – fully addressed in first draft brief.

C.vi Innovativeness of the Project

Does not need to be revisted – fully addressed in first draft brief.

Ulft, the Netherlands,
14th July 2003
Wim Giesen

Annex 3d) Response to Revised STAP Review

The project proponents would like to thank the STAP Reviewer once again for his constructive comments on the revised draft project brief.[1] The following table matches issues raised in the review with specific responses, including, where appropriate, reference to changes incorporated into the newly revised brief.

Re. section A.ii. Cost effectiveness in achieving focal area objective(s)

It should be noted that revenue generation is only one element of the project's strategy for cost effectiveness and sustainability and the fragility of these ecosystems will be taken into account in this context.

Re. section A.iii.: Adequacy of project design

Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
1. Para. 26 now refers to 37 WPAs – instead of the original 15 – being identified as replication sites. As far as the reviewer can tell, this figure (37) is not mentioned in Annex 6, which refers to 26 national WPAs (of the 62 wetlands included in the Directory of Middle East wetlands). No information appears to be provided in Annex 6 about which percentage of these WPAs are inland wetlands, and which are coastal. However, of the 62 wetland sites, 31 are either Persian Gulf/Gulf of Oman or Caspian Sea wetlands. The conclusion that the 'majority are inland sites' is therefore puzzling. As para. 26/Annex 6 form the basis for site choice – important in relation to replication – the proponent should reword these, at least in order to convincingly argue why no coastal wetland was chosen as a demonstration site.	The project team regrets the confusion caused by the use of conflicting and sometimes incorrect figures in the draft brief. The following summarises the situation with respect to demonstration sites (see also footnote 1 and para.26 of the revised draft project brief and Section 1.A of the Executive Summary): • The project defines Wetlands Protected Areas (WPAs) as all nationally and/or internationally protected (Ramsar) wetlands in Iran. • There are 36 WPAs, 26 of which are nationally protected and 10 of which are only protected as Ramsar sites. • Demonstration work will take place at 5 sites, including 2 of the nationally protected sites and (to a lesser extent) at 3 of the Ramsar-only protected sites (Uromiyeh satellite wetlands). • The remaining 31 WPAs have been termed 'target replication sites.' As noted, the only criterion for inclusion in this set is that a site should be nationally and/or internationally protected. • Of the 31 target replication sites, between 5-10 sites will be chosen as 'in-depth replication sites,' which will be represented in thematic working groups and for which site action plans will be developed. Criteria for selection of these sites will be finalized during the inception phase but will certainly include

[1] The Reviewer commented on the draft brief of 12 July, while also having available the GEFSec comments and a matrix of responses to those comments.

Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
	global biodiversity significance and transferability of demonstration elements.
2. Para. 82-87. Potentially unsustainable exploitation of wetland resources. In the response to the STAP review, the proponent states that "The Project has not specifically chosen either site for this purpose but will address this threat at both sites." However, it is evident that most of the threats mentioned in this section (and the University of Ghent studies on *Artemia*) directly refer to Uromiyeh. If these paragraphs are to be less site specific, they should be reworded and made more general.	See revised para. 82 and footnote 33 of the project brief. The response to the draft STAP review was unclear as was the language in the draft brief. The former meant to say that presence of this threat was not a major criterion in selecting the demonstration sites. Nevertheless, it is clearly a bigger issue at Uromiyeh than at Parishan, which is why the description of the threat in the brief focuses on Uromiyeh.
3. Para. 102-105. Construction of a causeway on Lake Uromiyeh. The proponent states that "while the situation is perhaps unique, the demonstration impact would be important in showing the possibility of requiring and important remedial measure for an infrastructural project affecting a wetland". Other infrastructural projects potentially affecting short-listed priority wetlands should be mentioned. If cumulative effects of infrastructural projects are most damaging (see also para 158 in this respect), then Strategic EA (i.e. for a particular sector) rather than support for EIA is called for in the present project.	We interpret the reviewer's use of the term 'short-listed priority wetlands' as a reference to the project's 5-10 'in-depth replication sites,' (see response to 1 above) which, as noted, have not as yet been selected. It is expected that an EIA working group will be established under Sub-outcome 3.3 and will involve those sites where similar EIA issues (strategic or otherwise) are particularly relevant.
4. Table 2 Threats matrix. As stated in the first STAP review, the described main threats (for which the two demonstration sites provide examples) appear to be mainly applicable to inland wetlands, rather than coastal wetlands. The number of short-listed priority wetlands have now been expanded in the revised brief to include more inland wetlands, but the shortcoming remains in the area of providing useful examples for issues in coastal wetlands (e.g. Caspian Sea wetlands, Persian Gulf wetlands).	The threats analysis and its concluding matrix focuses first and foremost on the demonstration sites. Lessons learned by addressing threats at the demonstration sites will be transferred as appropriate to managers of other wetland sites, whether these are inland or coastal. Experience with project development at the two short-listed coastal sites (Miankaleh and Khouran Straits) suggests that many (though perhaps not all) of the issues / threats facing these sites are similar in nature to those facing inland wetlands.
5. Para 141. Establishing a Lake Uromiyeh Basin Management Authority. Experience world-wide has shown that BMAs tend to focus on water resources management in a very limited way – extraction and permitting – and not deal with other water-related issues such as water quality, allocation of water for environmental flows, aquatic biodiversity, groundwater etc…. Put bluntly, BMAs often develop into agencies that are successful at generating income for themselves, but what is needed is good coordination between the various sectors and on the whole, BMAs do not provide this. Does the Government of Iran support establishing BMAs? In all likelihood the idea is supported by a department within the Ministry controlling water resources (that is likely to evolve into the BMA), and opposed by most other departments. In	The project team does not see a strong dichotomy between the two proposed strategies for co-ordination, but rather seems them as two points along a continuum of possible co-ordination strategies. The fact that the reviewer favors a looser, less institution-intensive model is noted, as is his recounting of global experience in this regard. The project team, however, continues to favor the approach outlined in the brief, which has been endorsed by the Government. However, the intention is to remain flexible and to ultimately adopt the most

Issue raised by the reviewer	Comment and / or identification of changes made in revised project brief
river basin management worldwide, the trend is away from BMAs, as they have proved to be ineffective. As an alternative, a coordination body (e.g. Lake Uromiyeh Basin Coordination Committee) could be established that includes representatives from major stakeholder agencies, and is provided with sufficient clout to deal with cross-sectoral issues. Another advantage is that same committee (or whatever you'd like to call it), with small differences in composition to accommodate local government/local interests, could be used for coordination in other lake/river basins.	appropriate institutional model, thus some degree of flexibility will be retained in this area. . The Department of Environment has been a lead proponent and is expected to play a key role in a basin management authority.
6. Para. 159. GEF support for capacity building for conducting EIAs. The revised brief states "GEF support will help to build capacities to undertake such EIAs" which is not the same as what the response to the STAP review states, namely "review and support strengthening of the EIA system". It is not a lack of capacity to undertake EIAs that is the problem (if it were, it would be up to others to address, and not GEF), it is the lack of enforcement, control and monitoring EIAs. It is therefore the EA system that requires support from GEF, not the 'capacity to undertake EIA' (admittedly, this might be a matter of semantics). Related to this: Strategic EA may also be called for, to provide sectoral environmental strategies for identifying and mitigating cumulative impacts (among others) not identified via individual EIAs (see point 2, above).	The wording of the draft brief has been changed. However, we agree that this is largely a matter of semantics. Both capacities as well as the 'system' will be strengthened through a combination of GEF and Government support under the project.
7. Para. 172. Incremental Cost Analysis. This paragraph should summarize findings and conclusions of ICA Annex 2, rather than provide only a few words on the process by which it was determined.	See revised brief, para. 172, which now cross-references Annex 2.
8. Para. 167. Sustainability. The proponent states that the GEF alternative "involves a one-time investment to develop the technical, managerial and operational framework for effective management." The reviewer doubts that a one-time investment will be sufficient for sustainability of the programme. The following sub-outcomes all appear to require further funding: Sub-outcome 1.2 implemetation of biodiversity monitoring programmes; Sub-outcome 1.3 awareness programmes at PAs; Sub-outcome 1.5 (satellite) wetland degradation/ destruction halted and (in some cases) reversed; Sub-outcome 2.5 best practices in EIA demonstrated; Sub-outcome 2.6 best practices concerning alien species introduction and control have been demonstrated. Sub-outcome 3.3 Lessons leaned in outcomes 1 and 2 are disseminated to managers of other key WPA sites, who use them in developing strategies for replication at their sites. Para. 175 states that "Activities within the PAs themselves are expected to improve the efficiency of management efforts there, without creating substantial new financial burdens." This may be too simplistic, as activities initiated in PAs are not geared solely towards improving efficiency, but also involve new activities such as awareness raising and biodiversity monitoring.	See paragraphs 173-175 and 200 of revised brief. The draft brief did not mean to imply that the task at hand required a one-off investment followed by a free ride. Clearly, as with any PA system, there will be recurrent costs, or, to continue with the investment analogy, 'operations and maintenance.' The point that the brief wished to make is that there should be no need for major new investments in building capacity within the sector.
9. Para. 168-170 on replicability. See points 1 and 4 above.	See responses above.

A.iv. Feasibility of implementation, operation and maintenance

In this section, the STAP Reviewer points out a number of risks and assumptions that were not included in the LFM. The project team agrees and many of these have now been added to the LFM.

B.i. Scientific and technical soundness of the project

Issue raised by the reviewer	Comment and/or identification of changes made in revised brief
Selection of demonstration sites; adding a coastal wetland should be considered, as most sites identified for replication are coastal, while both of the current demonstration sites are inland wetlands	Site selection is described in detail in Annex 6. It does not seem feasible to add a coastal wetland at this late stage. However, to the extent that these may face similar challenges to those facing inland wetlands – and the project team believes that they do to a certain extent – such sites are expected to benefit from the project's replication efforts
Funding for replication at other sites	The project includes over US$2 million of funding for work at replication sites. Additional leveraged co-financing will be sought during the course of the project.
Establishing sufficient coordination between existing agencies instead of creating a new basin authority.	See response to A.iii., point 5 above.

Annex 3e: Response to GEFSec comments

GEFSec review comment (as summarized under 'Further Processing')	Response, including summary and location of changes made in project brief, as appropriate
1. An assurance that: (i) GEF funds are not used to mitigate adverse impacts caused by other development practices (as in sub-outcome 1.5, 2.5 etc.); (ii) GEF funds are truly used to finance activities towards outcomes that will generate biodiversity benefits.	Point (i) • This principle is clear and UNDP-GEF hereby assures the GEFSec that it will be followed in the case of this project. • Re. sub-outcome 1.5: GEF funds will be spent on removing barriers, helping to find ways to alter incentives, raising awareness, etc. GEF funds will not be used for actual restoration work (which will be financed by Government). This was not clear from the submitted draft, which has now been revised accordingly (See revised description in LFA, AA 1.5.3). • Re. sub-outcome 2.5 (see ICA, para. 9): "Government and/or private sector cofinancing will support the cost of the EIAs as well as the costs of any remedial measures called for by the EIAs." GEF support is thus provided under 2.5.2, which is aimed at strengthening the EIA process in areas within and surrounding WPAs, and which does not represent mitigation of adverse impacts. Indeed, the objective of this support is to build capacities to avoid future impacts. Point (ii) • This project takes a watershed approach that involves working in locations and substantive areas far removed from PA management per se, based on the PDF-B's thorough analysis of threats. This has been considered necessary in order to achieve sustainable global benefits. We believe that all activities in this project have direct and/or indirect – the latter mainly through assurance of sustainable use – linkages to generation of global biodiversity benefits.
2. Criteria used for the selection of the demonstration sites? And replication sites? The global significance, especially of the demonstration sites, needs to be clear.	• Annex 6 has been revised to clarify the criteria used for selection of demonstration sites as well as the global significance of the demonstration sites • Definitional issues related to replication sites are newly clarified in the following locations: ➢ Project brief, footnote 1 and paragraph 26. ➢ Executive summary, section 1.A. ➢ Project brief, Annex 3d, Response to the Revised STAP Review, section A.iii, point 1.
3. Please justify the scale of GEF resources budgeted for outcomes 2 and 3 ($1.9mil). The activities are largely process oriented activities, and for which the baseline costs are anticipated to be significant in relation to biodiversity overlays.	The distribution of GEF resources in the draft brief is $0.92 million for Outcome 1, $1.08 million for Outcome 2 and $0.92 for Outcome 3. Thus, the distribution among outcomes is nearly even. If we characterize Outcome 1 as 'PA management,' Outcome 2 as 'Ensuring sustainable use' and Outcome 3 as 'Co-ordination and replication,' it may seem that Outcome 1 has a lower proportion of incremental costs and Outcomes 2 and 3 a higher proportion, than is typical for many GEF projects to date. This perception may be at the root of the GEFSec's query.

GEFSec review comment (as summarized under 'Further Processing')	Response, including summary and location of changes made in project brief, as appropriate
	Justification for the relatively high proportion of resources going to outcomes 2 and 3 is complex, but may be summarised briefly as follows: • As wetland PAs facing many threats that originate in the broader landscape, the project demonstration sites and their constituent biodiversity can benefit more, it is argued, from a relatively high proportion of attention towards issues at this landscape level. This is in fact an important lesson learned from previous GEF wetlands projects, in particular China wetlands. For this reason, too, the project brief notes the relevance of Strategic Priority II. The high proportion of co-financing to Outcome 2 reflects this situation, but the very scale and magnitude of the problems, particularly at Uromiyeh, require substantial GEF attention, *inter alia*, to remove barriers to sustainable use. • The apparently high proportional and actual budgetary allocations for Outcome 3 reflect the new importance under GEF II to catalyzing PA management systems. The project has identified an opportunity to influence management of numerous wetlands of international importance and has determined to invest accordingly. The long-term global biodiversity benefits from this 'replication effect' may ultimately outweigh even those generated at the project demonstration sites.
4. Please provide information on how measures put in place through the project for improved effectiveness can be sustained, particularly in terms of the recurrent costs and baseline budgets.	See revised section on financial sustainability (paras. 173-175) and last bullet point under section 2.1, verifiable indicators column, LFA (see Annex 1).
5.Please provide some details on the community numbers and their role in the project (in the executive summary).	See paragraph 28 of the rbief and section 1.A of the Executive summary.
6. Please include biodiversity related indicators (and benchmarks) for the globally significant demonstration sites.	See Annex 1, Logframe matrix, for a revised and expanded set of biodiversity-related indicators specific to the demonstration sites (It should be noted that these indicators were already included in para. 170 of the previous draft brief but had not been inserted into the LFM.)
7. The STAP review has raised the question of the global importance of the sites selected - and information has been included to confirm its importance. As requested by the reviewer, please get his additional review prior to work program inclusion. Please do this ASAP.	The STAP reviewer has submitted a revised STAP review (see project brief, Annex 3c), based on the following: (i) the latest version of the brief, amended as described herein (it should be noted that the original STAP review was 'upstream' and based on an interim draft), (ii) the GEFSec Review and (iii) the present summary of latest changes. This second STAP review has been responded to (see Annex 3d), with appropriate changes incorporated into the brief and Executive Summary.

Annex 4: GEF Focal Point Endorsement Letter

See separate file attached.

Annex 5: Public Participation Strategy

The present annex summarises and describes the participation of various stakeholders in the implementation of the project. It consists of three parts:

- Categorization of project stakeholders and summary description of their role in project activities
- Matrix identifying stakeholders by category and project sub-outcome
- Notes on establishment of a Lake Uromiyeh Basin Management Authority (LUBMA).

5.1 Project Stakeholders

Project stakeholders can be divided into several major categories. These include:

- Central Government
- Provincial Government
- Non-Government Organisations
- Local communities
- Project Partners and Co-funders

5.1.1 Central Government Stakeholders

Government stakeholders include central government ministries and agencies will be closely involved in project activities. Major stakeholders, whose roles are described elsewhere, include the Department of Environment, the Ministry of Agricultural Jihad and the Ministry of Energy and Natural Resources. Other relevant bodies include:

- The Environmental High Council (see para. 41 of main text)
- The Water High council (see para. 41)
- Government information-dissemination and public awareness agencies (e.g. media agencies) will provide assistance in publicity and awareness-raising activities at the national level.
- The Government's Legal and legislative drafting bodies will provide support in reviewing existing legislation and drafting any new policies and legislation that is required

Review and harmonization of policies and procedures (Outcome 3) will incorporate views and priorities of all relevant Ministries and Government bodies.

All Government stakeholders will be involved in the development and implementation of the coordination mechanisms, including LUBMA and the LPPCC.

5.1.2 Provincial Government

At the provincial level Government stakeholders include the Provincial Governments (the Governor-General's Office) as well as local authorities such as the Bashdari and Farmoundari (sub-provincial and district administrators). Key central agencies such as the Ministry of Agricultural Jihad are also represented at the Provincial level. The Department of Environment, as implementing agency for the project, is an implicit stakeholder in all project activities.

Government support and paerticipation at this level will include coordination of baseline data collection activities, and ensuring that all parties provide required support. Governor-General's Offices will have the primary coordinating responsibility to ensure support and cooperation from all stakeholders. In addition, llocal and regional media outlets (television stations, newspapers, etc.) will assist in disseminating information on the project, project sites and the importance of wetlands conservation overall. Finally, Provincial Government development programmes and projects will be channeled to provide alternative livelihood and sustainable development support (substitutional activities) were possible.

5.1.3 Non-Government Organisations

Non-government organisations likely to be involved in the project include grassroots NGO bodies such as the Iran Watershed Management Society, Green Wave, Iranian Green Front, Women Against Environmental Pollution, etc. Relevant non-government organisations can also include academic and research bodies, technical and professional societies, Academies of Science, etc.

Scientific and technical bodies, including universities, will cooperate in conducting targeted research on the site areas and related threats. They will also be invited to participate in commenting on draft management plans, particularly in technical areas (e.g. hydrology) where specialised non-biodiversity expertise is needed.

Grassroots NGOs will play a key role in public awareness and information dissemination activities, at the local level as well as on a national basis. They will also assist (through subcontracts, if necessary) in comprehensive assessments of local community socio-economic interactions, identification of threats and participative development of alternative livelihood activities

5.1.4 Local Communities

Local communities encompass all populations in the vicinity of the project sites, which interact with the sites to varying degrees. These may include villages or nomadic communities which live around or within the project site areas, nearby towns or rural centres which depend upon services provided by the wetlands or affect it, and broader regional communities which may depend upon the products or environmental services provided by the wetland sites, such as fishing communities which depend upon fish which breed in the wetlands, or towns which draw water from or discharge sewerage into the wetlands.

Local communities will be the key partners in developing and implementing alternative livelihood activities to reduce resource use and pollution pressures on the wetland sites. All alternative livelihood activities to be implemented will be developed and pilot-tested with the full participation of affected communities.

Local community knowledge and expertise will be tapped to assist in collecting information about the sites. Their cooperation and assistance in improving monitoring and enforcement, and reducing encroachment, will be essential. Sewerage and solid waste pollution management will require the support and cooperation of these communities. Finally, local community involvement in formulation and implementation of the management plan will ensure broad support for sustainable management of the sites.

5.1.5 Project Partners and Co-Funders

In addition to UNDP-GEF and the Government of Iran, the project will also receive financial and technical assistance from the Dutch Government. Additional sources of leveraged co-financing will also be welcome should these appear.

Organisations with specialist expertise on conservation laws and policy development, e.g. IUCN/ Ramsar Bureau, may be approached to provide technical support.

Bilateral cooperation and information exchange with countries such as Pakistan, Malaysia and China will help identify lessons learned and best practices in formulation and implementing EIA regulations.

5.2 Stakeholder Participation by category of stakeholder and project outcome

Table 5.1 below identifies relevant project stakeholders within individual sub-outcomes.

Table 5.1: Identification of project stakeholders, by sub-outcome

Sub-outcome description	Central Government	Provincial Government	NGOs	Local Community	Project Partners/ Co-financiers
Sub-outcome 1.1: WPA managers are well-trained in ecosystem-based planning and management and are skilled at identifying, monitoring and reporting on key site-based threats	• DoE Habitat and Protected Areas Bureau (co-ordination)	• Local PA managers and staff at Uromiyeh and Arjan	• Local Universities and research institutes	•	• GEF • Gov't
Sub-outcome 1.2: WPA managers implement biodiversity monitoring programmes which track the impacts of all anthropogenic threats	• DoE Habitat and Protected Areas Bureau (co-ordination)	• Local PA managers and staff at Uromiyeh and Arjan	•	•	• GEF • Gov't
Sub-outcome 1.3: Site managers co-operate with local communities and NGOs to raise awareness and encourage broad-based participation in WPA management	• DoE Habitat and Protected Areas Bureau (co-ordination)	• Local PA managers and staff at Uromiyeh and Arjan	• NGOs at project sites • Lake Uromiyeh NGO Forum	• Local community representatives	• GEF • Gov't
Sub-outcome 1.4: Site conservation, including active enforcement of regulatory measures, is performed according to agreed management plans, resolving issues and addressing threats which are fully within site managers' competencies and authority	• DoE Habitat and Protected Areas Bureau (co-ordination)	• Local PA managers and staff at Uromiyeh and Arjan	• NGOs at project sites • Lake Uromiyeh NGO Forum	• Local community representatives	• GEF • Gov't

Sub-outcome description	Central Government	Provincial Government	NGOs	Local Community	Project Partners/ Co-financiers
Sub-outcome 1.5: Degradation and destruction of satellite wetlands is halted and in pilot cases, reversed	• Environmental High Council (as needed) • DoE Habitat and Protected Areas Bureau (co-ordination)	• Governor-General's Office of West Azarbayjan • Bashdari and Farmoundari (sub-provincial and district administrators)	• NGOs at Uromiyeh (liaison)	• Local communities at satellite wetlands	• GEF • Gov't
Sub-outcome 2.1 Develop co-ordination mechanisms / institutions to facilitate decision-making and wise use of water, land and other natural resources in watershed areas affecting WPAs	• Parliament • Environmental High Council • Lake Uromiyeh Basin Management Authority (LUBMA)	• Governor General's office of all participating provinces • Lake Parishan Provincial Co-ordinating Committee (LPPCC)	• NGO observers at co-ordination structures	•	• GEF • Gov't • Netherlands
Sub-outcome 2.2: Systems for improving the efficiency of water distribution across economic and ecological 'uses' within WPA drainage basins have been developed	• LUBMA • Water High Council • Ministry of Energy • DoE (Natural Environment and Biodiversity Division)	• Governor General's office of all participating provinces • Lake Parishan Provincial Co-ordinating Committee (LPPCC)	• Local universities and research institutes	• Potential beneficiaries of planned dam construction projects	• GEF • Gov't • Netherlands
Sub-outcome 2.3: Integrated pollution control practices have been developed	• LUBMA • Ministry of Agricultural Jihad • Ministry of Industry • DoE (Pollution control)	• Governor General's office of all participating provinces • Lake Parishan Provincial Co-ordinating Committee (LPPCC)	• Local NGOs (awareness raising support)	• Local farming communities	• Gov't • GEF

Sub-outcome description	Central Government	Provincial Government	NGOs	Local Community	Project Partners/ Co-financiers
Sub-outcome 2.4: Enhanced measures for preventing land degradation have been introduced and are helping to reduce sedimentation and related negative impacts downstream	• Ministry of Agricultural Jihad • LUBMA • DoE	• Lake Parishan Provincial Co-ordinating Committee (LPPCC)	• Local NGOs (awareness raising support)	• Local farming communities	• Gov't • GEF
Sub-outcome 2.5: Best practices in Environmental Impact Assessment (EIA) have been demonstrated	• Ministry of Transportation • DoE (Bureau of EIA)	• Governor-General's Offices of East and West Azarbayjan	•	•	• Gov't • GEF
Sub-outcome 2.6: Best practices concerning alien species introduction and control have been demonstrated	• Shillat organization (Ministry of Agricultural Jihad) • DoE	• Governor General's office of all participating provinces	•	•	•
Sub-outcome 3.1: Relevant DoE headquarters structures are rationalized, human capacities for WPA management are strengthened and essential national-level WPA management tasks are demonstrated	• DoE (various departments)	•	•	•	• GEF • Gov't

Sub-outcome description	Central Government	Provincial Government	NGOs	Local Community	Project Partners/ Co-financiers
Sub-outcome 3.2: Awareness and technical capacities are raised in key sectoral ministries while National co-ordination structures are strengthened	• Ministry of Energy • Ministry of Agricultural Jihad • Ministry of Transportation	•	•	•	• Gov't • GEF
Sub-outcome 3.3: Lessons learned in Outcomes 1 and 2 are disseminated to managers of other key WPA sites, who use them in developing strategies for replication at their sites	• DoE	• Provincial-level offices of DoE • Local PA managers and staff	• NGOs at replication sites	• Communities surrounding replication sites	• Gov't • GEF

5.3 Notes on establishment of a LUBMA

5.3.1 The need for a coordination mechanism in the Lake Uromiyeh Basin

The threats analysis conducted under the PDF-B Phase of the GEF project has identified a number of severe threats facing the Lake Uromiyeh ecosystem. These include:

- severe actual and projected water shortages due to both natural drought conditions and overzealous dam construction within the Lake Uromiyeh Basin (LUB);
- serious erosion problems, which are causing high sedimentation levels and increases of salinity in Lake Uromiyeh;
- water pollution from increasing numbers of domestic and industrial sources;
- infrastructural developments, including the above-mentioned dams and the Kalantary Highway, which remains under construction – the final phase of which is to be subject to an Enviromental Impact Analysis (EIA).

The above combination of threats requires co-ordination and consultation amongst different economic sectors and governmental and non-governmental stakeholders in order to be resolved in a manner that serves **the Iranian national interest**. Whether it is the threat of inadequate water volumes reaching the lake and its satellite wetlands, the environmental problems caused by infrastructural developments, or the risks associated with alien species introductions, each remedy must involve working closely with economic actors and officials across sectors. However, current institutional structures have been wholly ineffective in achieving this desired aim. The analysis has therefore concluded that a new institutional approach is urgently required.

5.3.2 Establishing a Lake Uromiyeh Basin Management Authority (LUBMA)

The key to addressing many of the above-described threats lies within what may be termed 'enforceable co-ordination,' i.e., the establishment and operation of co-ordination mechanisms having enforcement powers. Such powers need to extend to areas such as water allocation and dam building and alien species introduction, as well as priority setting responsibilities in areas such as pollution and erosion control. The LUB will provide the key location for testing new models in this area. It represents a particularly challenging case, not only due to the severity of basin-wide threats facing the site, but also due to the fact that its area is distributed amongst three provinces and the Federal Government, meaning that some type of 'Federalized' decision mechanism is essential.

5.3.3 Roles and responsibilities of a LUBMA

The LUBMA would be a Federal-level institution with authority to decide on and enforce key water and land use issues within the LUB. The project would develop detailed TOR and operating guidelines for the LUBMA, which would presumably need to be approved by Iran's Environmental High Council.

Once established with adequate facilities, staffing levels and operating budget, the LUBMA would have responsibilities in areas such as the following:

- supervising and reviewing investment studies and proposals, including proposals for dam construction, pollution and erosion control, alien species introduction, as well as associated EIAs;

- arbitrating among the three provinces concerning water abstraction, water quality, etc.;
- finalizing a long-term management plan for the LUB;
- working with international donors and other partners at the site;
- enforcing the Federal Government's right to have adequate quantities of water reaching the National park and other nationally protected wetland areas within the LUB;
- conducting a strategic, basin-wide EIA for all dam proposals within the basin;
- ensuring that the combination of projects and investments allowed to move forward within the basin represent a sustainable mix.
- examining the costs and benefits of various investments and estimating, for example, the point at which the marginal benefits of building one more dam were outweighed by the marginal costs – if that point has not already been reached.

5.3.4 International experience with river basin management authorities (RBMAs)

A preliminary review suggests that there is a rich experience in this area in many countries throughout the world. While some RBMAs have been established in a multi-national context, e.g., the Mekong River Commission, others have been established in very similar circumstances to that facing Iran, i.e., where different levels of Government, including Federal and sub-Federal levels, as well as different Ministries, have competing or conflicting interests within a river basin.

Annex 6: Biodiversity Significance and Site Selection

6.1. Biodiversity significance of Iran's wetlands of international importance[1]

Surprisingly perhaps for a country dominated by arid and semi-arid regions—over 60% of its land is classified as such—Iran possesses a large number and wide variety of wetlands. Over 1,000 have been identified thus far.[2] These range from the inlets and marshes of the Caspian lowlands to the natural inland delta of Sistan in eastern Iran; from the vast salt lakes of the central plateau to the Mesopotamian deltas at the head of the Persian Gulf; and from the lakes of the Turkman steppes to the tidal mangroves and mudflats of the Persian Gulf coast.

Iran's wetlands constitute vital staging and wintering areas for millions of migratory waterfowl using the West Siberian-Caspian-East African and Central Siberian-Indus-South Asian flyways, and also support large breeding populations of many species. Several million waterfowl utilize the wetlands as wintering habitat, while perhaps as many birds again use the wetlands as staging areas on their way to and from wintering areas further to the southwest or southeast. Iran's wetlands are very important for seven species of birds listed as globally threatened in the 1994 IUCN List of Threatened Animals (Groombridge, 1993), namely Pygmy Cormorant (*Phalacrocorax pygmaeus*), Dalmatian Pelican (*Pelecanus crispus*), Lesser White-fronted Goose (*Anser erythropus*), Marbled Teal (*Marmaronetta angustirostris*), White-headed Duck (*Oxyura leucocephala*), White-tailed Eagle (*Haliaeetus albicilla*) and Siberian Crane (*Grus leucogeranus*). A further four threatened species formerly occurred in significant numbers, but are now only scarce passage migrants or vagrants, namely Red-breasted Goose (*Branta ruficollis*), Pallas' Sea-Eagle (*Haliaeetus leucoryphus*), Sociable Plover (*Chettusia gregaria*) and Slender-billed Curlew (*Numenius tenuirostris*).

Iran's wetlands may be grouped into the following major systems:[3]

- *Wetlands of the south Caspian lowlands in Gilan & Mazandaran Provinces in the north*: The wetlands of Gilan and Mazandaran comprise an almost unbroken chain of freshwater lakes and marshes, brackish lagoons, irrigation ponds and rice paddies stretching for some 700 km along the shores of the Caspian Sea from the border with the Republic of Azerbaijan in the west to the border with Turkmenistan in the east. Two of the most important wetlands in these lowlands are Anzali Mordab in the west and the Gorgan Bay/Miankaleh complex in the east. The former comprises a complex of shallow, freshwater lakes with extensive reed-beds and surrounding flood-meadows, while the latter is a large shallow brackish lagoon with extensive seasonally flooded sedge marshes and tamarisk thickets, almost completely cut off from the Caspian Sea by the 60 km long Miankaleh Peninsula.

- *Wetlands of the Uromiyeh Basin in Azarbaijan Province in the northwest*: The Uromiyeh Basin in the highlands of Azarbayjan in northwestern Iran includes a number of important wetlands centred on Lake Uromiyeh itself, a vast, shallow, hypersaline lake of some 483,000 ha with numerous small islands and spectacular breeding colonies of White Pelicans (*Pelecanus onocrotalus*), Greater Flamingos (*Phoenicopterus ruber*) and many other species of waterfowl. Although the lake is too

[1] Most of this section is taken verbatim from Mansoori, Jamsheed. 1995. "Introduction" (to Iran wetlands section). In *Directory of Middle East Wetlands*. Wetlands International. Ecological changes at some of the wetlands described mean that some statements contained need updating.
[2] Personal communication with Prof. Mohammad Mahdavi, University of Teheran, August 2000.
[3] A seventh major system consists of the wetlands of North Zagros, in Kermanshah and Kurdistan. No description of this system was available.

saline to support any plants or animals other than the alga *Enteromorpha* and the brine shrimp *Artemia*, the numerous small fresh and brackish water lakes and marshes along the rivers which enter the lake support abundant aquatic vegetation and are very rich in wildlife.

- *Wetlands of central Fars Province in the southern Zagros mountains:* Near the eastern end of the Zagros Mountains in central Fars Province, there is a group of large wetlands set in broad valleys between rugged mountain ranges. These wetlands include freshwater lakes and marshes, such as Dasht-e Arjan and the Haftbarm Lakes, and brackish to saline lakes with extensive brackish marshes, such as Parishan, Maharloo, Bakhtegan and Tashk. Lake Bakhtegan and Lake Tashk (together known as the Neiris Lakes) are fed by the Kur River; during years of heavy rainfall they unite to form a single lake of about 108,000 ha. In most years, however, the water surface is much less than this, and the two lakes are surrounded by extensive bare salt flats.

- *Wetlands of Khuzestan Province in the southwest*: In extreme southwestern Iran, three large rivers rising in the Zagros Mountains (the Karun, Dez and Kharkeh) flow out onto the plains of Khuzestan and create a vast complex of seasonal floodplain wetlands which extend southward to the head of the Gulf. In the west, these wetlands are contiguous with the great floodplain wetlands of lower Mesopotamia in Iraq. The most important wetland in this region is Shadegan Marshes, some 290,000 ha of seasonally flooded sedge marsh and brackish lagoons adjacent to the extensive intertidal mudflats at the head of the Gulf. Other similar, but much smaller, floodplain wetlands occur further south along the Gulf coast, notably in the delta of the Helleh River near Bushire.

- *Wetlands of the Sistan Basin on the border with Afghanistan in the east*: In the Sistan Basin, on the border between Iran and Afghanistan, there is a vast complex of freshwater lakes with extensive reed-beds which at times of peak flooding can cover over 200,000 ha. These wetlands are unusual in that although the three main lakes, Hamoun-i Puzak, Hamoun-i Sabari and Hamoun-i Hirmand, lie within an internal drainage basin, they are predominantly freshwater. The system is fed by the Hirmand River, which rises in the Hindu Kush in northern Afghanistan. During long periods of drought, as occurred throughout the late 1960s and again in the 1980s, the Hirmand supplies sufficient water to flood only the uppermost of the lakes, the Hamoun-i Puzak, which lies almost entirely within Afghanistan. However, during years of unusually heavy rainfall, as occurred in the late 1970s and again in 1990, the floodwaters of the Hirmand sweep through all three lakes and overflow into a vast salt waste to the southeast, flushing the salts out of the system in the process.

- *Wetlands along the Persian Gulf and Gulf of Oman coasts in the south*: The sixth major wetland system in Iran comprises the numerous tidal creeks and large areas of intertidal mudflats and mangrove swamps along Iran's 2,000 km of coastline on the Persian Gulf and Gulf of Oman. Mangroves are at the extreme limit of their distribution in the southern Gulf, and comprise only a single species, *Avicennia marina*. Harrington (1976b) gives a detailed description of mangrove distribution in Iran, and estimates the total area of mangrove at 8,900 ha. Much the largest of the mangrove/mudflats ecosystems is found in the Khouran Straits north of Qeshm Island, where there are some 100,000 ha of low-lying islands, mangroves, mudflats and creeks. Further east, along the Gulf of Oman coast in Persian Baluchistan, offshore depths increase to over 50 m and the coastline has extensive sand dunes, long sandy beaches and stretches of sea-cliffs interrupted at intervals by large creek systems with extensive mangroves and mudflats. Where the sublittoral has hard substrates, coral reefs and seagrass beds appear. The large bays at Pozm and Chahbahar in the east lie in a region with an extremely rich and diverse marine fauna. There are seven large offshore islands in the eastern Gulf, Qeshm, Hormoz, Larak, Hengam, Kish, Henderabi and Lavan, as well as many smaller islands and islets, some of which are extremely important for breeding sea-birds and marine

turtles. All of the larger islands are rocky and sparsely populated, and the easternmost are surrounded by substantial coral reefs. The little information available on Iran's coral reefs has been summarized by UNEP/IUCN (1988).

Each of these major regions comprises a complex of large and small lakes and marshes, providing a wide diversity of habitat types and supporting a rich and diverse flora. *Phragmites* reed-beds are characteristic of many of the wetlands, and are particularly extensive at Anzali Mordab in the southwest Caspian, in the Hamoun wetlands in the Sistan Basin, at Dasht-e Arjan and Lake Parishan in Fars, and at several of the wetlands in the Uromiyeh Basin in Azarbayjan. The reed-beds are highly productive, and provide breeding habitat for many species of waterfowl. The reeds are traditionally used for thatching, especially in Gilan, Mazandaran and Sistan, where reeds are harvested on a large scale not only for local use but also for export to other parts of the country for roofing materials and mat-making.

The desert interior of Iran is almost completely surrounded by a ring of high mountain ranges, the source of numerous perennial and seasonal rivers which flow down into the interior deserts and are eventually lost in great salt wastes such as the Dasht-e Kavir in the north and the Hamoun-i Jaz Murian in the south. Some of the larger rivers terminate in extensive brackish and saline lakes, such as Gavekhoni Lake at the mouth of the Zaindeh Rud in Isfahan Province. In years of high rainfall, such wetlands may remain flooded throughout the year. Elsewhere in the country, there are various isolated small lakes, spring-fed pools and seasonal marshes, particularly in the west, west-central and northwest, many of which support a diverse aquatic flora and fauna, and some of which may, at certain times of the year, be important for migratory waterfowl.

Iran's wetlands are of tremendous national, regional and global significance. According to a 1995 report, Iran supports at least 63 wetlands that meet one or more Ramsar criteria for international importance.[4] This figure represents nearly 40% of the 160 wetlands of international importance identified within 13 countries surveyed throughout the Middle East. Recent studies by Iran's Department of Environment (DoE) have raised the estimated number of wetlands of international significance to 76. Many of these correspond with the more than 105 Important Bird Area (IBAs) identified.[5] Without a doubt, the global biodiversity significance of Iran's wetlands remains unparalleled in the Middle East.

As part of the site selection process for the present project (see section 6.3 below), globally significant characteristics of the above 63 sites were compared. The results of this comparison are presented in Table 6.1, which groups the wetlands according to the systems defined above. The table constitutes a quantitative summary of the global significance of Iranian wetlands and in some sense represents the 'stock' of globally significant wetland biodiversity in the country. In its broadest sense, it is upon the conservation of this important baseline stock of wetland biodiversity significance that the project hopes to have an incremental impact.

[4] Scott, Derek. 1995. Directory of Wetlands of the Middle East. Wetlands International. Reference is to criteria defined under the Convention on Wetlands (Ramsar, Iran, 1971) based on which a wetland may be eligible for inclusion on the Ramsar List of Wetlands of International Importance.

[5] Evans, M.I., Ed. 1994. Important Bird Areas in the Middle East. Birdlife International.

Table 6.1: Biodiversity Importance Ranking of 62 Internationally Significant Wetlands in Iran, Grouped by Major Wetlands System

Name of site	Reasons for inclusion	Score	# of globally threatened species	Score	# of 1% species	Score	Total
System: None							
Choghakor Marsh	3	6	3	12	1	1	19
Lake Zaribar	4	8	2	8	1	1	17
Gavekhoni Lake and marshes of the lower Zaindeh Rud	3	6	0	0	8	8	14
Hashelan Marsh	4	8	1	4	1	1	13
Gandoman Marsh	3	6	1	4	2	2	12
Akh Gol	3	6	1	4	1	1	11
Dasht-e Moghan	1	2	0	0	2	2	4
Nur Gol	1	2	0	0	0	0	2
System: Central Fars							
Dasht-e Arjan and Lake Parishan	6	12	5	20	19	19	51
Lake Bakhtegan, Lake Tashk and Kamjan Marshes	5	10	3	12	19	19	41
Lake Maharlu	3	6	5	20	6	6	32
Haft Barm	3	6	2	8	0	0	14
Kaftar Lake	3	6	0	0	5	5	11
Harm Lake	2	4	1	4	2	2	10
Dorudsan Dam	1	2	0	0	2	2	4
System: Khuzestan							
Haur el Azim							100
Karun River Marshes	3	6	5	20	6	6	32
Dez River Marshes and Plains	4	8	5	20	3	3	31
Horeh Bamdej (Sadi Shavour Marshes)	5	10	3	12	9	9	31
Hamidieh Plains	2	4	2	8	7	7	19
Izeh and Shiekho Lakes	3	6	0	0	9	9	15

Name of site	Reasons for inclusion	Score	# of globally threatened species	Score	# of 1% species	Score	Total
Susangerd Marshes	4	8	1	4	2	2	14
Karkheh River Marshes	2	4	2	8	0	0	12
Dez Dam	2	4	1	4	2	2	10
System: Persian Gulf and Gulf of Oman							
Shadegan Marshes and Tidal Mudflats of Khor-al Amaya and Khor Musa	7	14	4	16	15	15	45
Delta of Helleh River	5	10	4	16	9	9	35
Khouran Straits	6	12	2	8	8	8	28
Sheedvar Island	5	10	2	8	3	3	21
Lower Sarbaz River and Khor Govater	4	8	2	8	5	5	21
Nakhilu, Morghu and Ummal Korm Islands	5	10	1	4	3	3	17
Deltas of Rud-i-Gaz and Rud-i-Hara	5	10	1	4	3	3	17
Deltas of Rud-i-Shur, Rud-i-Shirin and Rud-i-Minab	4	8	1	4	2	2	14
Monde River Delta	3	6	1	4	2	2	12
Deltas of Rud-i-Jagin and Rud-i-Gabrik	4	8	1	4	0	0	12
Pozm Bay	3	6	1	4	0	0	10
Chahbahar Bay and Khor Konarak	3	6	1	4	0	0	10
Khor Jask	2	4	1	4	0	0	8
Kharku Island	3	6	0	0	1	1	7
Faror Islands	3	6	0	0	0	0	6
Bushire Bay	2	4	0	0	0	0	4
System: Sistan Basin							
South end of Hamoun-i Puzak	6	12	5	20	11	11	43
Hamoun-i Sabari and Hamoun-i Hirmand	6	12	4	16	13	13	41
System: South Caspian							
Miankaleh Peninsula and Gorgan Bay	7	14	4	16	34	34	64
Anzali Mordab Complex	7	14	3	12	18	18	44
South Caspian Shore	8	16	1	4	14	14	34
Gomishan Marshes and Turkoman Steppes	4	8	2	8	16	16	32
Seyed Mohalli, Zarin Kola and Larim Sara	4	8	3	12	9	9	29

Name of site	Reasons for inclusion	Score	# of globally threatened species	Score	# of 1% species	Score	Total
Lake Alagol, Lake Ulmagol and Lake Ajigol	4	8	4	16	3	3	27
Fereidoonkenar Marshes	3	6	1	4	11	11	21
Bandar Kiashar Lagoon and mouth of Sefid Rud	4	8	1	4	4	4	16
Amirkelayeh Lake	4	8	1	4	3	3	15
Abbas-abad Dam	3	6	1	4	1	1	11
Lavandavil Marsh	3	6	1	4	0	0	10
Voshmigir Dam	2	4	1	4	2	2	10
Lapoo-Zargmarz Ab-bandans	2	4	1	4	1	1	9
Lake Bibishervan and Lake Eymar	2	4	1	4	0	0	8
Incheh Borun Lake	1	2	1	4	0	0	6
System: Uromiyeh Basin							
Shur Gol, Yadegarlu and Dorgeh Sangi Lakes	4	8	5	20	8	8	36
Lake Uromiyeh	6	12	2	8	15	15	35
Lake Kobi	4	8	3	12	8	8	28
Gori Gol	5	10	2	8	1	1	19
Gerde Gheet and Mamiyand	2	4	2	8	2	2	14
Ghara Gheshlaq Marshes	2	4	1	4	4	4	12
Nowruzlu Dam	1	2	0	0	2	2	4

Table 6.2 below summarises the distribution of internationally significant wetlands by province.

Table 6.2: Internationally significant wetlands in Iran, by province

Province	Number of sites	Area (ha.)	% of total
Khuzestan	9	497,540	26.8
Azarbayjan	10	492,520	26.5
Sistan/Baluchistan	7	267,460	14.4
Fars	7	169,070	9.1
Mazandaran	9	123,390	6.7
Bandar Abbas	1	100,000	5.4
Persian Gulf	8	94,607	5.1
Isfahan	1	63,300	3.4
Gilan	5	16,775	0.9
Baluchistan	1	14,900	0.8
Hormozgan	1	11,800	0.6
Kurdistan	1	1,550	0.1
Kermanshah	1	400	0.0
Total	62	1,856,412	100.0

Source: Calculations by author, based on WIAP, 1996.

6.2. Biodiversity significance of Wetland Protected Areas (WPAs)

It is arguable that the project's connection with, and potential impact upon, many of the wetlands presented above will remain tangential. Thus, it is important to focus on a smaller set of sites, which this project has termed as 'target replication sites.' These are quite simply defined as **all wetland sites of international significance in Iran subject either to national or international protection.** The tool for conserving and having a positive impact upon the biodiversity of these sites is the national WPA system.[1]

Table 6.3 below presents a breakdown of the set of wetlands of international significance according to conservation class. The table shows the breadth of the national WPA system, which includes 26 sites and covers nearly 1.6 million ha. At the same time, however, it shows the extent of unprotected areas; numerically, the proportion of unprotected sites is quite large, at 36 sites, or 58% of the total. However, in area terms this proportion drops to only 15%. This is reflected in the smaller mean size of unprotected areas, at 7,828 ha., vs. 60,562 for the protected sites.

[1] The only exception to this will involve work within the WPA system, to be supported by the project, on identifying potential new sites for WPA status. Nevertheless, it is likely that such sites may already be Ramsar sites and thus already included within the defined set of target replication sites.

Table 6.3: Internationally significant wetlands in Iran, by conservation class

Conservation class	Number of sites	Area (ha.)	Mean size (ha.)	% of total
National park	1	483,000	483,000	26.0
Wildlife refuge	6	660,542	110,083	35.6
Protected area	13	406,950	31,304	21.9
No hunting	4	21,120	5,280	1.1
Limited hunting	2	3,000	1,500	0.2
None	36	281,800	7,828	15.2
Total	62	1,856,412	29,942	100.0

Source: Calculations by author, based on WIAP, 1996.

Table 6.4 below presents an overview of Iran's Ramsar sites, all of which (by definition) are contained within the set of wetlands of international importance, but many of which remain unprotected at national level.

6.3 Overview of the site selection process

The site selection process may be broken down into the following stages:

1. Preliminary site selection: During this phase, the project team developed and applied criteria for selection of a short-list of project sites. This included a combination of quantitative and qualitative factors.[2] The exercise began with an attempt to score the wetlands according to biodiversity importance. The criteria used to measure biodiversity importance were as follows:

    - number of threatened species found at each site (multiplied by a weighting factor of four);
    - number of reasons for inclusion of a site as a site of international importance within the Directory of Middle East Wetlands (multiplied by two), and;
    - number of 1% criterion species found at each site.[3]

[2] The initial assessment, presented here, was of the 62 wetlands, rather than of the larger set of 76. Additional information on the two rounds of the site selection process is contained in project reports available from UNDP Iran

[3] Weightings were applied to give appropriate importance to the first two factors, which in nominal terms were generally lower than the 1% criterion figures. Thus, for example, a site may have had 20 to 30 1% criterion species, yet few sites had more than 6 or 7 globally threatened species observed. The weighting system represented an attempt to balance out these figures.

Table 6.4: Wetlands of International Importance (Ramsar sites) in the I.R. of Iran, their protection and management status

Ramsar Site Name	Area (ha.) of Ramsar Site	Protection Status and Area [1]	Montreux Record	Management Guidance Procedure?	Manage-ment Plan
1. Miankaleh peninsula, Gorgan Bay, Lapoo-Zaghmarz Ab-bandan	100,000	68,800 ha. WR + BR	No	Yes	No
2. Lake Parishan and Dasht-e-Arjan	6,600	52,800 ha. Arjan PA + 65,750 ha. BR	No	Yes	
3. Lake Orumiyeh	483,000	463,000 ha. NP + BR	No	No	Prepared & awaiting approval? [2]
4. Neyriz Lakes and Kamjan Marshes	108,000	327,820 ha. WR	Yes	Yes	
5. Anzali Mordab (Talab) complex	15,000	4,500 ha. Sia-Keshem PA 360 ha. Selke WR 150 ha. Sorkhan Kol NHA	Yes	Yes	Ramazani (1995)? [3]
6. Shadegan Marshes and mudflats of Khor-al Amaya & Khor Musa	400,000	296,000 ha. WR	Yes	No	
7. Hamoun-e-Saberi and Hamoun-e-Helmand	50,000	50,000 ha. (?) PA	Yes	Yes	
8. Lake Kobi	1,200	No protection status	No	No	
9. Hamoun-e-Puzak, south end	10,000	No, but adjacent to Hamoun-e-Saberi & Hamoun-e-Helmand PA	Yes	Yes	
10. Shurgol, Yadegarlu and Dorgeh Sangi Lakes	2,500	No protection status	Yes	No	
11. Bandar Kiashahr Lagoon and mouth of Sefid Rud	500	No protection status	No	Yes	
12. Amirkelayeh Lake	1,230	1,230 ha. WR	No	Yes	

[1] PA: Protected Area; WR: Wildlife Refuge; NP: National Park; BR: UNESCO Biosphere Reserve.
[2] Point 5.1 of the National Report of the I.R of Iran for Ramsar CoP7, Costa Rica, 1999.
[3] Ramzani, B. 1995. Conservation and management of Anzali wetlands. Azad University, Rasht.

Ramsar Site Name	Area (ha.) of Ramsar Site	Protection Status and Area [1]	Montreux Record	Management Guidance Procedure?	Manage-ment Plan
13. Lake Gori	120	No protection status	No	No	
14. Alagol, Ulmagol and Ajigol Lakes	1,400	No protection status	Yes	No	
15. Khuran Straits	100,000	85,686 ha. PA 100,000 ha. BR	No	No	
16. Deltas of Rud-e-Shur, Rud-e-Shirin and Rud-e-Minab	20,000	No protection status	No	No	
17. Deltas of Rud-e-Gaz and Rud-e-Hara	15,000	No protection status	No	No	
18. Gavkhouni Lake and marshes of the lower Zaindeh Rud	43,000	No protection status	No	No	
19. Govater Bay and Hur-e-Bahu, lower Sarbaz River	75,000	Protected status unknown?	No	No	No
20. Sheedvar Island, north-central Persian Gulf	870	870 ha. Protected by DOE in breeding season	No	No	No
TOTAL AREA OF IRANIAN RAMSAR SITES	***1,432,150***				

(adapted from Pourlak, 1999 and Ramsar Database)

The above method generated a score for each of the 62 wetlands included in the Directory of Middle East wetlands. These are shown in **Table 6.1** above, grouped according to wetlands system. These scores were among the criteria used in selecting sites. Additional, qualitative criteria included: (i) the urgency of threats facing sites; (ii) their national significance / importance; (iii) the distribution of sites within wetland systems (it was originally intended to have four sites, one each from different wetland systems), and;(iv) whether sites had significant transboundary elements. This phase concluded with the short-listing of five sites to be visited and appraised by the project team.

2. Site visits, stakeholder consultations and appraisal: This phase included: (i) visits to the five short-listed sites, (ii) consultations with local officials and potential project stakeholders, and (iii) appraisal of each site based on available data. Based on the above, the project team recommended four of the five sites for inclusion in the full-scale project. These were: (i) Lake Uromiyeh; (ii) Dasht-e-Arjan and Lake Parishan; (iii) Miankaleh Peninsula, and; (iv) Khouran Straits. The fifth site, which was not selected, was Anzali Mordab.

3. Stakeholder and Steering Committee meetings: This phase included further discussion of the threats facing each of the sites as well as the official decision regarding site selection.

4. Site reduction: Based on further consultations and assessments, it became clear to the project partners that the scope of the project was too large. Key factors included the capacity of DoE to assimilate and manage a project with multiple demonstration sites. It was therefore agreed to scale down the project to two demonstration sites, while simultaneously retaining a robust replication component. Following a review of the various factors pertaining to each site, the final demonstration sites were agreed upon. It should be noted that Government strongly supported the idea of working at the two inland sites, as opposed to the coastal sites. This was partly due to the fact that many such wetlands throughout the country had become threatened due to the serious drought faced by Iran from 1999-2002 – the worst in some 40 years.

6.4 Biodiversity significance of project sites

6.4.1 Biodiversity significance at Lake Uromiyeh and satellite wetlands[1]

Lake Uromiyeh, located between East and West Azarbaijan, is considered one of the world's premier examples of a deep (5-8 m) hypersaline lake. It is by far the largest inland lake in Iran and is the largest permanent salt lake in the Middle East.[2] The roughly 5,000-6,000 km^2 lake, which represents LUB's lowest point of elevation at approximately 1,276 m. above sea level, acts as a 'sink' for inflows of water, sediments and nutrients from throughout the basin, as well as a moderator of climate for the area. The lake, along with its shores and its more than 100 small, mountainous islands, constitute Iran's largest and probably most important National Park, with an area of 463,600 ha. The area is both a Ramsar site as well as a Unesco Biosphere Reserve.

Lake Uromiyeh's ecosystem is a rather simple one. Due to its high salinity, the lake does not support plant or fish life. Its primary producers are dense communities of green and blue-green algae. The high level of production of these algae supports a single, endemic species of brine shrimp, *Artemia urmiana*. *A. urmiana* thrives in the absence of any fish species within the lake, providing a rich food source for many of the bird species which congregate in internationally important numbers at the Lake.

[1] Portions of this section are drawn verbatim from Volume 1 of Yekom 2002.
[2] Unlike most other salt lakes in Iran, the Middle East and North Africa, Lake Uromiyeh does not dry out in summer.

The Lake has historically been of great importance for breeding *Phoenicopterus ruber*, *Pelecanus onocrotalus*, *Tadorna tadorna*, *Tadorna ferruginea*, *Recurvirostra avosetta*, *Tringa totanus*, *Larus armenicus*, *Larus genei*, *Egretta garzetta*, *Platalea leucorodia*, *Burhinus oedicnemus*, *Marmaronetta angustirostris*, and *Aythya nyroca.* This importance has decreased in recent years, particularly since the onset of a major drought in 1999.

Historically among the most important among these bird species has been the Greater Flamingo (*Phoenicopterus ruber*), which is found year-round on the lake but typically in greatest numbers during its breeding season. The flamingo breeding colony is located on the low islands and extensive muddy beaches on Ashk and Doghuzlar Islands in the southern part of the lake. Lake Uromiyeh's flamingos are totally dependent on *A. urmiana* as their food source.

Up to 100,000 flamingos have been recorded at the Lake. Flamingos breed in colonies, and Lake Uromiyeh is their only regular breeding site in Iran. A recent report described it as being "the most important breeding site (over 10,000 pairs) for this species in Eurasia."[3] The birds have bred at many locations throughout the lake and the largest single colony observed was 5,000 pairs seen in 1998. Unfortunately, no flamingo breeding has taken place at the site since 1998, probably due to rising salinity levels in the Lake, which have led in turn to sharply reduced *Artemia* populations and drying out around the breeding islands.[4] Attempts to initiate harvests of *A. urmiana* may also have contributed to this result.

Extensive mudflats surrounding the Lake are important autumn staging areas for migratory shorebirds and *Anas querquedula*, while the open waters of the Lake occasionally support huge numbers of *Podiceps nigricollis.* Over 425,000 waterfowl of at least 53 species were recorded in Lake Uromiyeh Basin during an aerial survey in August 1973 (Scott 1973), and around 150,000 during another aerial survey in August 2001 (recorded by DOE), the latter despite the drought conditions. The 2001 total included some 24,000 flamingos, though these did not breed.

There are about 56 islands in the Lake, mostly small. These are known to be important breeding areas for many different bird species: *Falco biarmicus* (at least 5 pairs), and *Neophron percnopterus, Falco cherru*g and *Falco peregrinus* have been recorded during the summer months and may breed. *Gyps fulvus, Aegypius monachus, Haliaeetus albicilla* and *Falco columbarius* occur in winter. Several of the islands, notably Ashk and Kaboodan, support almost pristine stands of Azarbaijan Pistachio (*Pistacia atlantica*) forest. The few surviving stands of this forest type elsewhere in northwestern Iran are now much degraded.

Table 6.5 below presents data on estimated bird populations within the LUEZ in the 1990s.

To the immediate south of Lake Uromiyeh, within the Lake Uromiyeh Ecological Zone (LUEZ), are found what have been called the Lake's satellite wetlands. These are very close (< 5 km) to the shore of the Lake and intimately linked to it both hydrologically and ecologically. Many species, e.g., pelicans – which breed on the Lake but feed in the wetlands – as well as flamingos, grebes, etc., rely on both the lake and the wetlands.

[3] Yekom, 2002. Breeding pairs in 1977 were estimated at some 11,000 pairs. From 1991-1998, the estimated annual number of breeding pairs ranged from about 2,500 to nearly 6,000.
[4] These conditions are described in detail in the threats analysis (see below).

Table 6.5 Estimated populations of selected waterbird species in the LUEZ

Species	Population (1990s)	Season	Regional population	% of regional population
Phoenicopterus ruber	5,000-10,000	Breeding	500,000	1-2%
Podiceps nigricollis	?	?	25,000	?
Pelecanus onocrotalus	1,000-3,000	Breeding	70,000	1-4%
Ciconia ciconia	1,000-3,000	Breeding	50,000	2-6%
Phalacrorax pygmeus	300-500	Wintering	5,000	6-10%
Cygnus bewickii	150-300	Wintering	500	30-60%
Tadorna tadorna	20,000-40,000	Wintering	80,000	25-50%
Tadorna ferruginea	3,500	Wintering	350,000	1%
Anas querquedula	?	Winter passage	100,000-200,000	?
Marmaronetta angustirostris	300-4,300	Wintering	15,000	5-29%
Oxyura leucocephala	2,000-5,000	Wintering	15,000	13-30%
Himantopus himantopus	300-500	Breeding	10,000-25,000	3-5%
Tringa tetanus	7,000	Wintering	?	?
Limicola falcinellus	650-700	Winter passage	20,000	3-4%

Source: Yekom, 2002.

All of the satellite wetlands have suffered heavily from drought and many have also suffered from years of mismanagement. Some may be beyond recovery. However, their close ecological relationship with the Lake and the inevitable fact that increasing levels of freshwater inflows to the Lake will pass through and help to rejuvenate these wetlands, mean that the project cannot afford to ignore their potential role in the recovery of the overall Uromiyeh ecosystem.

Satellite wetlands where certain project activities will take place (see especially Outcome 1.5) include the following:[5]

- Shur Gol (Hassanlou), Yadergarlou and Dorgeh Sangi: A group of fresh to brackish and saline lakes and marshes on the plains to the south of Lake Uromiyeh, important for breeding, passage and wintering waterfowl. The wetlands have been designated as a Ramsar Site, but are otherwise unprotected. Shur Gol and the associated Hassanlu Marshes consist of a shallow, brackish to saline lake and marshland fed by local rainfall, springs, seepages and several small streams. The maximum depth of the lake is about one metre. Flooding occurs in autumn and winter, but drainage is virtually closed and the complex dries out completely only in very dry years. The much smaller Yadegarlu and Dorgeh Sangi wetlands a few km to the east and southeast are shallow freshwater lakes with peripheral eutrophic marshes. Both are subject to wide fluctuations in water level, and are often completely frozen over in winter. The extensive marshes at Shur Gol and Yadegarlu are dominated by sedges (Carex) and grasses. There is relatively little aquatic vegetation at Dorgeh Sangi, where extensive bare mudflats are exposed at low water levels. The surrounding land includes wheat fields on the rolling hills and plains to the north, and more intensive agriculture in the vicinity of the villages to the south. The wetlands are especially important for breeding waterfowl, notably *Ciconia ciconia*, *Plegadis falcinellus* (50-75 pairs),

[5] From Scott, 1995. Note that significant negative ecological changes – related both to drought and to anthropogenic causes – have taken place since these descriptions were prepared. See concluding paragraphs under each bullet for summaries of these changes – based on Yekom 2002.

Marmaronetta angustirostris (10-15 pairs), *Aythya nyroca* (several pairs), *Oxyura leucocephala* (several pairs) and *Glareola pratincola* (50-80 pairs), and passage ducks, *Fulica atra* (up to 120,000) and shorebirds. When not frozen over, the lakes also support large numbers of wintering waterfowl, mainly dabbling ducks and *F. atra*. A small flock of *Cygnus columbianus* (maximum 57) occurred regularly at these lakes in the early 1970s, and this was the only regular wintering site for *C. columbianus* in Iran at that time, with 41 in 1969/70, 57 in 1970/71, 4 in 1971/72 and 14 in 1974/75. A few *C. columbianus* were present in a flock of 30 swans (mainly C. cygnus) in January 1995. Small flocks of *Anser erythropus* (maximum 175) were recorded on autumn passage in the 1970s, and up to 120 *Anser albifrons* were present in winter, along with several hundred *Anser anser*. *Ciconia nigra* and *Charadrius asiaticus* have occurred as scarce passage migrants. Peak counts of some waterfowl are given in Table 5. The Great Bustard *Otis tarda* was an occasional visitor to the surrounding plains in the 1970s (maximum 6). *Haliaeetus albicilla* is a regular winter visitor, with up to three birds present at one time.

In the last few years, both natural and anthropogenic changes have affected these wetlands as follows.

- Due to construction of a dam, Shur Gol has been turned into a deep, permanent freshwater reservoir. Despite the above changes, the following species counts were made during a 2000 bird counting exercise.

Species	**N**	**1% level**	**Applicable region**
Podiceps nigricollis Black-necked *Grebe*	2,617	1,000	Europe
*Aythya nyroca** Ferruginous Duck	65	50	West / Southwest Asia / North East Africa
*Oxyura leucocephala** White-headed Duck	21	115	East Mediterranean / Turkey / SW Asia
Larus armenicus Armenian Gull	660	300	Armenia / E Turkey / W Iran

* Globally threatened species

- In the case of Yadegarlu, unsustainable waterfowl hunting and grazing by domestic livestock have taken a toll over the last ten years or so and the wetland has been drained for agriculture since 1998. It has remained completely dry in recent years.

- Dorgeh Sangi was partially drained five years ago and has remained dry ever since.

- Gherde Geet and Mamiyand: An area of freshwater marshes on the plains to the south of Lake Uromiyeh, important for breeding and wintering waterfowl A breeding area for *Ardea purpurea* (several pairs), *Ciconia ciconia*, *Circus aeruginosus* (several pairs) and *Glareola pratincola* (50+ pairs). One or two pairs of *Oxyura leucocephala* were breeding in the marshes in the 1970s, and *Marmaronetta angustirostris* and *Gelochelidon nilotica* probably bred. Up to 20 Great Bustards *Otis tarda* have occurred on the surrounding plains in winter. Large numbers of wintering waterfowl have been recorded in recent years, including large numbers of *Anser anser*, up to 2,500 *Tadorna ferruginea* and 3,000 *T. tadorna*.

Agricultural activities on the margins of the wetland are a significant threat. In addition, water resource development projects on the Godar River have affected the freshwater supply reaching the wetland.[6]

- Lake Kobi: A fresh to brackish lake and associated marshes on the plains to the south of Lake Uromiyeh, important for breeding, passage and wintering waterfowl. The lake has been designated as a Ramsar Site, but is otherwise unprotected. Lake Kobi (or Ghopi Bob Ali) is a shallow, eutrophic, fresh to brackish lake with extensive seasonally flooded marshes, receiving its water from local rainfall, several springs, seepages and temporary watercourses fed by snow-melt. The maximum depth is about 1.5 m; the bottom is comprised of mud. The lake overflows when full, flooding marshland to the north and west. It regularly freezes over in winter. The lake supports an abundant growth of submerged vegetation; there are extensive sedge marshes around much of the shoreline, and Phragmites reed-beds occur in the south and to the northwest, together with some grassland. The whole area is surrounded by rolling steppic hills, with scattered settlements and cultivation to the north and south. The marshes support a variety of breeding waterfowl, notably *Nycticorax nycticorax* (100 pairs), *Ardeola ralloides* (100 pairs), *Egretta garzetta* (100 pairs), *Plegadis falcinellus* (100-150 pairs) and *Aythya nyroca* (several pairs), and there was a breeding colony of 50 pairs of *Podiceps nigricollis* at the lake in 1972. *Sterna albifrons* is present in summer and may breed. *Oxyura leucocephala* occurs during the summer (maximum 33), but these birds appear to be non-breeders or feeding birds from breeding sites at other wetlands in the general area. The lake is an extremely important staging area for ducks, *Fulica atra* and shorebirds in autumn, regularly holding in excess of 100,000 birds. Peak counts have included 6,600 *Phoenicopterus ruber*, 3,000 *Anas querquedula*, 5,000 *A. clypeata*, 20,000 *Aythya ferina* and 50,000 *F. atra*, as well as over 100 *O. leucocephala*. Large numbers of ducks and coots remain throughout the winter in very mild years when the lake remains unfrozen. A flock of 16 *Branta ruficollis* in January 1970 was exceptional, as was a single *Grus virgo* in August 1972. Small numbers of *Marmaronetta angustirostris* and *Charadrius asiaticus* have been recorded on autumn passage. Peak counts of some waterfowl are given in Table 6. *Haliaeetus albicilla* and *Falco columbarius* are regular winter visitors, and *Circus pygargus* has been recorded in summer and may breed. The Great Bustard *Otis tarda* is an occasional visitor in small numbers to the surrounding plains (maximum 6).

The Lake was reported to be dry in 2002, though this appears due largely to drought conditions and dam construction rather than deliberate drainage.

On the whole, observations of globally threatened species within the satellite wetlands as a group continue – *Oxyura leucocephala* (breeding), *Aythya nyroca*, *Netta rufina*, *Otis tarda*, *Aquila clanga*, etc. – despite the area being so poorly watched and despite the unusually severe drought of recent years.[7]

6.3.2 Biodiversity significance at Lake Parishan

Located in the southern Zagros Mountains of Fars Province, Parishan Lake is a shallow but permanent lake, having a maximum area of 4,200 ha. Its waters are oligotrophic and vary from brackish to saline, largely depending on quantities of freshwater inflow. It is located at an altitude of 853 meters within a 29,000 ha. enclosed drainage basin. The lake is surrounded by eutrophic marshes, reedbeds and halophytic vegetation.

[6] Yekom, 2003. Report 1: The Natural Environment of the Lake Uromiyeh Ecosystem.
[7] Personal communication, Mike Moser, 8 July 2003.

Both Lake Parishan and the related wetland of Dasht-e Arjan are extremely important for waterfowl of various species.[8] They have been called "outstanding examples of freshwater and brackish to saline wetlands characteristic of the highlands of western Iran."[9] Both wetlands support a very diverse flora and fauna, helping to maintain the ecological and genetic diversity of the region. They support at least five threatened species of birds in appreciable numbers as part of their extremely diverse wetland fauna and flora. These are: *Pelecanus crispus*, *Marmaronetta angustirostris*, *Aythya nyroca*, *Oxyura leucocephala* and *Aquila heliaca*.

Marbled teal *Marmaronetta angustirostris* breeds at Lake Parishan and large numbers winter there. Together, the wetlands support over 1% of the regional wintering populations of *Pelecanus onocrotalus*, *Phoenicopterus ruber*, 11 species of ducks (*Anatidae*), *Fulica atra*, *Grus grus*, and *Larus ridibundus*. Wintering raptors include the white-tailed eagle *Haliaeetus albicilla*, marsh harrier *Circus aeruginosus*, imperial eagle *Aquila heliaca*, saker *Falco cherrug* and barbary falcon *Falco pelegrinoides*. During breeding season, large colonies of herons (*Ardeidae*) and ibises (*Threskiornithidae*) are found at the lake, together with over 1% of the regional populations for *Plegadis falcinellus* and *Platalea leucorodia*.[10]

Lake Parishan, together with its sister wetland Dasht-e Arjan, scored second highest among all Iranian wetlands on the biodiversity ranking conducted by the project. The basis for its high score is outlined in **Table 6.6** below.

Table 6.6: International significance criteria for Lake Parishan and Dasht-e Arjan

Criterion[11]	**Description (from *A Directory of Wetlands in the Middle East*)**
1a – it is a particularly good example of a natural or near-natural wetland, characteristic of the appropriate biogeographical region	"Dasht-i Arjan and Lake Parishan are outstanding examples of freshwater and brackish to saline wetlands characteristic of the highlands of western Iran."
2a – it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of individuals of any one or more of these species	"Five threatened species of birds occur in appreciable numbers: *Pelecanus crispus*, *Marmaronetta angustirostris*, *Aythya nyroca*, *Oxyura leucocephala* and *Aquila heliaca*."
2b – it is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna	"They support an extremely diverse wetland fauna and flora, and thus play an important role in maintaining the genetic and ecological diversity of the region."
2c – it is of special value as the habitat of plants or animals at a critical stage of their biological cycle	"Both wetlands support large breeding colonies of Ardeidae and Threskiornithidae…"
3a – it regularly supports 20,000	"Both wetlands…regularly hold over 20,000

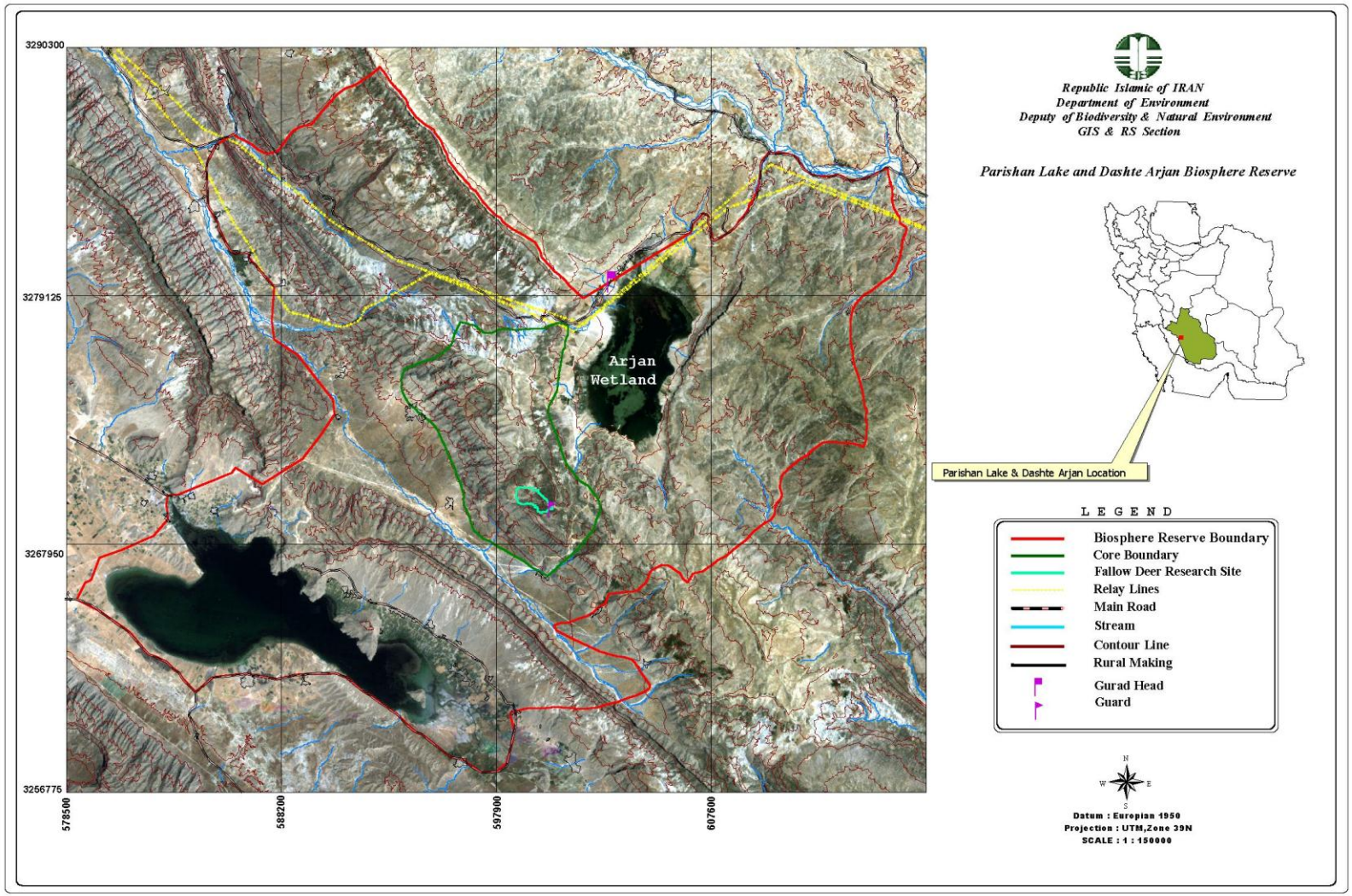
[8] Dasht-e Arjan and Lake Parishan are managed jointly. However, the recent drought in Iran has led to a drying up of Dasht-e Arjan for much of the year and there is little in the way of management activity taking place. Should climatic conditions change during the course of the project, it might be feasible to expand work at the site to incorporate support for Dasht-e Arjan.
[9] Scott, 1995.
[10] Wetlands International and Ramsar Sites Database. *A Directory of wetlands of International Importance*. See www.wetlands.org/RDB/Ramsar_Dir/IranIslamicRep/ir002DO2.htm
[11] It should be noted that these criteria have since been replaced by new criteria adopted at Ramsar's COP7 in San Jose, Costa Rica, 1999.

Criterion[11]	**Description (from *A Directory of Wetlands in the Middle East*)**
waterfowl	waterfowl in winter."
3c – it regularly supports 1% of the population of one species or subspecies of waterfowl	"During the breeding season, the wetlands support over 1% of the regional populations of *Plegadis falcinellus* and *Platalea leucorodia*; during the migration seasons, over 1% of the regional population of *Podiceps nigricollis*; and in winter, over 1% of the regional populations of *Pelecanus onocrotalus*, *Phoenicopterus ruber*, 11 species of Anatidae, *Fulica atra*, *Grus grus* and *Larus ridibundus*."

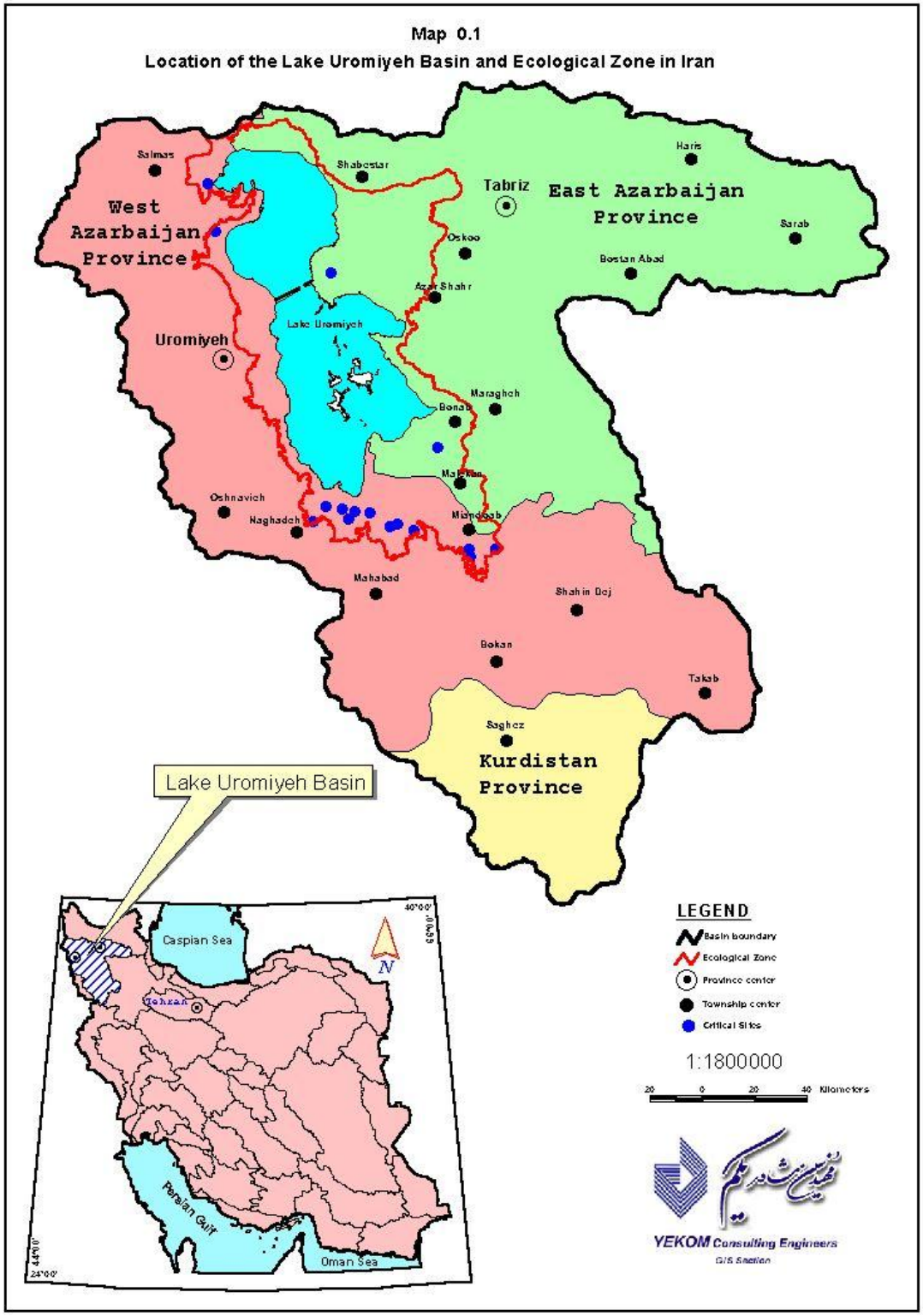
In addition to the above listed six reasons for inclusion as wetlands of international importance (only 3 sites scored more), the sites support five globally threatened species and 19 1% species, i.e., species for which the site supports more than 1% of the regional breeding population (more than any other site but one in Iran). These facts should leave little doubt of the global significance of the site.

Annex 7: Maps of Project demonstration sites

7b) Map of Parishan Lake and Dasht-e-Arjan



7b) Map of Lake Uroomieh Basin and Ecological Zone



Annex 8: Cofinancing Commitment Letters

See separate file attached.